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THIRTY-SEVENTH
ANNUAL REPORT

OF THE

FISHERY BOARD FOR SCOTLAND

Being for the Year 1918.

Presented to Parliament by Command of His Majesty.



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THIRTY-SEVENTH ANNUAL REPORT.

TO THE RIGHT HONOURABLE
 ROBERT MUNRO, K.C., M.P.,
His Majesty's Secretary for Scotland.

FISHERY BOARD FOR SCOTLAND,
 EDINBURGH, 1st June 1919.

SIR,—

In terms of the Act 45 and 46 Vict., c. 78, we, the Fishery Board for Scotland, have the honour to present this, our Thirty-seventh Annual Report, being for the year 1918 :—

PART I.

GENERAL STATEMENT.

The total quantity of sea-fish landed in Scotland during 1918 amounted to 3,313,228 cwts., of the value, including shell-fish, of £6,066,588. As compared with 1917 these figures show increases of 8 per cent. in quantity and 64 per cent in value.

This result was obtained through the agency of 4614 fishing vessels manned by crews numbering 15,416.

SUMMARY OF MEANS OF CAPTURE AND RESULTS.

Year.	Number of Vessels.	Value of Boats and Gear.	Total Catch.	
			Quantity.*	Value.
		£	Cwts.	£
1909	9,889	5,291,533	7,423,185	2,889,107
1910	9,724	5,439,857	8,709,655	3,100,387
1911	9,543	5,628,087	8,511,974	3,127,929
1912	9,290	5,777,102	8,587,106	3,656,178
1913	8,991	6,035,952	7,828,350	3,997,717
1914	8,869	6,297,745	7,440,321	3,208,536
1915	4,653	1,668,765	2,319,390	2,109,465
1916	4,650	1,827,346	3,412,030	3,206,550
1917	4,609	1,902,167	3,079,768	3,704,789
1918	4,614	3,038,592	3,313,228	6,066,588

* Excluding shell-fish, which are sold partly by number (e.g., oysters) and partly by weight (e.g., mussels), and have no common measure except value.

CHANGES IN MEANS OF CAPTURE.

The figures for the year 1918 as to the number and value of the vessels, etc., engaged in the Scottish fisheries, given above and in Table A, do not include the vessels which were engaged in the service of the country, or unemployed on account of lack of crews to man them. 1249 steam and motor fishing vessels were taken over by the Admiralty for mine-sweeping and other duties, while about 20,000 fishermen out of a total of 33,000 were on active service or employed at naval bases.

Their most striking feature is the great appreciation shown in the value of all kinds of boats and gear, the total increase amounting to £1,136,425, or no less than 60 per cent. This remarkable increase was due not only to the great rise in the cost of labour and materials, but also to the keenness of the competition to acquire fishing vessels which arose in consequence of the extraordinarily lucrative results derived from fishing during the year.

In regard to the steam fishing fleet there is little to record. A number of powerful steam trawlers and drifters were built to the order of the Admiralty, but these have not so far been registered as fishing craft, although they will doubtless be added to the strength of the fishing fleet in due course.

There was again a large addition to the number of motor fishing vessels. The number of boats actually employed in fishing is shown in Table A, but if boats engaged otherwise than in fishing or unemployed during the year are taken into account, the Scottish motor fishing-fleet at the end of 1918 numbered 1518, an increase of 256 over the total for the preceding year. The greatest increase occurred in second-class boats, a fact which is attributable to the singular success of this type of vessel in small-line fishing in inshore waters. Substantial as is the increase reported, it would undoubtedly have been much greater but for the difficulties experienced by the makers in supplying and installing engines, a large number of orders having been unfulfilled at the close of the year.

The following figures show the totals for the years 1917 and 1918 :—

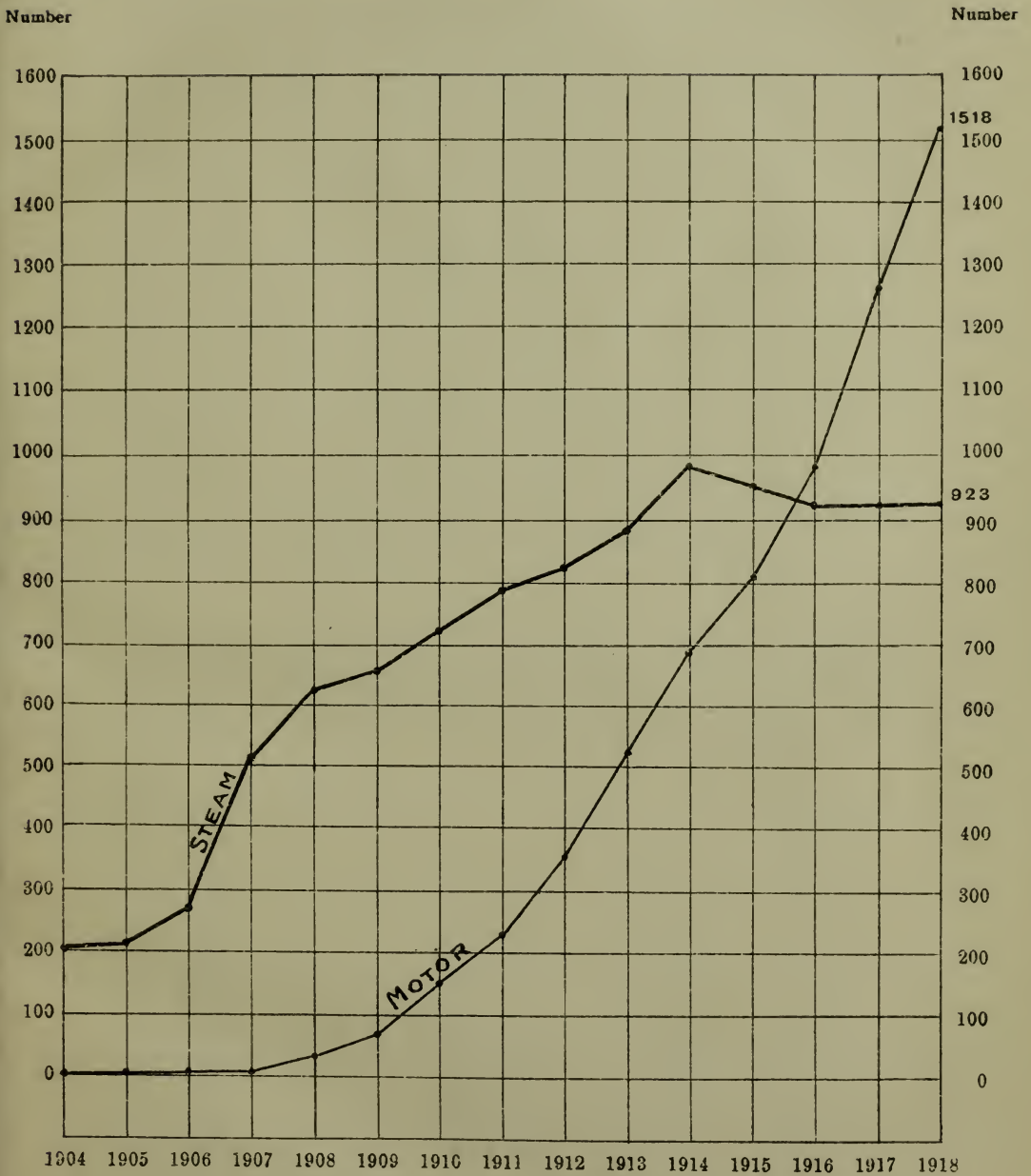
	1918.	1917.	Increase.
East Coast	1008	811	197
Orkney and Shetland	66	54	12
West Coast	444	397	47
	<hr/>	<hr/>	<hr/>
Total	1518	1262	256

On the opposite page we give a diagram showing in graphic form the increase in the steam and motor fishing fleets of Scotland during the last fourteen years: the figures for the last four years represent the number of vessels on the register, and not the numbers actually engaged in fishing.

TOTAL CATCH.

The total quantity of fish landed in Scotland (exclusive of shell fish) during the year under review was 3,313,228 cwts., which realised

CHART SHOWING THE INCREASE OF STEAM DRIFTERS AND LINERS AND MOTOR BOATS



£5,991,693—an increase in quantity of 233,460 cwts., and in value of £2,346,678, as compared with the figures for 1917. The shell-fish landed realised £74,895, so that the gross total value of the fisheries was £6,066,588. This sum is by far the highest ever recorded, being no less than £2,068,871, or 50 per cent. in advance of the previous record, set up in 1913, when the catch was 136 per cent. greater.

The feature of the fishing industry, which, indeed, dwarfed all others, was the great and sustained increase in prices throughout the year. The shortage of other foods, and particularly meat, combined with the general, if illusory, prosperity of the country, led to the keenest competition for the produce of the fisheries, with the result that prices soared to hitherto unheard-of levels. On one occasion herrings touched £16 per cran, while during one week in January the average price per cwt. of all white fish sold in Aberdeen was £7, 9s. 2d. In the interests of the consumer it became necessary to fix maximum prices which, although they represented a very sensible reduction on those which had been ruling, had perforce to be fixed at a level sufficiently high to induce fishermen to brave the dangers attendant on their calling. Under the stress of competition these prices, as in the case of other commodities, became, except in comparatively rare instances, the minimum throughout the remainder of the year, with the result that the fishermen and others engaged in freshing and kippering enjoyed the most lucrative season ever experienced.

Numerous instances of the exceptional earnings realised by fishermen in all branches of the fisheries will be found cited in the annual reports of the Fishery Officers (Appendix V., p. 36), the publication of which has been resumed after an interval of three years.

HERRING FISHERY.

The quantity of herrings landed in Scotland in 1918 was 2,061,741 cwts., of the value of £2,537,110, these figures representing an increase of $4\frac{1}{2}$ per cent. in quantity, and of 62 per cent. in value as compared with 1917.

The following table shows the results of the Scottish herring fishery during the last ten years:—

Year.	Quantity. Cwts.	Value. £	Average Price per Cwt.
1909 . . .	4,541,297	1,569,743	6/11
1910 . . .	5,687,226	1,594,308	5/7
1911 . . .	5,036,484	1,505,334	6/
1912 . . .	5,201,300	1,910,533	7/4 $\frac{1}{2}$
1913 . . .	4,449,323	2,087,754	9/4 $\frac{1}{2}$
1914 . . .	4,383,265	1,339,046	6/1 $\frac{1}{4}$
1915 . . .	703,096	441,980	12/6 $\frac{3}{4}$
1916 . . .	2,086,177	1,350,609	12/11 $\frac{1}{2}$
1917 . . .	1,972,346	1,563,824	15/10 $\frac{1}{4}$
1918 . . .	2,061,741	2,537,110	24/7

The most outstanding fishing of the year was that prosecuted in the Minch from January to March. Here operations could be carried

on practically free from Admiralty restrictions, and the fishermen, spurred on by the lucrative earnings to be gained, prosecuted the fishing with unremitting energy. Many difficulties had to be contended with : the weather was unusually stormy, delays in discharging owing to the congestion at the ports of landing were frequent, and the shoals were less widely distributed than in the preceding year : but notwithstanding these handicaps, the season's total amounted to nearly 700,000 cwts., for which £915,000 were realised, as against 712,000 cwts., valued at £472,500, in 1917.

Reference was made in last year's Report to the effect upon the incidence of the landings of the special conditions created by the war. The curtailment of curing owing to the cutting-off of the usual markets, on the one hand, and on the other the increasing demand for fish to compensate for the shortage of other foodstuffs had, it was pointed out, tended to divert the landings from Stornoway, formerly the principal centre of the winter fishing, to the railway termini on the mainland. This tendency was accentuated during the year under review, the statistics showing that over 55 per cent. of the season's catch was landed at Mallaig, Oban, and Kyle, as against 40 per cent. in 1917, and the difference would have been still more pronounced but for the fact that the last-named port was closed to fish traffic by the Admiralty in the middle of February.

This tendency developed as the year progressed, and the total figures show that 566,445 cwts. were landed at the mainland ports, and 372,727 cwts. at Stornoway, as against 482,000 cwts. and 435,000 cwts. respectively in 1917.

The Shetland herring fishing declined still further in 1918. Owing to the presence of enemy submarines fishing operations were not possible during the first quarter of the year, and only 693 cwts. were landed during that period ; and although fish were very abundant in Shetland waters during the summer months, the lack of adequate facilities for dispatching fish fresh to the southern markets rendered it unprofitable for even the local boats to prosecute the fishing to any extent, and the total catch for the year was only 97,650 cwts., as against 120,362 cwts. in 1917.

The summer herring fishing on the East Coast yielded a total of 782,495 cwts., valued at £863,150, as compared with 700,124 cwts. and £471,834 in the preceding year. The area available for fishing operations was again severely circumscribed, but the Naval Authorities found it practicable to throw open for a time an additional area to the north-east of Kinnaird Head, and the result is seen in the increased landings at the ports from Peterhead to Buckie, which received 677,000 cwts., or 56,000 cwts. more than in 1917. On the other hand, the fishing on the South-East Coast was a failure, the total catch of 12,000 cwts. being less than one-fourth of that landed in the preceding year.

The proportions of the total catch landed by steam, motor, and sailing drifters respectively were roughly one-third, one-half, and one-fifth. As between motor and steam-drifters, this reversal of the usual position was due entirely to the wholesale depletion of the steam-fishing fleet by the Admiralty, but it will be observed that during the winter fishing, the largest share of the catch fell to the steamers, their greater size giving them the advantage in stormy weather.

DISPOSAL OF HERRING CATCH.

The measures adopted in 1917 to encourage the home consumption of the herring catch by discouraging pickling, and increasing the facilities for marketing the fish either fresh, or if preserved, in a form suitable to British tastes were reinforced in 1918 by the closure of practically all the remaining channels of export, and by the great impetus given to the freshing and kippering trade by the high level at which prices ruled throughout the year. The cumulative result is shown in the following table :—

	Freshed.	Kippered.	Bloaters or Reds.	Tinned.	Cured Gutted.	Cured Un- gutted.
	Cwts.	Cwts.	Cwts.	Cwts.	Barrels.	Barrels.
1918 .	1,064,587	899,388	77,130	61,425	31,031	45,649
1917 .	666,889	654,598	46,133	59,678	193,081	25,360
1916 .	442,292	547,795	22,459	79,212	343,582	30,612

Practically all the herrings cured un-gutted are eventually converted into "reds," so that, with a total catch which was practically the same in each of the three years, the quantity disposed of fresh or preserved in other ways suitable for the home market increased by 90 per cent., while the quantity cured gutted fell to the same extent.

So great was the demand for freshing, kippering, etc., that, after the introduction of maximum prices, a system of rationing had to be adopted in order to secure an equitable distribution of the supplies among the buyers clamouring to purchase them. The kippering industry in particular has rapidly expanded. New establishments have been erected, existing smoke-houses improved and extended, and others which had long been idle renovated and used. Supplies were seldom equal to the demand, and when opportunity offered were supplemented by herrings from East Anglia and Norway.

It would have been impossible to achieve these results but for the whole-hearted co-operation of the Railway Companies, who spared no effort to cope with the abnormal volume of traffic with which they were called upon to deal, and although it was inevitable that breakdowns should occasionally occur, it is a matter for congratulation that the enterprise shown by all concerned was successful in providing the country with such a large addition to its food supply in the time of its greatest need.

CURE AND EXPORT OF PICKLED HERRINGS.

In view of the conditions prevailing in 1918, it is not a matter for surprise that the number of barrels cured gutted (31,000) was the lowest in the history of the industry. Practically every foreign market was closed, and as pickled herrings do not appeal to British tastes, it was highly problematical whether, in the event of any being cured, it would be possible to dispose of them. A few of the more speculative curers undertook the risk, but only when the breakdown of transport for freshing purposes caused a temporary glut and brought prices down to a moderate level, and hence it is that the bulk of the cure is returned

from the remoter districts such as Shetland and those on the north-west coast. Fortunately the embargo which had been imposed on the import of cured herrings into the United States was removed in August, and curers were thus enabled to dispose of the greater part of their stocks at a fair profit.

Including 84,663 barrels remaining in hand at the close of 1917, the total stock of Scottish cured herrings in 1918 was 115,694 barrels. Of this quantity 85,592 barrels were absorbed during the year, the United States of America taking 23,500 barrels, France 6550 barrels, and the remainder going into home consumption.

The exports to the principal markets abroad since 1909 have been as follows:—

Year.	To Germany.*	To Russia.	To America.
	Barrels.	Barrels.	Barrels.
1909 . . .	786,682	574,307	69,074
1910 . . .	982,361	732,345	73,409
1911 . . .	794,219	655,814	75,005
1912 . . .	719,013	750,187	93,471
1913 . . .	672,701	619,680	104,045
1914 . . .	353,323	493,039	115,347
1915 . . .	—	51,143	45,385
1916 . . .	—	285,365	46,281
1917 . . .	—	52,041	16,109
1918 . . .	—	—	23,498

* From 40 to 50 per cent. of the total quantity of herrings exported to Germany was, in normal circumstances, sent over the frontier to Russia and other Eastern countries.

SCOTTISH BOATS IN ENGLAND AND IRELAND.

The Naval Authorities again found it possible to grant facilities for the prosecution of the East Anglian autumn fishing, and a fleet composed of 103 steam and 237 motor vessels proceeded from Scottish ports to participate. These vessels enjoyed a highly successful season, notwithstanding the handicap imposed by the ravages of influenza, which was rife at the East Anglian ports, the total landings amounting to 692,000 cwts., for which £772,500 was realised. In contrast with the experience in 1917, the losses of gear were comparatively light.

A number of Scottish vessels also engaged with success in the herring fishings conducted off the Isle of Man and the Irish coasts.

WHITE FISH FISHING.

The quantity of white fish landed in 1918 was 1,128,623 cwts., which realised £3,342,811, or an increase of 121,054 cwts. and £1,320,994 upon the figures for the preceding year. As regards value, these figures, of course, constitute a new record, the average price per cwt. in 1918 having been £2, 19s. 2d., or 50 per cent. more than in 1917. The gain in quantity was due to the increased success of the line and cod-net fishings, the quantity landed by trawlers having, owing to the continued depletion of the trawling fleet, suffered a further decline.

The following are the totals of the white-fishing for the last decade :—

Year.	Quantity. Cwts.	Value. £
1909 . . .	2,830,728	1,305,811
1910 . . .	2,968,598	1,491,339
1911 . . .	3,391,316	1,540,539
1912 . . .	3,331,799	1,666,380
1913 . . .	3,296,257	1,824,741
1914 . . .	2,949,008	1,778,973
1915 . . .	1,540,345	1,585,717
1916 . . .	1,258,390	1,772,561
1917 . . .	1,007,569	2,021,817
1918 . . .	1,128,623	3,342,811

Trawling has contributed to the foregoing result as follows :—

Year.	Quantity. Cwts.	Value. £
1909 . . .	2,020,209	953,259
1910 . . .	2,102,031	1,102,976
1911 . . .	2,439,108	1,113,820
1912 . . .	2,392,692	1,232,193
1913 . . .	2,541,948	1,424,115
1914 . . .	2,191,387	1,333,834
1915 . . .	953,503	1,040,726
1916 . . .	735,862	1,117,056
1917 . . .	528,276	1,152,742
1918 . . .	495,401	1,569,454

The balance, as follows, has been taken by lines and by nets other than trawls :—

Year.	Quantity. Cwts.	Value. £
1909 . . .	810,519	352,552
1910 . . .	866,567	388,363
1911 . . .	952,208	426,719
1912 . . .	939,107	434,187
1913 . . .	754,309	400,626
1914 . . .	757,621	445,139
1915 . . .	586,842	544,991
1916 . . .	522,528	655,505
1917 . . .	479,293	869,075
1918 . . .	633,222	1,773,357

As the trawlers available for fishing purposes after Admiralty requirements had been satisfied were of an inferior class, operations were carried on mainly on the nearer North Sea grounds. The most productive trips, however, were those to Shetland waters, where the grounds on the west of the Islands had been reopened by the Admiralty at the beginning of the year, although only a few of the

larger vessels were able to work regularly in these exposed waters, while fewer still were able to go as far as Faroe. Small haddocks and codling predominated in the catches brought from the North Sea, while large haddocks figured prominently in the landings from Shetland waters.

Steam line fishing was prosecuted to better advantage than in 1917, the contribution from this source amounting to 56,813 cwts., an increase of 63 per cent. The bulk of the catch was taken on the West Coast grounds and landed at Mallaig by a number of Aberdeen vessels which worked from that port throughout the year, this fleet being supplemented during the spring and summer months by a number of Fraserburgh motor boats which worked from Oban. Towards the close of the year these grounds were beginning to show signs of depletion.

Small liners accounted for nearly 450,000 cwts., or about 110,000 cwts. more than in 1917. Of this quantity 290,000 cwts. were taken by motor boats—a circumstance which furnishes additional proof, if any were needed, of the great advantage accruing from the possession of boats which are not dependent upon the wind for propulsion, and of the peculiar suitability of medium-sized motor-boats for this branch of the fisheries, which they are rapidly making their own.

The quantity of white fish taken by net was about 85,000 cwts., the bulk of which consisted of cod, taken principally in the Moray Firth in the spring.

Otter trawling by means of motor-boats was again engaged in to a limited extent on the East Coast, but their small size and liability to engine break-down under the strain render them unsuitable for this method of fishing, and their success was limited.

WHITE FISH CURING.

The curing of white fish was further curtailed during the year under review, mainly owing to the keen demand for fresh fish. A proportion of the trawled fish landed from the long-voyage trawlers is frequently, however, unsuitable for the fresh market, and, consequently, upwards of 38,000 cwts. of haddocks were smoked at Aberdeen. There is also always a certain demand for smoked line-caught haddocks of the best quality, irrespective of price, to meet which some 13,000 cwts. were cured in addition. The quantities of white fish cured elsewhere were negligible, being limited to small supplies landed at places where no marketing facilities exist.

The foregoing remarks apply only to fish landed by Scottish vessels and do not cover cod, saithe, etc., imported in a wet-salted state from Faroe and elsewhere, of which over 60,000 cwts. were cured dried during the year.

PERSONS EMPLOYED.

The number of persons employed in the Scottish fishing industry during 1918 was 37,624. Of these 15,416 manned the fishing fleet, 5568 were gutters and packers of herrings, 2383 were engaged in the carrying trade, 2126 in boatbuilding, and the remainder in other forms of employment connected with the fishing industry.

WHALING.

The whaling stations in Shetland and Harris were again closed down during the year.

IMPROVEMENTS OF FISHERY HARBOURS.

Work on improvement schemes for fishery harbours, on the East Coast was further slowed down during the year as a result of the war, and completion of a number of schemes was postponed pending the return of normal conditions. A report for the year by the Board's Consulting Engineer is printed as Appendix IV., p. 32.

BYELAWS AND REGULATIONS.

Reference was made in last year's Report to the powers of modifying the normal restrictions on fishing which had been conferred upon the Board by the Sea Fishing (Scotland) Order, 1917, made by the Food Controller under the Defence of the Realm Regulations. During the year under review three Orders were made under these powers. The first of these authorised beam or otter trawling by boats not exceeding 45 feet in keel for a limited period within the territorial waters off Kincardineshire and Forfarshire, subject to certain restrictions as to the size of mesh permissible, etc. The second Order permitted seine or flounder-net fishing for the capture of white fish between 1st August and 31st October in the territorial waters between Red Head in Forfarshire and Babbit Ness in Fifeshire, subject to certain restrictions, and the third extended this permission until 30th November.

No other change in the regulations affecting the Scottish fisheries was made during the year.

WORK IN CONNECTION WITH THE WAR.

The special duties and work arising out of the war which devolved upon the Board, have been alluded to in previous Reports, but for various reasons it was not possible to give more than a bare reference to the principal matters dealt with. As the year under review will be the last passed under war conditions, we therefore propose to deal with our activities during the war at greater length than has hitherto been feasible.

When hostilities broke out in August 1914, the fishing industry was immediately dislocated, owing, *inter alia*, to the mobilisation of the Royal Naval Reserve, in which a large number of fishermen were enrolled; the announcement by fishing boat insurance companies that ordinary policies did not cover war risks; the closing of the continental markets for cured herrings; and the general state of apprehension as to the future. English drifters were recalled by their owners, and Scottish vessels left for their own ports to lie up. Trawlers ceased work. Curers were informed by exporters that all existing contracts were cancelled, and as their capital was practically

all tied up in stocks of cured herrings, they in turn were compelled to discharge their employees. The cessation of fishing operations also reacted immediately on the subsidiary industries—sail, buoy, oilskin, net, box, basket, and ice-making, etc., and the persons engaged therein found themselves either thrown idle, or with that prospect confronting them in the near future.

A special meeting of the Board was immediately called to consider the unprecedented situation thus created, and a Committee was appointed to formulate measures for meeting the situation. This Committee, after numerous consultations with the Trade, drew up a series of recommendations designed to facilitate the disposal of the stocks of cured herrings on hand, to enable the industry to be carried on, and to restore the credit of curers and fishermen by granting advances on the security of unsold herring stocks and of steam drifters.

Although the Committee's proposals were not adopted in their entirety, a scheme was eventually inaugurated for assisting traders by granting advances on the security of outstanding foreign trade debts (extended later to consignments of cured herrings lying abroad but unsold), while fishermen whose vessels had been acquired partly on mortgage were protected by the Courts (Emergency Powers) Act, and as in the meantime the Admiralty had intimated that fishing could be engaged in in the North Sea under certain restrictions, and on the West Coast without any restrictions, and a Government scheme of war insurance of steam fishing vessels had been instituted, a measure of confidence was ultimately restored.

Fresh problems, however, now arose. It soon became evident that any new markets which might be found would absorb only a small proportion of the stock of cured herrings, and that the only hope of disposing of them lay in getting them into Russia. Efforts were accordingly concentrated on exporting them to that country by way of Archangel, although, owing to the great congestion prevailing at that port, and the exiguous means of communication with the interior, this enterprise was in the nature of a forlorn hope. The necessities of the situation were, however, frequently and strongly impressed upon the Departments concerned, and the representations made to the Russian authorities were so far successful that by the Autumn of 1915 practically the whole of the stocks on hand at the outbreak of war had been successfully transported to the interior of Russia.

The harmonising of naval and fishing operations presented another serious difficulty, as it was necessary throughout the war, in the interests of national safety, to prohibit fishing operations in large areas round the Scottish coasts, in order to simplify naval operations. This inevitably bore very hardly upon the fishing industry, and constant representations were received from the various fishing interests affected soliciting the aid of the Board in securing some modification of these restrictions, and these were sympathetically received by the Admiralty. Moreover, as the submarine menace intensified the problem of the national food supply, the difficulty of reconciling fishing and naval interests tended to increase rather than diminish. The Board were not only therefore constantly consulted by the Naval Authorities, but were in virtue of their office the custodian of fishing interests, and they are glad to reflect that,

while never overlooking the primary interests of national defence, they were able from their intimate knowledge of the subject to convince the Naval Authorities that numerous modifications of restrictions proposed were possible without in any way detracting from their efficacy.

During the first two years of the war a certain amount of curing for export was engaged in, a limited market being found in the United States of America and elsewhere, but with the increasing scarcity of foodstuffs, it became necessary to reserve the produce of the fisheries to the utmost possible extent for the needs of our own people. This could only be accomplished by discouraging the pickling of herrings, and encouraging the preservation of such fish as could not be used fresh in forms more in keeping with the popular taste, and by increasing the facilities for marketing the fish from the remote places at which it was landed. A scheme was accordingly arranged with the curers early in 1917 by which the Board's officers were enabled to restrict the purchase of any herrings for pickling until every other channel for the absorption of the catch had been utilised to its fullest capacity; while every possible provision was made for transporting the fish to the large centres of population. This scheme, which the Board were mainly instrumental in devising and putting into operation, entailed numerous conferences with the trade and the railway authorities, whose co-operation was essential, and the very large measure of success achieved has already been alluded to in an earlier portion of this Report.

The reserves of food in the country were also supplemented as the result of a scheme formulated some months later by a Committee appointed by the Food Controller, on which the Board were represented, whereby curers' stocks could be taken over by the Government at specified prices.

As the economic pressure increased, the difficulty of satisfying both naval and fishing requirements became intensified. The exigencies of naval warfare led to an ever-increasing drain on the *matériel* and *personnel* of the fishing fleet, and it therefore became of prime importance to utilise the services of the fishermen available to the maximum possible advantage. An arrangement was accordingly arrived at—after anxious and protracted negotiations—whereby the calling up of Scottish fishermen for naval service was placed in the hands of the Board, and by this means the minimum disturbance of the industry compatible with the satisfaction of naval demands was secured. In addition, the Board were able to render considerable assistance to the Admiralty in connection with the chartering of fishing vessels.

Throughout the war the Board were in intimate touch with the Departments—such as the Board of Trade and Ministry of Food—concerned with the provision, conservation, and disposal of the national food supply, and were frequently consulted on the numerous questions—such as, to name only a few, the granting of licences to export fish, the importation and disposal of fish purchased by the Government in Norway and Holland, cold storage, prepayment of railway rates on fish sent by passenger train, the regulation of fish prices, etc.—arising out of the conditions created by the war.

Other questions which had to be dealt with were the relaxation of trawling restrictions in the interests of the food supply, the valuation of drifters lost on Admiralty Service, compensation in respect of drifter gear requisitioned by the Admiralty, and many other matters arising out of the relations between the Admiralty and the fishing fleet.

The safety of the fishing fleets was naturally the subject of the most careful consideration, and no efforts were spared, by the dissemination of information as to suspicious vessels, hostile submarines, mines, etc., by furnishing the Admiralty each week with particulars of the principal fishing grounds and the number of vessels working on each, and by the elaboration of schemes of protection, to achieve the desired end.

Another phase of the Board's work was that relating to the provision of the raw material required by the industry. As is well known, it became necessary, as the strain upon the national resources increased, to control the use of various materials the supply of which was limited, and to institute a system of priority certificates whereby work was classified according to its national importance. The fishing industry, in common with others, was affected by this system, and the Board accordingly became the intermediary between the trade and the Ministry of Munitions and other Departments concerned in all matters relating to the manufacture or release of materials, e.g. motor engines, wood for fish-boxes, oil-fuel, curing materials, tin-plate for fish-canning, etc., etc., required in the prosecution of the industry.

Many of the problems which arose in the course of the war were delegated to Committees for solution. Of those which dealt with matters affecting the Scottish fisheries the following, on which the Board were represented, may be mentioned :—

1. *Cured Fish Committee*.—This Committee, of which the Board's Secretary was a member, was appointed in 1917 to acquire, control, and distribute stocks of cured fish.

2. *Scottish Sea Fisheries Committee*.—This Committee was appointed in 1917 to consider the means by which the greatest quantity of food could be made available from the Scottish Sea Fisheries. The Board were represented thereon by Provost Malcolm Smith and their Secretary.

3. *Scottish Fresh-Water Fisheries Committee*, appointed in 1917 to consider to what extent and in what manner the food-supply could be augmented by fresh fish. Of this committee the Marquess of Breadalbane, K.G., was Chairman, and Mr. W. L. Calderwood, Inspector of Salmon Fisheries, was a member.

4. *Demobilisation of Fishermen and Fishing Vessels Committee*, composed of representatives of the Admiralty and the Fishery Departments, on which the Board were represented by their Secretary.

5. *Food Investigation Board*, established at the close of 1917, to organise and control research into the preparation and preservation of foods. The Board's Secretary was appointed an Assessor to this Body, and he and Ex-Provost Smith were appointed members of the Committee of this Board appointed to deal with fish.

6. *Distribution of Fish Committee*, formed in 1918 to consider

questions affecting fish distribution, the Board being represented by their Secretary.

7. *Admiralty Reconstruction Committee*, to which the Board nominated their Secretary, appointed in September 1918, to consider naval questions bearing upon the fishing industry.

The foregoing does not pretend to be an exhaustive account of the Board's activities during the war, and numerous other matters which arose have not been touched upon. Nor can a brief survey such as has been attempted convey anything like an adequate idea of the large amount of additional work thrown upon the staff—depleted as it was by enlistments and other causes—and it may therefore be permissible to recount in somewhat greater detail a few of the matters which bulked most largely in the special war work.

I. ADMIRALTY ORDERS FOR FISHING VESSELS.—Although the chart issued by the Naval Authorities to indicate the prohibited areas showed little alteration in the waters off the coast of Scotland from its first issue in December 1914 until towards the close of the war, the local regulations affecting those waters have been materially modified from time to time. On the north-west coast, for example, fishing was originally restricted to local vessels, but successive relaxations of the restrictions were made—the final result of which is shown in the very successful fishings of the past two years in that locality. On the other portions of the coast included in prohibited areas the experience was similar, though in some of these areas the tide of concession ebbed as well as flowed.

Apart from the correspondence and other work involved in those matters—in considering and making representations and advising the Authorities as to the necessity, desirability, and effect of suggested restrictions or relaxation of restrictions—each amendment of any importance involved the preparation of fresh orders and their communication to the fishermen and others concerned. The number of orders, or amendments of orders, published by the Board up to the close of 1918 was 186, exclusive of minor amendments indicated only on the permits issued to the fishermen.

The most prolific source of clerical work in connection with the Admiralty Orders was, however, the permit system. With certain limited exceptions fishing from Scottish ports could be prosecuted only by vessels holding permits issued by the Board, and countersigned by the appropriate Naval Authority, and the total number of applications received and dealt with reached the figure of 17,918, exclusive of applications made through the Board for permits issued by the Fishery Authorities of other portions of the Kingdom. The applications were made through the local Fishery Officers, who signified approval—or otherwise—and forwarded them to the Head Office where they were considered; if found in order, the necessary permit was prepared and transmitted, with relative lists, to the appropriate Naval Authority for countersignature. After countersignature they were returned to the Head Office or forwarded to the local officer for issue to the fishermen. Intimation of the issue was then made to the district officer or the Head Office, as the case required, and particulars of permits issued, surrendered, or cancelled had also to be furnished to the Admiralty and to certain naval and police authorities.

Class A might be granted by the Board of Trade, and that Department was induced to agree that applications for motors, or for the construction or repair of fishing vessels generally, should be made through the Board.

Eventually the granting of certificates for engines was placed entirely in the hands of the Ministry of Munitions, and at the request of that Department programmes of the requirements of the Scottish fishing industry in respect of motors were prepared, to which priority 4 was granted. The settlement of priority in the general repair of vessels remained for a time in the hands of the Board of Trade, but was ultimately taken over by the Director of Shipping Repairs.

The total number of cases of applications for certificates for engines dealt with was 994, and in addition a large number of applications in respect of general repair work also passed through the hands of the Board.

IV.—FISHING VESSELS ON ADMIRALTY SERVICE.—The Board were frequently consulted by the Admiralty in regard to the chartering of steam drifters and other fishing vessels. Apart from general correspondence on the subject, the revision of the terms for the hire of steam drifters involved the issue of circulars to the owners of upwards of 800 vessels, and the receipt and notation of the owners' replies, with further correspondence in many of the cases. Particulars of the vessels remaining at the fishing were from time to time furnished to the Naval Authorities, and this was later on extended to motor drifters, a number of which were also chartered.

In addition to the services rendered to the central authorities in this matter, assistance was on several occasions given to local authorities in regard to obtaining vessels and men for special purposes.

V. LICENCES TO EXPORT FISH.—Following upon the placing of fish upon the list of articles prohibited to be exported, an agreement was reached with the Board of Trade and the War Trade Department, after considerable negotiation, by which applications for licences to export fish from Scotland were referred to the Board for consideration. The total number of applications dealt with was 315, and with the exception of a small number in which special inquiry proved necessary, all were disposed of on the day of receipt.

VI. OIL FUEL FOR MOTOR BOATS.—When restrictions on the quantity of petrol issued to consumers were imposed fishermen in different parts of the country found that the quantities authorised by the licences issued to them were insufficient for their purpose. Representations on the subject were made to the Petrol Control Committee, who agreed to grant applications for additional quantities if recommended by the Board. Applications for renewal of licences were also reviewed by the Board, and as the result of these arrangements upwards of 1100 cases were dealt with.

Petrol licences for vehicles used by the trade on shore were also dealt with by the Board.

Much difficulty was also experienced after a time by motor fishing boats in obtaining sufficient and regular supplies of petroleum or paraffin, and as the result of representations made by the Board to the Ministry of Munitions on the subject, the Scottish Oil Companies were instructed to provide the necessary supplies. Subsequently it

was arranged that the Board should prepare estimates of the quantity of paraffin required by the Scottish fishing fleet, and with the co-operation of the Scottish Companies adequate arrangements for supplies were made, any temporary shortage being due to transport difficulties. This arrangement worked well, and no interruption of fishing operations by reason of lack of oil fuel was experienced.

VII. FISH DISTRIBUTION.—When in the early part of 1918 the fixing of maximum prices for fish interfered with the free play of competition, it became necessary to organise a rationing scheme in order to secure the equitable division of the available supply among the various branches of the Trade, and to arrange for its distribution throughout the country to the greatest advantage.

To accomplish this the Fish Distribution Order, 1918, was promulgated by the Ministry of Food, and it became necessary to arrange some organisation whereby effect might be given to its provisions. In England the necessary machinery had to be improvised, but in Scotland the Food Minister found in the Board's outdoor staff an organised and competent executive ready to his hand.

It was accordingly arranged that the Fishery Officers should act as the executive officers in Scotland. The arrangement has worked well, and no difficulty has been experienced in carrying out the provisions of the Order.

Among the duties performed by the Officers the following may be mentioned :—

1. Seeing that maximum prices are not exceeded by any Section of the Trade.
2. Assisting the Trade in difficulties, such as shortage of packages, ice, etc., or shortage of labour.
3. Advising on applications for certificates of registration as retailers.
4. Issuing permits for fish supplies to wholesalers.
5. Arranging, when necessary, for the diversion of supplies.
6. Assisting in rationing supplies to dealers.
7. Arranging transport on the occurrence of gluts.

All of this work threw a very heavy burden on the Board's depleted permanent staff, and on those temporarily engaged, and we cannot let this opportunity pass of again expressing our appreciation of the loyal, efficient, and ungrudging way in which the work was performed.

MEMBERS OF THE STAFF SERVING WITH THE FORCES.

In addition to the staff of the Board's cruisers and research vessel, numbering 107, all of whom were in Admiralty service throughout the war, 22 members of the clerical, outdoor, and scientific staff enlisted in the Army or Navy, out of a total male staff of 62, of whom 33 were above 41 years of age, while one member of the clerical staff was lent to the Munitions Department, and one of the outdoor staff to the Ministry of Food. At the date of the Armistice the Board had only 7 men under 41 in their service, none of whom was under 36, and only one of whom was in Class A.

We regret to announce that Privates E. T. Downing, Scottish Rifles, Wm. Thomson, Royal Scots, and J. M. Wilkie, Argyll and

Sutherland Highlanders, all of the Head Office Staff; and Sergeant John Mowat and Lance-Corporal Geo. Craig, Gordon Highlanders, and Private John Sim, Black Watch, of the Outdoor Staff, were killed or died of wounds received in action. All were promising officers, and their loss is deplored.

RECONSTRUCTION.

It was always foreseen that on the cessation of hostilities many difficult problems would have to be faced in connection with the re-establishment of the fishing industry, and the question of utilising to the best advantage the unique opportunity which would then be presented of reconstructing and developing the industry on sound lines was the subject of many deliberations.

In the course of the year under review an exhaustive memorandum on the subject was prepared by the Board's Secretary. This memorandum was considered by the Board and unanimously adopted by them, and as their views on this question are fully presented therein, it is reprinted as Appendix I. of this Report.

PART II.

SALMON FISHERIES.

The total weight of salmon and sea trout carried by rail and sea in Scotland in 1918 was 1568 tons 13 cwts. This is a low figure, being the lowest but one since records were commenced. The average for the last five years is 1651 tons, so the figure for 1918 is 83 tons below the average. But the quinquennial average is the lowest yet shown, in part possibly owing to its being the quinquennium of the war.

We have now quinquennial averages for a period of 25 years, and the condition is displayed in the accompanying graph.

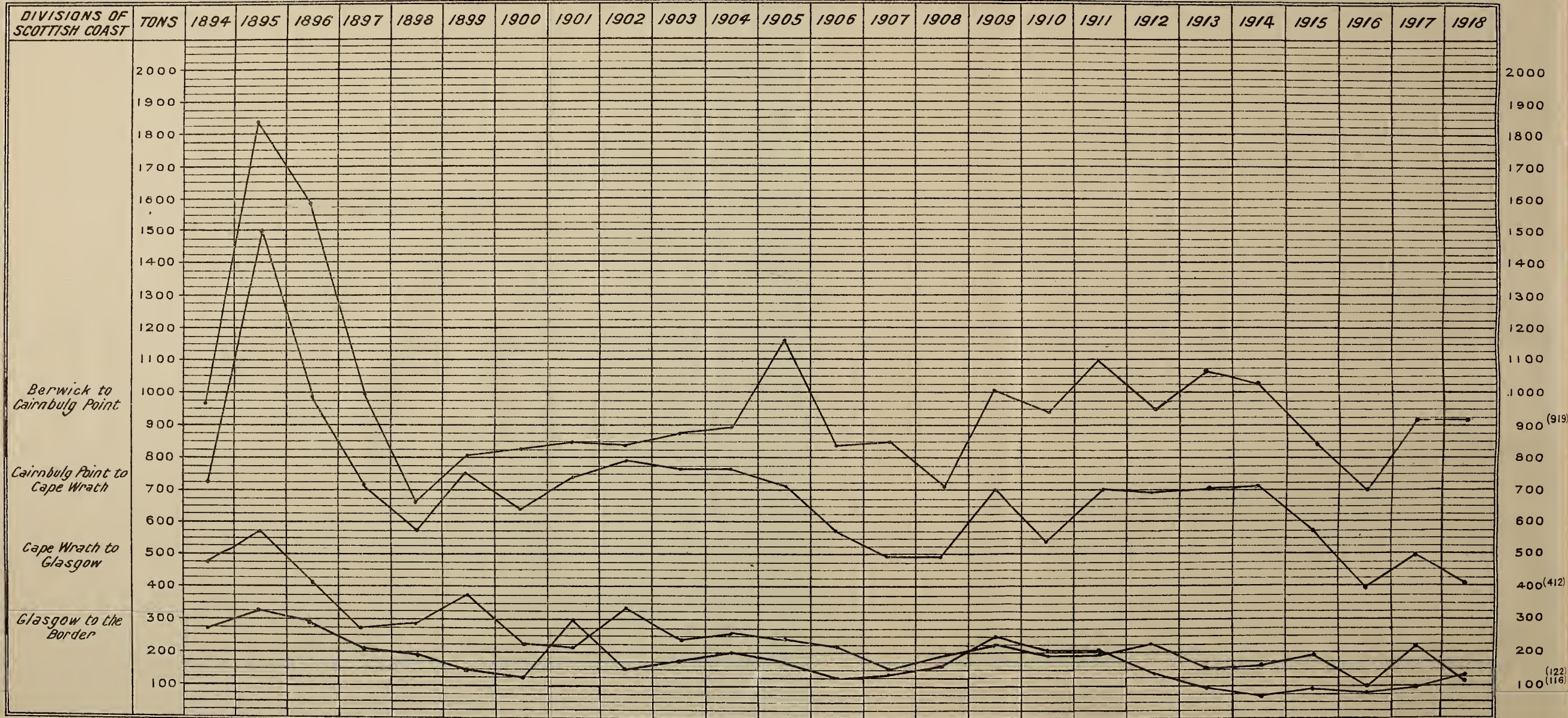
The coast line has been divided into four sections as formerly, and when these are examined, it is evident that the decline has been common to all districts, in the average state, but that in the figures for 1918 a slight increase over the average figures is shown in the Berwick to Cairnbulg district and in the Glasgow to the Border district. The details as to average and also the figures for the last five years are given in the following table:—

[TABLE.]

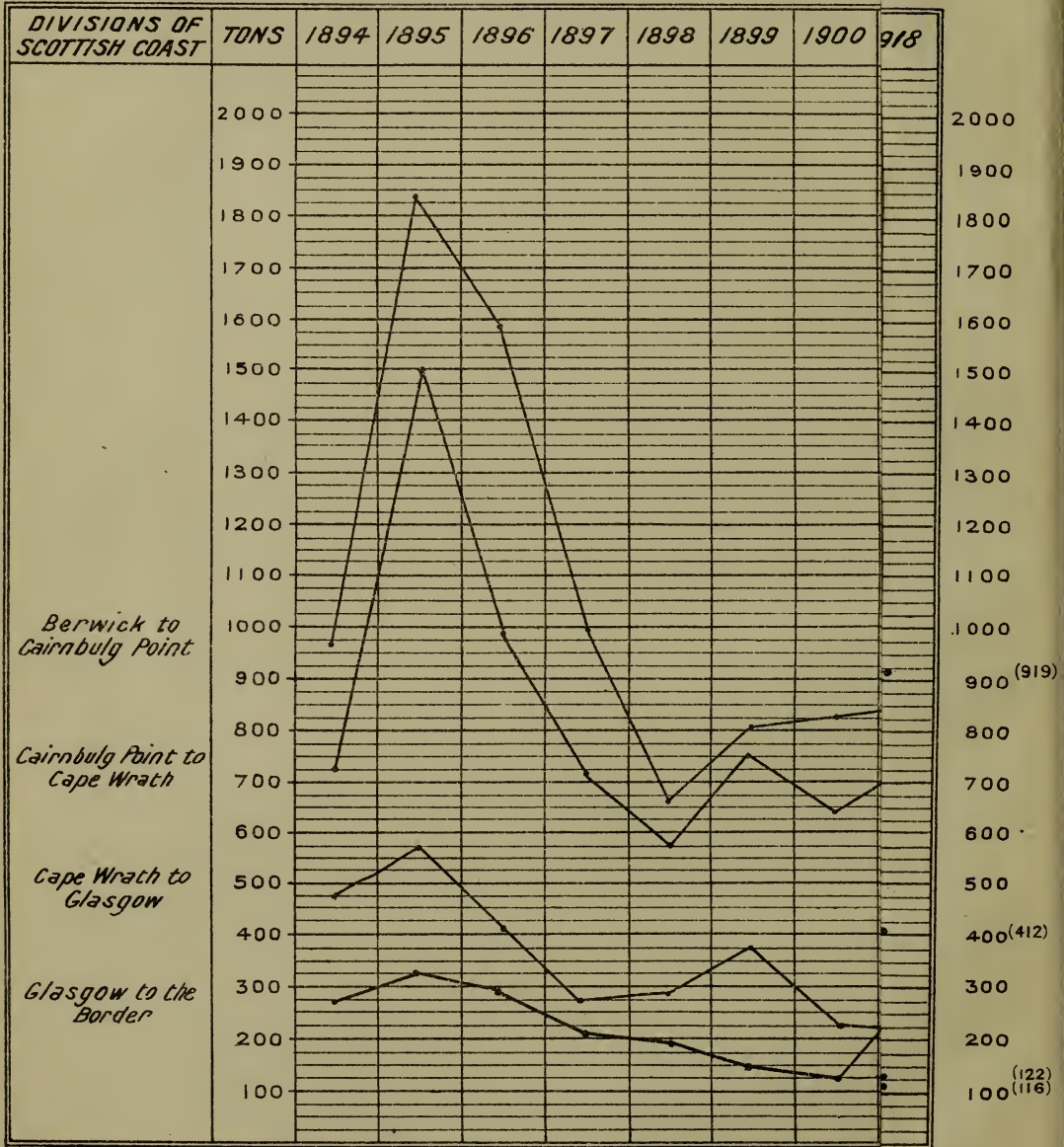
Approximate Weight of Salmon carried by Scottish Railways and Steamships annually since 1894.



CURVES SHOWING APPROXIMATELY THE TONS OF SALMON CARRIED BY
SCOTTISH RAILWAYS & STEAMSHIPS SINCE 1894



CURVES SHOWING APPROX
SCOTTISH RAIL



District.	Average, 1894 to 1898.				Average, 1899 to 1903.				Average, 1904 to 1908.				Average, 1909 to 1913.				Average, 1914 to 1918.			
	Tons.	Cwts.	Qrs.	Lbs.	Tons.	Cwts.	Qrs.	Lbs.	Tons.	Cwts.	Qrs.	Lbs.	Tons.	Cwts.	Qrs.	Lbs.	Tons.	Cwts.	Qrs.	Lbs.
a Berwick to Cairnbulg Point	1,206	18	1	1	839	1	2	9	887	8	2	24	1,015	5	3	18	884	1	3	17
b Cairnbulg Point to Cape Wrath.	900	17	3	6	737	10	3	17	608	13	1	19	664	14	-	3	518	8	3	17
c Cape Wrath to Glasgow	403	7	1	21	274	18	1	27	209	3	3	6	205	2	-	7	157	8	3	10
d Glasgow to the Border	260	3	2	6	183	6	1	19	160	9	3	15	171	13	1	3	91	12	-	-
Totals	2,771	7	-	6	2,034	17	1	16	1,865	15	3	8	2,056	15	1	3	1,651	11	2	16

District.	Year 1914.				Year 1915.				Year 1916.				Year 1917.				Year 1918.			
	Tons.	Cwts.	Qrs.	Lbs.	Tons.	Cwts.	Qrs.	Lbs.	To e.	Cwts.	Qrs.	Lbs.	Tons.	Cwts.	Qrs.	Lbs.	Tons.	Cwts.	Qrs.	Lbs.
a Berwick to Cairnbulg Point	1,030	14	1	7	847	9	-	2	701	2	3	7	922	3	-	16	919	-	-	3
b Cairnbulg Point to Cape Wrath.	710	1	3	20	575	8	1	24	397	19	2	22	497	-	3	1	411	13	2	20
c Cape Wrath to Glasgow	161	6	3	8	198	17	3	10	96	3	3	25	215	3	2	12	115	11	3	25
d Glasgow to the Border	74	2	-	-	86	12	-	-	77	14	-	-	97	4	-	-	122	9	-	-
Totals	1,976	5	-	7	1,708	7	2	3	1,273	-	1	26	1,731	11	2	1	1,568	13	2	20

The complete details for the period from 1894 to date are shown in the accompanying chart of curves.

There was again considerable difficulty in obtaining men to work some of the netting stations on the coast, but it appears to be unlikely that the serious position of the catch can be attributed to any great extent to this cause. The Inspector has in former years called attention to the relative scarcity of grilse as compared with adult fish, and this may in some degree affect a statement based entirely on weight. We never have been able to secure a more trustworthy return based on numbers caught. We regard it as most unfortunate that no records are obtained from such important districts as the Tay, Dee, Don, North Esk, and Spey, which with the Tweed (from which a return is furnished) produce the largest catches for the market.

In accordance with the request that reports should be abbreviated as much as possible during the war, the annual statements from District Fishery Boards to the Inspector have been omitted. We may say, however, that as regards catch, so long as statements are of a general kind as to whether or not the catch is believed to be above or below the average,—statements which bear no relation to actual figures,—the information is of comparatively little value.

The Inspector deals, in his report, with a general decline in rental which is now noticeable (p. 81). He also includes a statement of the more pressing needs which appear to have arisen during the long period since the passing of the last Scottish Salmon Fishery Act.

PART III.

SCIENTIFIC INVESTIGATIONS.

During the year 1918, the scientific fishery investigations of the Board were carried on, under the supervision of Dr. T. Wemyss Fulton, the Scientific Superintendent, as far as possible on the same general lines as in previous years. The research work, with a considerably reduced staff, has been done at the Marine Laboratory at the Bay of Nigg, and in the Laboratory at the Old Post Office, Aberdeen, and the inquiries relating to the herring fishery in Lochfyne have also been carried on occasionally, as circumstances allowed.

THE HATCHING OPERATIONS.

Owing to the fact that the research steamer "Goldseeker" was engaged on Admiralty duties, the stock of adult plaice has not been renewed since 1913. It is estimated, however, that nearly one hundred of the old stock remain, and, as they had been well fed with mussels, a large number of fertilised eggs were obtained during the spawning season, viz., about 2,656,000, of which over 2,000,000 were taken in March. Fertilised eggs were obtained from the pond from 13th February to 12th April, the largest collection on any one day amounting to about 336,000 on 14th March. The estimated number which died in the hatching boxes at one stage or another was 210,000, leaving about 2,446,000 which were liberated as fry in the neighbourhood of Aberdeen.

Since the hatching of the plaice was begun at the Bay of Nigg, the eggs which have been dealt with are estimated to amount to nearly 446,000,000, and over 349,000,000 fry of the plaice have been added to the sea, to enrich the inshore grounds.

THE INVESTIGATIONS ON THE HERRING FISHERY IN LOCHFYNE.

The investigations in connection with the Lochfyne Herring Fishery, which have been described in previous Reports, were continued in 1918, so far as means allowed. The statistics show that the yield from this once important fishing still continues at a low level. The quantity of herrings landed in 1918 amounted to 5763 cwts., as compared with 899 cwts. in 1917, and 2576 cwts. in 1916, showing therefore an increase, although the quantity is much below

former years, and below the total for 1915, when 13,399 cwts. were taken. The following shows the monthly catches, in cwts., last year :—

	Cwts.		Cwts.
January	28	July	416
February	—	August	108
March	14	September	815
April	—	October	2071
May	—	November	626
June	66	December	1619

It will be seen that in the latter part of the year, especially in October and December, considerable catches of herrings were obtained. The Fishery Officer reports that at the end of September the Lochfyne fleet working north of Skipness, between Laggan and the Kerry shore, had a successful fishing, it being “the first shoal of importance operated on, well into Lochfyne, for several years back.” In his weekly report on 21st December, he says that “not for the past seventeen years have the shoals of herring penetrated so far into Lochfyne as during the past week. From reports to hand, about 1000 baskets were landed at Ardrishaig. The fishing-ground was between Otter and Lochgair. The herrings were of mixed size and quality.” Earlier in the month the fishermen reported a good appearance of herrings in Lochfyne, but the fish were “of small size.”

It is to be hoped that the presence of great numbers of small herrings, so far up Lochfyne, at the close of last year, is a prelude to the return of the shoals to the Loch and the re-establishment of the Lochfyne herring fishery.

Fluctuations in the herring fishery, especially in fjords or arms of the sea, are not infrequent on the coasts of other countries, and have been attributed to a variety of causes. In Lochfyne a series of temperature observations are made at different levels, and collections of the floating food secured, and it is proposed to continue these investigations until the herrings return to the Loch in their former abundance, so that comparison may be instituted between the observations taken in the period of scarcity and those taken in the period of abundance.

FISHERY INVESTIGATIONS IN THE NORTH SEA.

Trawling and other Investigations.

The reduced staff have been kept busily engaged in working at the collections of various kinds, which were obtained in previous years, and also in dealing with the records of the observations and the statistics. During the year the publication of scientific papers and reports, except those of an urgent nature, was suspended at the request of H.M. Stationery Office. A report on the marking experiments, migrations, and growth of the plaice is now at press.

Other work on which the scientific staff have been engaged, and in regard to which Reports have either been completed, or are in course of preparation, includes the following :—The influence of herring-

trawling on the fish supply ; the closure of the Moray Firth to trawling ; the determination of the age and growth of the herring and of the lemon sole from a study of the markings on the scales ; the diseases of fishes ; the drift-bottle experiments on marine currents ; and the distribution of the pelagic eggs, and of the larval and post-larval stages of the food fishes.

We have the honour to be,

SIR,

Your most obedient Servants,

ANGUS SUTHERLAND, *Chairman.*

W. LYON MACKENZIE, *Deputy-Chairman.*

D'ARCY W. THOMPSON.

BREADALBANE.

JAMES ARCHIBALD.

JOHN H. IRVIN.

MALCOLM SMITH.

DAVID T. JONES, *Paymaster, Lieutenant-Commander, R.N.R.,
Secretary.*

APPENDIX I.

POST-WAR PROBLEMS.

Memorandum by Paymaster Lieut.-Commander D. T. Jones, R.N.R., on the Re-establishment of the Scottish Fishing Industry after the War.

I. HISTORICAL INTRODUCTION.

THE "harvest of the sea" is a paradox; the operation of sowing is absent, but the reapers are many and the harvest is both rich and abundant. The "bonnie fish and halesome farin'" immortalised by Lady Nairne have for generations been a most welcome addition to the table, and during the recent war they proved a very present help in time of need, while the fishermen as a class were a tower of strength in the defence of our shores.

The operation of fishing was until recent times a laborious process, but with the advent of steam much of this arduous labour has been eliminated, while the precarious nature of the results has been gradually nullified by the wide extension of the field of operations. While "all is fish that cometh to net," the real troubles of the fisherman begin when the fish are brought to port. The extreme perishability of fish and the remoteness of many of the landing ports from the populous centres—and this applies especially in the case of Scotland—have intensified the difficulties of distribution; in short, the problem of distribution is the crux of the situation.

Generally speaking, the industry in the early days was encouraged by the State as a nursery for our Navy, every fisherman being regarded as a potential fighting man in the continual struggle for the supremacy of the seas. The Scottish fishing population, however, on more than one occasion received an infusion of Dutchmen and Frisians, and the resulting blend has produced a class of fishermen second to none for bravery, perseverance, and the spirit of self-help.

A brief sketch of the genesis and rise of the Scottish fishing industry is necessary to a proper appreciation of the important position which it has reached as one of our chief national assets. From the earliest times it has been of economic importance, not only as providing food for the people at home (and they consumed a good deal of cured fish, though the lack of transport precluded any appreciable development of the trade in fresh fish) but also as producing a large quantity for exportation.

Herring fisheries were prosecuted in the Firths from the early part

of the twelfth century (reign of David I.) and the fishing went on practically unchanged down to the beginning of last century. The curing, export, and sale of the fish was in the hands of the Royal Burghs, and the privileges were jealously guarded. A not inconsiderable part of the revenues of the Crown was for a long time derived from the export duties on fish; Aberdeen pickled and dried cod and pickled salmon were known all over Western Europe—the name “Aberdeens” (haberdines, aberdines, etc.), as applied to dried cod fish, being well known in all markets and being still used on the Continent.

Apart from trawling, the methods of fishing pursued have all along been practically the same as at the present time, viz., long and small lines, and drift and trammel nets.

The value of the fisheries, even in the middle of the seventeenth century, was such that it certainly required some temerity on the part of a French gentleman, Hugues L’Amey, to propose to the Scots Parliament that in return for introducing and supervising the growing of Indian corn in Scotland he should receive a grant of the whole of the Scottish Fisheries! About the middle of the eighteenth century a serious effort was made to establish a deep-sea herring fishery on the Dutch plan, large vessels called “busses” being built—on board of which the fish were pickled and barrelled. The effort failed completely. It was based on an imperfect bounty system and (as Adam Smith said) the boats were often fitted out to catch the bounty and not the fish. In 1808, however, the Commissioners of the British White Herring Fishery, who had jurisdiction over the United Kingdom, were appointed, and a new system of bounties was instituted having as its object the improving of the quality of the cure of herrings, cod and ling; and as a result of the efficient and close supervision of the fishery officers appointed, the fisheries developed so rapidly that it was found possible in 1830 to dispense with the bounties. The marks placed on the barrels of herrings reaching the requisite standard and on the fish themselves in the case of cod and ling had acquired so much value in the eyes of the foreign dealers as an indication of good quality that the curers petitioned the Government to retain them in the form of a Crown brand. A proposal to abolish the brand in 1849 met with so much opposition from the trade (who were now prepared to pay a fee to meet the cost of administration) that the Government consented to its continuance, and the herring brand survives to this day as the only official imprimatur of the quality of goods exported from this country.

During the course of the last hundred years the industry passed through many phases and vicissitudes. Apart from administrative measures the industry has been dependent for development on three main factors or conditions:—(1) Preservation, chiefly for export—a factor paramount in earlier times; (2) the provision of transport facilities for carrying fish to the markets in a fresh state; and (3) a combination of conditions involving improved means of propulsion of boats, extension of harbours, and better facilities for distribution in the inland centres.

In Scotland, till well on into the last century, fresh fish was a luxury; it was available only in the neighbourhood of the fishing ports by the help of such media as “Maggie Mucklebackit” and the Newhaven fishwives, and further afield by means of horses. Owing

to the lack of railway and steamer communication the efforts of the administrative body were very much cramped. Nevertheless a large number of our fishery piers and harbours were begun in the first forty years of last century.

The following figures are enough to illustrate the growth of the Scottish herring fishery during the period in question, viz. :—

1811	..	..	90,000	barrels cured.
1840	..	..	500,000	do.
1874	..	..	1,000,000	do.
1907	..	..	2,500,000	do.

Throughout the first half of the nineteenth century, the Scottish fishing-boats were all “open” or undecked, similar in build and rig to the Shetland “sixerns,” of which a few are probably still in use; the great majority of them were small boats of about 20 ft. long. Half-decked boats of larger size and stronger build began to take their place all round the country, and then, in the '60's and '70's, another change took place—to fully decked boats of 45 ft., and soon of 60 ft. long, drawing some 5 ft. of water, and costing from £300 to £400, and later as much as £600. By about 1872 their great superiority had become apparent to all; the catch by these decked boats was from four to five times that of the undecked; they could follow the shoals to a great distance—and it so happened that just about this period the chief herring shoals tended to lie further off-shore than they had done for some years previously; and as a result boat-builders were busy all round the coast building the new type of vessel.

Steam was first applied to fishing vessels other than trawlers in Scotland in the late eighties, and in 1892 there were 44 such vessels. The modern steam drifter came into use about 1898, not without much dislike and opposition on the part of the older men, but its success was rapid, and the Scottish fleet of steam drifters now consists of close upon 1000 vessels, valued at £4,500,000, and manned by over 8500 men. Still more recently (with the help and encouragement of the Fishery Board for Scotland) the installation of motor engines in sail boats has taken place with greatly increasing rapidity—though not until their usefulness had been recognised elsewhere for several years, especially in the Scandinavian countries. From a beginning in 1906 the Scottish motor fleet now numbers about 1500 boats, valued at £900,000, and manned by 7500 men.

So recently as 1906 sail boats took 69 per cent. of the whole Scottish herring catch; eight years later, in 1914, they took only 19 per cent. The immense revolution thus effected and the changes it made in many ways (not least in regard to the greater harbour accommodation required) need not be emphasised.

The introduction of steamers using the beam trawl into Scotland in 1882 marked a distinct epoch. The beam trawl was, however, superseded in 1895 by the more efficient otter, and, although this method of fishing was viewed with grave apprehension by a large section of the fishing community, the fleet grew until in 1914 it numbered 332 vessels (now valued at £3,000,000), and manned by 3500 men. In 1889 the fish landed by trawlers in Scotland amounted to 140,000 cwts., and in 1914 to 2,000,000 cwts., while the rise of the great fishing port of Aberdeen (also that of Granton—the only other important trawling

centre in Scotland) may be said to be wholly due to trawling. In 1889 Aberdeen landed 13 per cent. of the total catch of "demersal" fish—*i.e.*, of fish other than herring; in 1914 Aberdeen landed 60 per cent. or $\frac{3}{4}$ ths of the whole.

As to the present extent of the industry in Scotland, it need only be said that the quantity of fish landed in 1913 was nearly 8,000,000 cwts., valued at close on £4,000,000, while Scottish fishermen also landed at English ports some 2,500,000 cwts. of herrings, valued at £1,000,000, these herrings being bought chiefly by Scottish firms for cure and export.

The fishing fleet, based mostly upon steam, brings in its catch from all over the northern seas as far as the coast of Iceland and occasionally even from the White Sea. The future of the industry depends upon an expansion of the method by which it has grown in the past—not, perhaps, so much by extension of the fishing areas (although in that direction there may still remain something to be done), but rather by an increase of the size and improvements in the design of the vessels, especially the further extension of steam and motor power; by the deepening and enlargement of harbours; by the provision of better and cheaper means of distribution, including the revision of railway rates and railway facilities in general; and, not least, by improvements in the methods of preservation both of a quasi-permanent kind, such as pickling and tinning, and of a temporary kind, such as the employment of refrigerating cars for railway transit.

Owing to the sudden cessation of hostilities, the situation so far as the comparative urgency of the problems facing us is concerned has altered materially. Questions affecting demobilisation and distribution are especially urgent, while other problems of re-establishment and development also require early attention.

II. DEMOBILISATION.

War was declared at a most inopportune moment for the herring fishermen. The great summer herring fishing on the East Coast of Scotland was at its height. The Scottish fishermen and shore workers, however, responded readily to the call for men, and their services have proved of inestimable value, especially in the dangerous work of mine-sweeping and patrolling.

(i) FISHERMEN AND VESSELS.

So far as can be ascertained 25,000 men joined the services, and 302 steam trawlers and 838 steam and 100 motor herring drifters have been requisitioned for Admiralty purposes. The demobilisation of these men and of the vessels chartered is therefore a matter of some importance to the industry, and it is gratifying to know that satisfactory arrangements are being made for carrying it into effect.

The rate at which men can be released is largely governed by the rate at which vessels can be demobilised, the one being useless without the other, and it is of importance that neither shall remain idle for a day longer than is necessary, both in the interests of the owners and men and of the national food supply.

The large majority of the steam and motor drifters are owned by

the fishermen themselves, and it is essential that those who are serving on boats in which they have no interest should be released in time to take delivery of their own vessels.

Generally speaking, the things to avoid are release of vessels in advance of the capacity to recondition them and to provide them with the necessary fishing gear, and the sending of the men home long distances by rail.

(ii) DISPOSAL OF ADMIRALTY TRAWLERS AND DRIFTERS.

During the progress of the war the Admiralty found it necessary to supplement the privately-owned craft hired by them by building trawlers and drifters of their own, and while a certain number of the trawlers will have to be employed for some time to come in sweeping the sea clear of mines, the remainder will fall to be disposed of to the best advantage.

Various proposals have been put forward for their disposal, viz., (1) by sale in the open market ; (2) by sale to owners in place of vessels lost on service ; and (3) by sale to skippers and other fishermen who have served in the Navy during the war, the purchase price to be repaid in instalments of principal and interest over a fixed period.

It is incontestable that the second and third proposals are deserving of serious consideration, particularly the latter—and for two reasons, (1) these men have done yeoman service at comparatively low rates of pay, while their fellows who remained fishing have reaped enormous earnings, and (2) it is very desirable that the principle of fisherman ownership, which is almost universal in the Scottish herring fishery, should be extended in the trawling industry, especially in view of the probable lack of recruits for the fishing fleet. The existence of a family interest and the attendant incentive to thrift and independence are factors which would help materially to solve this difficulty. It cannot be gainsaid that the Scottish herring fisherman who owns a share in his own boat or in the gear is a fine type of man—enterprising, industrious, and self-respecting, and the thriving communities of well-educated and healthy families on the East Coast are the best testimony to the principle. Any scheme which would achieve this end is worthy of favourable consideration.

(iii) EMPLOYMENT OF DISCHARGED SAILORS AND SOLDIERS.

The substantial additions made during the war to the fleet of motor fishing boats have created a demand for experienced motor drivers. Many of those hitherto employed have had only a superficial knowledge of the mechanism of the engines, and the result has been that in some cases engines have been ruined through ignorance, and in many others the boat has had to be laid up to await repairs which could have been effected by a man who had gone through a course of training.

To meet this deficiency and the fresh demands which are likely to arise in the near future schemes have been drawn up by the Board in conjunction with certain Disablement Committees (Pensions) for the training of discharged sailors and soldiers, preferably those hailing from villages on the coast, in the theory and practice of motor engineering. By means of such a scheme men disabled in the war will be

enabled to secure healthy and fairly lucrative employment, and owners will be provided with men who can both drive and repair the engines.

(iv) REMOVAL OF WRECKS.

The question of the removal of wrecks due to the operations of enemy submarines and minelayers which now form an obstruction on the fishing grounds is closely associated with demobilisation, and as the presence of these wrecks involves risk of considerable damage to the gear of fishing vessels, whether engaged in trawling or drift net fishing, it is suggested that steps should be taken without delay to consider the best means of removing or destroying the wrecks.

It is further suggested that charts showing the position of wrecks in the different areas should be prepared and issued for the information of fishermen. Such charts will be necessary, particularly for trawl fishermen, even after the destruction of wrecks, as any operations undertaken will probably leave some obstruction on the bottom which may be liable to damage trawl nets.

(v) SUPPLY OF RAW MATERIALS FOR FISHING.

In view of the very considerable rise in the prices of material necessary for the construction and repair of ships, it is suggested that means should be taken to regulate such prices as far as possible. So also with regard to supplies of cotton for making nets, wood for making barrels, hemp and manilla for making rope, and other material necessary to the re-establishment of the industry, similar steps will have to be taken, and, if practicable, stocks of such material built up in anticipation of general demobilisation.

Cotton and hemp are used so largely in the manufacture of goods for purposes other than fishing that it may be difficult to control the price unless the whole of the supply is commandeered by the Government. Arrangements could be made, however, for regulating the price of the nets and ropes so that they would bear a fair relation to the market price of the raw material, plus oncosts and a reasonable profit.

Negotiations are proceeding with the manufacturers of the more important articles of gear.

(vi) SHORE WORKERS.

With regard to the men employed in the subsidiary industries on shore, particularly those required for essential work of national importance connected with the initial stages of the transition from war to peace conditions, it is desirable that men employed in the capacity of ship repairers and carpenters, coopers, rope makers, sail makers, curers, smokers, and other skilled occupations, should be released as early as possible. Negotiations to this end are proceeding with the Demobilisation and Resettlement Department, and the Board has been appointed the Central Authority for Scotland in so far as the fishing industry is concerned.

III. RE-ESTABLISHMENT.

(i) INTRODUCTORY.

The problem of re-establishment is fortunately simpler than was at one time contemplated. It may be recalled that during the first few months of the war dire forebodings were expressed as to the fate of our large and valuable fleet of fishing vessels, especially those which were unsuitable for mine-sweeping. As a matter of fact the position to-day is probably sounder financially than it was in August 1914, as more than 80 per cent. of our steam drifters have been employed by the Admiralty at rates yielding a satisfactory return on the capital involved, and the keen rush to discard first-class sailing boats for steamers received a wholesome check, with the further curious and fortunate result that discarded boats were taken off the beach and fitted with motor engines, which increased their earning capacity at least twofold.

Those boats which remained fishing have secured enormous earnings, owing to the high price realised for fish through the general scarcity of other food commodities, and the result has been that *during the war* 800 sailing vessels have been fitted with motor engines.

Apart from our minor or inshore fisheries, which have been sadly neglected, particularly on the West Coast, we shall resume active operations with a large and efficient fleet of fishing vessels and the prospect of large catches of fish of all kinds due to the enforced close time caused by the war, so that with proper organisation, and improved methods of distribution and preservation—the twin factors in continued development—the future presents brighter prospects than might have been anticipated.

The crux of the situation is, as already stated, distribution, and, incidentally, improved methods of preservation, and these can be secured only by providing more efficient and quicker transport from the ports of landing to the consuming centres. This problem applies in the case of Scotland to a far greater degree than to the English ports, as more than 80 per cent. of the herrings landed in Scotland was exported, and about 50 per cent. of other kinds of fish was dispatched by rail to the English markets, the Scottish catch being much greater in proportion to the population than that of England and Wales.

What we have to consider therefore is how we can induce the British public to increase its consumption of this cheap and wholesome article of diet, and having done this, how we can provide them with it in the best possible condition. War has its blessings as well as peace, and the serious scarcity of food which has prevailed on account of the activities of submarine warfare has done more to advertise the merits of a fish diet than any propaganda that could have been devised; let us therefore concentrate our minds on improved and cheaper transport.

(ii) TRANSPORT AND DISTRIBUTION.

(a) *Transport and Distribution.*—The factors which bulk most largely in the consideration of this problem are increased steamer and railway facilities and lower railway rates.

Improved steamer services are essential to any development of the fisheries of the West Coast and the adjacent islands, but transport is only a part of the problem affecting this area, and the matter is dealt with as a whole under "Development of Inshore Fisheries" (*vide* p. 11).

As regards the railways, additional rolling stock adapted for the transport of fish, particularly the provision of a large number of refrigerating vans, is required. The construction of these should be regarded as a matter of urgency, and in the meantime steps should be taken to secure that all fish trucks and vans which have been diverted to other traffic are made available for the trade.

The railway rates on fish have been most unsatisfactory and discouraging to distributors, and revision of them is urgently required. The three ton minimum for reduced rates should certainly be lowered, and it is suggested that for a period of years a flat rate for smaller quantities, with a minimum of say 1 cwt., should be adopted.

Other measures which would undoubtedly tend to give a great impetus to the consumption of fish in a fresh state in this country are the provision of freezing or cold storage establishments, the erection of municipal fish markets in all the large centres, with refrigerating establishments attached, the removal of the present congestion at Billingsgate by the erection of a central market in the neighbourhood of the railway termini for the reception of all rail-borne fish sent to London, exploitation of the "small parcel" system, which has been developed to such an important extent at fish centres like Grimsby, the encouragement of fish hawkers—who formed a very important link in many country districts with the consumers—and of fish friers.* A good deal could also be done to develop the demand for fish by the formation of an organisation to ensure more regular and equal supplies of fish to fishmongers in the various centres, and to encourage them to more cleanly methods, and the provision only of good class fish in sound condition. A large section of the trade is blameless in this matter, but there is room for improvement in many parts of the country.*

(b) *Cooking*.—The teaching of cooking in schools and the selection of skilful cooks to impart instruction to housewives as to the best ways of cooking the different kinds of fish are measures which will undoubtedly yield beneficial results, while as regards the fish-frying industry, which has been largely conducted by Italians, it is suggested that disabled sailors and soldiers should be given practical instructions in the splitting, cleaning and cooking of fish, so that they could engage in the industry with advantage to themselves and to their customers.

(c) *Tinning, etc.*—Tinning, freezing, and the making of fish pastes are subsidiary branches of the industry which offer good prospects of development, and it is gratifying to know that steps are being taken to conduct experiments in the freezing of fish, in view of the fact that this has been shown to be a successful treatment with certain kinds

* Since this was written two excellent organisations—the National Fish Association and the National Fish Friers' Federation—have been formed to further the objects in view.

of fish—large quantities of frozen fish being now consumed by the Canadian troops in this country and in France.

(iii) MAN POWER.

The question of man power has been touched upon above in connection with Demobilisation, but it appears clear that further arrangements will have to be made for the maintenance of the industry at sea. It has been suggested that this can best be secured by adopting the apprenticeship system now in force at English ports for the trawling industry, but it is to be borne in mind that, in so far as the Scottish herring fishing industry is concerned, there is no necessity for the adoption of such a system. Hitherto there has been no dearth of recruits for this branch of the industry, these being usually forthcoming from the sons and relatives of the fishermen owners, and the prospect of obtaining an interest in the ownership of the boats or gear has served as a sufficient incentive to them to enter the industry.

In the case of the trawling industry, however, it is obvious that the apprenticeship system has some advantages, and that it may have to be adopted in Scotland. The number of steam trawlers belonging to Scotland or working from Scottish ports is nearly 400, valued according to pre-war rates at, say, £1,750,000, and employing 3500 men. The losses due to the war and the lack of new hands are bound to operate injuriously to the industry unless measures are taken to interest and attract boys to this branch of the industry. The extension of the system of fisherman ownership advocated in an earlier part of this Memorandum would probably not of itself solve the problem, but it is thought that the deficiency could be largely met by providing proper facilities for teaching boys attending schools in fishing towns and villages the rudiments of navigation and motor engineering, and making them acquainted with the different methods of fishing pursued (illustrated by models and diagrams). Advantage should also be taken of such classes to stimulate interest in the subsidiary industries, such as boat-building and repairing, coopering, net and rope making, fish curing, and other forms of preserving and marketing, all of which are essential to the successful conduct of the industry. The curriculum of such training should be submitted to the Board for revision and approval before adoption.

(iv) CURED FISH TRADE.

(a) *Extent.*—Cured herrings form the staple food of the German and Slavonic peasantry, the fish being usually consumed raw with potatoes.

In the early days of the nineteenth century the export trade was confined almost wholly to the West Indies and Ireland. The slave-owners in the Indies found that cured herrings were both a cheap and wholesome food for the slaves, and a considerable trade was developed. The abolition of slavery, however, put an end to the demand, and the prospects for a time were most gloomy. A trade had, however, been gradually developed on the Continent after the close of the Napoleonic wars, until in 1843 the export had reached 100,000 barrels, when the economic measures of Sir Robert Peel induced Russia and Germany

to become bigger customers of this country, and the repeal of the duty on timber (which reduced the cost of the barrel) further assisted in the process of development, until in 1913 the quantity exported had reached a total of 1,400,000 barrels.

Of the total Scottish herring catch in pre-war days only about 15 per cent. was consumed in this country in a fresh state or as kippers, etc. Practically the whole balance was pickled, and the home consumption of the pickled article was negligible, the great bulk being exported as stated above.

Some idea of the importance of the herring pickling industry in Scotland, from the point of view of the labour employed, may be gathered when it is stated that in 1913 nearly 38,000 men and women were engaged either as coopers, gutters, packers, seamen on carrying vessels, labourers, carters, or otherwise, and that of this total nearly 13,000 consisted of women employed solely in the gutting of herrings, whose total earnings for the year were computed to exceed £318,000, or an average per woman of £25.¹⁷ In one district the women workers had the unique experience of actually bringing home more money than the value of the fish landed in the district during the whole year.

Apart from herrings, the quantity of fish cured for preservation for lengthened periods is comparatively small. The principal kinds of round fish, such as cod, haddocks, ling, tusk, and saithe, if cured, are usually dried or smoked, and an appreciable proportion of them is exported to the British Colonies and South America. The trade in these fish had been largely developed in the decade immediately before the outbreak of war, and it appears to have been a most thriving one. As in the case of herrings, the proper organisation of the channels of distribution is mainly responsible for this development, and so far as can be seen neither the herring export trade nor that of the white fish export is in need of any State aid for the purpose of re-establishment.

(b) *Prospects*.—It is true that Germany was a large customer for pickled herrings, but latterly a considerable proportion of the quantity exported to German ports was subsequently conveyed to Russia and disposed of in that country, and it is fully expected that in future the Russian demands will absorb all the pickled herrings produced in this country without any difficulty, provided the economic and political troubles now prevailing can be solved. The great drawback to distribution in Russia is the lack of proper railway and other means of transit, and there is much more room for improvement in this respect in that country than in almost any other. It is to be feared that any attempt to induce the Russian Government to reduce the Russian tariff on herrings will fail, but there may be some prospect of inducing that Government to change the basis of taxation by substituting an *ad valorem* rate instead of a rate per barrel. Encouragement should also be given to the direct exportation to Russian ports instead of *via* German ports, especially as an ice-free port on the northern coast of Russia is now available for shipping purposes.

There is little doubt that there is room for improvement in the methods of preserving fish, and it is suggested that funds should be provided to enable an exhaustive enquiry to be made into the subject.

It is also suggested that it would be of considerable benefit to the trade if an official were appointed to pay periodical visits to

Russia who could speak Russian and was familiar with the conditions under which the trade was carried on.

The trade in cured herring with America was on the increase before the outbreak of war, and shows great promise of developing hereafter, and in order to encourage it still further it will probably be necessary to adopt the use of smaller packages. Here again it would also be an advantage to have a Government official visiting the various large centres in Canada and in the United States with a view to developing the trade, while efforts should also be made to introduce cured herrings into China and Japan.

The largest size of statutory barrel used at present has been found difficult to handle by both men and women workers, and it is suggested that a smaller barrel, say about three-quarters the size of that in use at present, would be a great boon.

(c) *Supply of Raw Material.*—It has proved somewhat unfortunate that this country was so entirely dependent on foreign countries for practically the whole of the raw material necessary for the making of barrels and baskets for use in the herring fishery. Wood for staves came principally from Scandinavia, hoops from France, and osiers from Holland, and it is suggested that, in order to make the industry independent of foreign supplies, steps should be taken to encourage the growing of the necessary timber, and that, as regards osiers, the successful experiment conducted on a small scale by the Congested Districts Board in Skye in growing willows for this purpose should be extended and developed, particularly in the Highlands and Islands, and that a factory should be erected at one of the important herring centres in the Moray Firth for the making of the baskets. This would prove of much benefit to those engaged in herring curing operations.

Steps have already been taken to stimulate interest in osier growing in Scotland among those making and using baskets in large quantities, especially for the carriage of yeast and in the measuring of herrings by the statutory quarter cran measure, and there is every prospect of action being taken in this direction.

(v) DEVELOPMENT OF INSHORE FISHERIES.

(a) *General.*—No serious attempt has been made to develop the valuable inshore fisheries which exist along the Scottish coast, particularly on the West Coast and in the Islands. They are undoubtedly deserving of greater attention than has hitherto been bestowed upon them, not only as a source of livelihood to the people but also as a potential nursery for the Navy. It is well known that the lobster and crab fisheries are capable of great development, and that a considerable revenue could be derived from proper exploitation of the different shell fisheries, especially on the West Coast. The lack of piers and the absence of the necessary steamer connection with the mainland have seriously handicapped the development of the industry at the outlying islands and also at those creeks situated at some distance from the rail heads, while the combination of fisherman and crofter has not, generally speaking, proved successful.

(b) *Proposals for Development.*—It is difficult to formulate the lines on which development should proceed on a coast so remote from the

consuming centres, and among a people who have for generations divided their attentions between fishing and agriculture—but briefly they should be :—

- (1) to select from the crofts the younger, more active and intelligent men and to provide them with motor fishing vessels capable of prosecuting net and line fishing at all seasons of the year, either on the prolific grounds off the West Coast, particularly those for white fish lying to the West of the Outer Hebrides, or on the East Coast of Scotland ;
- (2) to establish fishing centres for them on the model of the fishing villages on the south shore of the Moray Firth ;
- (3) to train them to navigate their vessels and drive and repair their motor engines ;
- (4) to provide them with suitable landing and transport facilities—piers; and fish carriers from outlying villages ;
- (5) to institute experiments in the hatching of lobsters, and to provide lobster ponds at convenient centres ;
- (6) to develop the oyster, mussel, and cockle fisheries on the farming system adopted in France ;
- (7) to erect small smoking houses for emergencies at remote stations, and fish canneries, cold stores, and fish oil, cake, and manure factories at the larger centres ; and
- (8) to encourage the regular prosecution of the white fishing on the West coasts of Ross and Sutherland and of the Outer Isles, and in the Clyde estuary, where the prospects are most promising.

A great deal of valuable information as to the pre-war position of the industry on the West Coast was collected by a committee of the Board in 1914, and this is available in the event of its being decided to adopt definite action.

In pre-war times the important herring fishery prosecuted off the West Coast, except in the Clyde estuary, was carried on by vessels and men belonging to the East Coast, and the great bulk of the fish was pickled for export. Even during the existing food stringency only comparatively small quantities of fish so preserved are used in this country. Consequently, with the return of peace and the dislocation of the usual foreign trade in herrings, there will be difficulty in finding an outlet for the catch unless steps are taken either to adopt some other means of preservation more likely to appeal to the British palate or to expand the market for fresh fish by providing improved means of transport.

Kippering has been developed to a fair extent, but it by no means meets the situation because (1) the rich West Coast herring taken in the summer does not keep for more than seven or eight days even when smoked, and (2) delays in transport are almost as fatal to them as to fresh herring.

Canning is therefore the only alternative to pickling as a comparatively permanent method of preserving herrings, and every encouragement should be given to any effort in that direction for the following (among other) reasons, viz. :—

- (1) The social and economic conditions obtaining in the West

Highlands and Islands have long occasioned anxiety to the Government and Departments concerned. The various schemes which have been tried have not yet wholly solved the difficulties, and any practical proposal for adding to the local industries must act beneficially, and

(2) Local effort will be stimulated by the additional outlet for the disposal of the fish landed during that period of the year when stranger fishermen and curers are absent.

In this connection it is highly important that there should be no hiatus between the release from the Services of the young men hailing from the West Coast and the creation of new openings for energy and perseverance, such as will be provided by the prospect of constant and regular employment.

(vi) FORMATION OF AN AUXILIARY PATROL SERVICE.

Some years prior to the outbreak of war large numbers of Scottish fishermen were members of the Royal Naval Reserve, and they went through a course of training annually at certain Scottish shore stations. Latterly, however, this system of training had been abolished, and it was made compulsory for the men to train on board naval vessels operating at considerable distances from their homes, with the result that the service became unpopular, and the strength declined.

An opportunity has now arisen for reviving the interest of our fishermen in naval matters, as a large body of them will return home on demobilisation with a respect for discipline and full of enthusiasm for the service.

The pre-war nucleus of the auxiliary patrol consisted of a Trawler Reserve formed within a comparatively short period before the outbreak of war. This was greatly extended thereafter, until it has now attained large dimensions.

As regards the immediate future, it is probable that fishermen will be quite prepared to undergo a short annual course of training for service if the men are taken up in rotation, so as to avoid having their boats laid up.

Thereafter special arrangements may require to be made to attract the rising generations to the Reserve, and it would be advantageous if the scheme adopted provided for the establishment of schools at a number of the important fishing centres where the education begun at the elementary schools could be carried to a higher stage and training given in navigation, cookery, engineering (steam and motor), signalling, and the different duties of the Auxiliary Patrol.

(vii) FISHERY HARBOUR ADMINISTRATION.

The fishery harbours of Scotland form a national asset of the first importance, and on their proper development and management largely depends the prosperity of the fisheries themselves. Without good fishery harbours for the safe accommodation and shelter of fishing vessels, and convenient harbours of refuge to which they can run with safety during storms, the confidence of the fisherman in his precarious calling can never be properly assured.

(a) *Development of Fishery Harbours.*—In recent years the

character of the fishing vessel employed has undergone rapid change. In former times fishermen relied entirely on the sail boat for their living, but now no really enterprising fisherman is content with anything short of steam or motor power, with the result that owing to the greater size and tonnage of the vessels the deepening and enlargement of fishery harbours has become essential to enable them to cope with the altered conditions. Within the last few years progress in this direction has been made, but much remains to be accomplished if the fisheries are to be properly developed. The modern harbour should provide a safe and comparatively quiet berth for each steam fishing vessel, motor boat, and sail boat, with sufficient depth to keep them always afloat, and with ample facilities for repair and overhaul, while access to the harbour should be safe and convenient, at least in moderate weather, and proper facilities must be provided for landing and for handling the catch of fish.

In no instance have these requisites been fully ensured, most of the existing harbours being inadequate to satisfy the new and rapidly increasing demands. Much has been done in the past to improve these harbours by the Board, and the Development Commissioners—in conjunction with the Board—are at the present time assisting to carry out improvements at a number of places, but the importance of the subject demands even broader and more sympathetic treatment than it has yet received, if the fisheries are not to continue to suffer under serious disabilities.

The fishery harbour authorities in Scotland are constituted either under procedure laid down by the Harbour Department of the Board of Trade or by Provisional Order obtained through the Secretary for Scotland, the expense consisting chiefly of a fixed scale of fees and charges by parliamentary agents.

What often deters a small fishing community from improving the local harbour is the relatively costly procedure that has at present to be followed before powers can be obtained by Provisional Order to meet the expenditure.

The chief intention of the Private Legislation Procedure (Scotland) Act, 1899, was to simplify procedure and reduce the cost of the application to Parliament for obtaining parliamentary powers in matters relating to Scotland for the purposes specified in the Act, which, in former times, had to be promoted as Private Bills. The chief direction in which procedure has been modified lies in the provision that has been made for the examination of Orders in Scotland and the holding of inquiries at convenient places in the case of Orders that are opposed.

It cannot be denied, however, that the procedure is still cumbrous and costly, and the incidence of fees and legal expenses bears heavily on the promoters of Provisional Orders when the estimate of expenditure under the Order is relatively of small amount, whereas the charges are relatively light when the estimate of expenditure is large. A graduated scale of fees on a much lower commencing charge rising in proportion to the estimate of expenditure would afford relief to small communities who are not in a position to meet the existing charges without incurring a serious burden. In this connection reference may be made to a report on the procedure in obtaining Provisional Orders generally which has been issued by the Acquisition

of Powers Sub-Committee of the Reconstruction Committee, and which contains valuable recommendations on the subject. (Cd. 8982.)

In Scotland there is an analogy in the case of the Several Oyster and Mussel Fishery Orders, these being now obtainable through the good offices of the Secretary for Scotland at a very moderate charge, seldom exceeding £10 to £15, including the expenses of an Inspector in holding a local inquiry.

(b) *Designing of Fishery Harbours.*—No problem in harbour engineering is more subtle or more difficult than the design of fishery harbours. It can only be successfully dealt with by those who possess an intimate personal experience in the design, construction, and maintenance of these harbours, and much of the trouble that has arisen in connection with the fishery harbours of Scotland is traceable to a want of appreciation of the peculiar conditions that have to be dealt with. In the case of large commercial harbours, where the sea works and the protected area within these are on a comparatively large scale, the problem presents many difficulties which may be more or less successfully overcome. When, however, a small harbour such as those under review is considered, where the sea works and interior accommodation are relatively on a small scale, but where the forces in operation are of the same magnitude as in the larger harbour, it will be at once recognised that the problem is one that presents greater difficulty for its proper solution. Only those engineers who have spent many years in the study of the problem can fully appreciate the difficulties that have to be met in providing a small harbour, which will afford safe access in stormy weather, with safe berthing accommodation within. It is essential therefore that engineers employed to design the plans should be men who have specially studied the problem.

(c) *Administration and Maintenance of Fishery Harbours.*—Public grants in aid of harbour improvements are at present made in Scotland by the Fishery Board for Scotland, the Development Commissioners, the Board of Agriculture for Scotland (in the case of West Coast schemes), and the Harbour Committee of the Board of Trade, while loans are obtainable for a similar purpose from the Development Commissioners, the Public Works Loan Board, and the Harbour Committee of the Board of Trade, and until the Development Commission was constituted some of the Departments concerned did not possess an official with the necessary technical qualifications to secure that the money granted was spent to the best advantage, nor indeed to see that it was properly spent in accordance with the scheme approved.

In regard to the proper disposal of the Harbour Revenues, provision is made under Provisional Orders and Private Bills that all books and accounts are to be sent to the Board of Trade annually, but no steps appear to have been taken to secure that a certain proportion of the income was expended on the upkeep of the fabric, nor indeed to see that the fabric was being regularly inspected and, if necessary, repaired.

In the case of those harbours which have benefited by State aid under Parliamentary sanction and powers an obligation is placed upon the Harbour Authority to maintain in good order the works that have been constructed by the aid of State funds. There is, as already stated, no machinery of any kind, however, for seeing that this condi-

tion is carried out, and in too many cases the works after completion are neglected and fall into disrepair. Where no assistance from State funds is given, there is an entire absence of even this shadowy measure of obligation to maintain works in a state of repair. In the case of the smaller harbours it is pleaded that the available funds are insufficient to meet the many repairs, and unless grants are provided—as they are in many cases by the Board—the works ultimately fall into ruin and have to be reconstructed at great cost, while the fisheries languish through the diminished interest of the particular community in their inefficient harbour. With some simple and properly organised system of State supervision much of this indifference to the decline of our fishery harbours would disappear. Not only would there be more revenue available for the maintenance of these harbours, but interest would be stimulated, local enterprise encouraged to an extent not hitherto realised, and loans borrowed from the State repaid.

On the institution of the Development Commission provision was made on the Vote of the Fishery Board for Scotland for the remuneration of a Consulting Engineer and Clerk of Works with the most satisfactory results to all concerned, as the expenditure of the grants and loans made by the Commissioners has been closely supervised and defects have been duly reported and made good. No payments are made out of public sources except on the certificate of the Consulting Engineer that the sum claimed has been properly spent on the scheme approved, and no departure is allowed from plans or specifications without the approval of the Engineer and of the Board.

(d) *Collection of Dues, etc.*—It is generally understood that there has been a good deal of laxity on the part of local officials in enforcing the recovery of dues from fishermen who have been in arrear, and also in collecting sums in respect of damage caused to the fabric by reckless navigation of fishing boats and otherwise, and this is probably largely due to the fact that such officials are appointed by the Local Authorities (who are partly composed of fishermen and others interested in the industry), and may be dismissed at their pleasure. In these circumstances it is suggested that the appointment and dismissal of such officials should be subject to confirmation by a central Government Authority.

(e) *Conclusion.*—Any scheme for placing these fishery harbours on a sound administrative basis should deal with the subject in a sympathetic way, keeping in view that the fishermen who constitute the bulk of the communities concerned are not by training quite familiar with modern methods of business, and have to be guided and encouraged in the observance of such methods as would give the best results. Probably some State aid would in the first instance be necessary to put the various harbours into a proper state of repair, and to establish a system of supervision, but this aid need not be of long duration, as under a proper system the revenues that are meantime lost through want of control and inefficient collection, together with the increased revenue arising from an improved harbour, would be more than enough to maintain most of the harbours.

The scheme should be organised on the simplest and most modern lines, financial returns being made on forms provided by the State, and a few inspectors would be sufficient to supervise the system by

periodical visits of inspection to each harbour, for the examination of the books and works, and to assist and encourage in a sympathetic way the Local Authorities to sustained effort.

Under such a system the independent spirit of the fisherman and his interest in the fisheries would be fostered and encouraged.

(f) *Summary of Recommendations.*—The following suggestions are submitted as a basis for discussion in so far as fishery harbours wholly or largely constructed by means of Government grants are concerned.

- (a) Administration by central authority (preferably the Fishery Departments).
- (b) Model form of Provisional Order and Accounts.
- (c) Simplification and cheapening of procedure in obtaining Provisional Order.
- (d) Proper recovery of dues.
- (e) Proper recovery of damages.
- (f) Annual audit.
- (g) Engineering supervision embracing—
 - (i) periodical inspection of the fabric,
 - (ii) examination of the accounts, and
 - (iii) measures for securing proper maintenance.
- (h) Increased annual grant from Government to central authority.
- (i) Security of tenure of harbour officials.

(viii) PROVISION OF PATENT SLIPS.

It is feared that the accommodation already in existence for the overhaul of fishing vessels will be quite inadequate to deal with the large number which will have to be overhauled at the conclusion of peace, and it is therefore suggested that it may be necessary to make provision for the construction of a number of patent slips along the coast for this purpose. These would be of permanent value, as there is in normal times a large demand for the use of such slips.

An inquiry has been set on foot by the Board to elicit the probable requirements of the industry in this respect.

(ix) PROTECTION OF FISHERIES AT SEA.

(a) *Historical.*—The protection of the fisheries in Scotland is carried out by the Fishery Board for Scotland—the Department responsible for the administration of the fishing industry and for the enforcement of the various statutes and regulations governing the fisheries. In England and Wales, on the other hand, fishery protection is largely undertaken by local district fishery committees by means of the local rates—each committee acting quite independently of the others and being subject only to the general supervision and approval of the Board of Agriculture and Fisheries.

The predecessors of the Scottish Board—the Commissioners of British White Herring Fishery, constituted in 1809 under the Act 48 Geo. III. cap. 110—were responsible for the administration of the whole of the British fisheries until 1860, the fishing fleet during that period consisting almost entirely of herring and cod boats propelled by sails or oars ; and, apart from the action taken by the naval authori-

ties to prevent encroachments on the territorial waters by foreign fishing craft, the enforcement of the national fishery laws and byelaws was secured by means of two naval vessels specially set apart for the purpose. Their commanders were described as Superintendents of the Deep Sea Fishery and the Lochs and Coast Fishery respectively. The former met the deep sea craft at a fixed rendezvous and secured that the fishery was carried on according to the regulations, and also that order was preserved among the persons employed, and that these and their vessels were protected against enemies. The Superintendents were appointed usually for a period of three years, and on reporting themselves to the Commissioners on appointment they signed a declaration before one of the Commissioners. They were also paid a special allowance in addition to their naval pay, and were thereafter under the instructions of the Commissioners in so far as their fishery duties were concerned.

The Commissioners were first provided with a fishery cruiser of their own, in addition to the naval vessels, in 1818, when the Lords Commissioners of the Admiralty made over to them "the 'Swift' cutter, with her stores and rigging to be employed permanently in their service." The services of the Deep Sea Superintendent were dispensed with in 1821, and from that time only one naval gunboat has been placed at the Board's disposal for fishery superintendence (first H.M.S. *Jackal* for a long period of years, and latterly and until the outbreak of war H.M.S. *Ringdove*). The Lords of the Admiralty have on one or two occasions disputed the right of the Board to have a gunboat placed exclusively at its disposal, comparing its status with that of the local district fishery boards in England and Wales, and questioning even its legal right under the statutes, but as the result of a lengthy and exhaustive correspondence on the subject in 1902, 1903, and 1904, the legal question was submitted for the opinion of the Attorneys-General for England and Wales and Ireland respectively (Sir R. B. Finlay, now Lord Finlay, Lord Chancellor, and Sir Edward Carson), when they expressed the view (on 20th June 1904) that the "Admiralty are bound to supply a vessel if, and so far as, it is necessary to enable the Superintendent to discharge his duties imposed on him by Section 9 of 55 Geo. III. c. 94." In so far as Their Lordships are concerned there the position remains.

The Board have, however, added to the single vessel originally gifted to them by Their Lordships, and at the present moment they own five fishery cruisers and one scientific vessel. This has been rendered possible by the provision of a sum of £15,000 per annum from the Local Taxation (Scotland) Account under an Act passed in 1898 (61 and 62 Vic. c. 56). The vessels fly the blue ensign of H.M. Fleet, with the badge of the Board on the Fly under Admiralty Warrant. The officers of the vessels are appointed by the Board, and after a month's probation the Commanding Officers are presented to the Treasury for appointment as "Superintendents of the Fishery" (*vide* Herring Fishery Act, 1860, Sec. 3), and all the Executive Officers are appointed "Sea Fishery Officers" by warrant of the Board of Trade.

The only officer who holds a permanent post is the Board's Marine Superintendent, and he only is entitled to a superannuation allowance. It may be stated, however, that in 1911 a scheme of allowances for

officers and men was prepared and submitted to the Secretary for Scotland and the Treasury, but was not proceeded with on the ground that it would require legislative sanction.

Such, briefly, is the history and composition of the machinery at the Board's disposal for the policing of the fisheries.

(b) *Powers of the Board's Officers.*—The statutory provisions setting forth the powers and duties of fishery superintendents and sea fishery officers are numerous, and to some extent they overlap. They may be divided broadly into two categories, viz., Herring Fishery Acts and Sea Fisheries Acts. The latter were directed to be enforced by sea fishery officers appointed by the Committee of the Privy Council appointed for Trade and Foreign Plantations—subsequently the Board of Trade—and by certain other officers in H.M. Service. The Herring Acts, on the other hand, fell to be administered by the Superintendents created under those Acts.

Under the North Sea Convention the only country which retained the right to appoint commanding officers of fishery cruisers other than commissioned officers of the Navy was Belgium. The Board's officers have in this way been debarred from exercising any authority over foreign fishing craft outside the territorial limits, and this handicap has in some instances operated to the disadvantage of our fishermen in prosecuting claims for compensation in respect of damage caused to their gear by foreign fishermen. In so far as the territorial waters are concerned our officers have similar jurisdiction over foreign craft as naval officers, and it is understood that in practice any foreign vessel violating these limits and trying to evade capture is pursued and overtaken outside the limits.

(c) *Future Arrangements.*—Apart from any discussion as to the obligations of the Admiralty to provide a gunboat or its equivalent, in the form of a grant or otherwise, there can be no doubt that it will be necessary to consider whether the existing arrangement is the best that can be devised for securing adequate fishery protection, and in so far as my experience of over thirty years goes I am inclined to the view that the most efficient and economical results will be secured by placing the policing under the control of the Fishery Departments concerned. Dual control in this as in other directions is fatal to efficiency, and it is essential that the Department responsible for making the regulations affecting fisheries should be in charge of and in direct contact with the machinery for enforcing it. Naval officers have never been enamoured of police work outside their legitimate sphere, and it is probably better that in the interests of recruiting for the Navy they should come as little as possible into conflict with those who have proved to be the most valuable material for service in the Navy—our fishermen. The Board has had some experience of dual control at sea in its own domestic affairs, as an attempt was made for a brief period to enforce fishery regulations simultaneously with the conduct of scientific investigations, with the result that no satisfaction was secured in respect of either service, and the arrangement was soon dropped. Another disadvantage arising out of the comparatively short period of service permitted to naval officers employed on fishery superintendence is the lack of opportunity to become thoroughly *au fait* with the various fishery statutes and regulations and the different fishing communities along the coast—a most essential factor in securing the goodwill of the fishermen and their

respect for restrictions imposed in their own interest and that of the industry. Apart from the excellent work performed by the Board's cruisers in times of peace, they have been highly complimented by the Commander-in-Chief, Coast of Scotland, on the way in which they have conducted the Examination Service in the Firth of Forth. This service has been performed for the Admiralty free of any charge for hire, and the officers and men are all embodied in the Royal Naval Reserve.

It is suggested, however, that extended powers should be conferred on the commanding officers. Arrangements could also be made for putting them and the men through a short course of training in gunnery, etc., annually in order to fit them for dealing with refractory foreign craft.

At present the cruisers in normal circumstances are empowered to enforce the laws and regulations affecting fishing operations against British vessels, whether within or without the territorial waters, but as already stated they have no power to interfere in any way with foreign vessels outside the territorial waters, this duty being performed exclusively by naval vessels, and there is no reason why this procedure should not continue to be followed in future, as any infringement of international law in those waters by foreigners observed by fishery cruisers could be duly reported to and be investigated and reported on by the commanders of naval ships.

The question of ways and means will in the light of present abnormal conditions have to be faced, as the annual pre-war grant made to the Board for this service will be quite inadequate to meet the greatly increased expenditure in prospect.

In this connection it may be mentioned that in view of the disruption of the German Empire, which was a party to the North Sea Convention of 1882, it will be necessary to review the arrangements for the regulation of the fisheries outside the territorial limits. It is suggested that in any new convention which may be entered into provision should be made whereby any of the parties could formulate regulations affecting methods of fishing considered to be injurious to the stock of fish, such regulations to be subject to the concurrence of the other parties to the convention.

(x) STATISTICS AND RESEARCH.

Apart from distribution and preservation the chief handmaids of the industry are statistics and research, as without these there can be no intelligent and efficient administration. Data of a reliable and scientific character should form the basis of all regulative action, and this data should extend over a long period of years owing to the inherent fluctuating character of the fishing industry.

(a) *Statistics and Intelligence*.—In so far as Scotland is concerned, complete statistics of the progress of the industry are available over a long period of years. It is true that during the nineteenth century these were based largely on the curing returns, but during that period the consumption of herrings, cod, and ling in a fresh state was negligible, and the returns afford a fairly reliable guide as to the fluctuations which took place.

In the '80's a beginning was made with the remodelling of the statistics, and a system was gradually built up which ultimately came

to be regarded by investigators and administrators as a model of what such statistics should be.

The Board's system of publishing intelligence as to the progress of the important herring fishery prosecuted in Scotland is also regarded as abreast of modern tendencies, but there is still room for improvement provided the necessary funds and staff are made available.

During the course of the fishing daily telegrams are exchanged between the officers intimating the extent of the fishing, the prices current, and the position of the grounds in which the fish was being obtained, and duplicates are sent to the head office.

At the end of each week telegrams are sent by each District Officer to the Board giving the catch of the week, the quantity cured, the number of barrels branded under each brand, the quantity exported, and the countries to which exported. This information is tabulated, and a statement of the totals for the East Coast, Orkney and Shetland, and the West Coast respectively is sent for publication to the Press.

A statement is also issued at the end of each month showing the quantity of cured herrings of each description in stock in this country.

Information is also received from Germany, Holland, Norway, and Sweden, giving particulars, in so far as those countries are concerned, of the catch, cure, and export of herrings and other sea-fish, and this is also issued to the Press for the information of those interested.

The publication of such information in the Press depends, however, upon the convenience and the exigencies of the time and space at the disposal of the various newspapers, many of which do not circulate extensively among those most directly interested. The Board therefore have had long in contemplation a publication of their own in order to make all the information at their disposal directly available to those engaged in the various branches of the fishing industry, but hitherto they have not been enabled to succeed in this object for the lack of funds.

The Board, however, are convinced that an official publication devoted to the interests of the industry is essential to its full development, and they trust that the importance of providing the necessary funds will be fully appreciated.

(b) *Fishery Research*.—There can be no doubt that scientific researches conducted on practical lines and particularly (1) the establishment of an experimental laboratory and the appointment thereto of a chemist or chemists who would conduct experiments into the most effective methods of preserving fish and the extraction and utilisation of by-products, and other cognate subjects of a practical character, and (2) researches or experiments in connection with the development of the inshore fisheries, embracing the artificial hatching of lobsters on the West Coast, and the revival of the once valuable Scottish shell fisheries, especially those for oysters, mussels, and cockles, would be of incalculable benefit to the industry.

The provision of a properly equipped trawler of greater size and power than the vessel hitherto employed, and the utilisation of commercial fishing vessels for the deep sea investigations and the exploitation of new fishing grounds—a most important factor in development—and improved methods of fishing, and of a suitable motor launch for investigation of the minor or inshore fisheries would be

essential to the proper conduct of such investigations, as would also be the provision of an up-to-date laboratory and museum.

Prior to the war interim advances were made from the Development Fund for the purpose of fishery research, but the Development Commissioners, while expressing general approval of the adoption of a comprehensive scheme of research in British waters, expressed their unwillingness to recommend large advances for this purpose until a joint scheme could be laid before them, agreed upon between the three Fishery Departments concerned, for general research, coupled with arrangements for co-operation between the Departments, which would avoid unnecessary duplication of work, and at the same time secure economy. In order to avoid duplication and to secure efficiency it was proposed that regular periodic conferences between the representatives of the Fishery Departments should take place at fixed dates, and that such conferences should be held, as circumstances permitted, in different localities in England, Scotland, and Ireland, opportunities being given on these occasions to representatives of the fishing and fish-curing industries to lay their views before the representatives of the Departments. Provision was also to be made for the utilisation of the services of suitable scientific institutions for the prosecution of part of the work to be undertaken, and persons working on behalf of the State at such institutions were to be invited to such of the conferences as might be concerned with the particular investigations committed to their charge.

The importance of hydrographical observations is fully recognised, and the view (which was also the view of the International Council for the Exploration of the Sea) is accepted that these investigations should be carried as far as possible into Atlantic waters, and should be linked up, so far as circumstances permit, with observations made on the western side of the Atlantic by the United States of America and others.

It is not thought desirable in this Memorandum to enter into discussion of details of expenditure: four items, however, may be briefly remarked upon:—

1. (a) *Industrial Laboratory*.—The proposal made to undertake investigations which have a more direct bearing on the solution of problems of a practical nature, and which will give to the trade in every branch some more immediate practical hints and benefits from scientific investigations than have hitherto been possible is of the utmost importance. The curing industry has attained to a position of great importance notwithstanding the fact that it has had to depend largely on mere rule-of-thumb methods, but difficult questions frequently crop up which call for the services of skilled investigators in their solution.

Apart from such special investigations as may be entrusted to outside experts of eminence in chemistry and bacteriology, it is felt that it is most essential that at least one investigator should be appointed in Scotland who would be in constant and daily touch with the trade—with the markets, yards, curing houses, etc., and with the various methods and processes. • Such knowledge would be indispensable, for instance, in the investigation of certain diseases which attack preserved fish.

Investigations which will tend to the better transport and preservation of fish will not only be beneficial to the industry, but will

appeal with special force to those directly interested in its welfare. Among the subjects, which may be mentioned as requiring investigation by chemists and bacteriologists, the following are cited :—

- Best methods of preserving fish temporarily on their way from the grounds to the market.
- Preservation of fish for longer periods—embracing their transit to foreign countries and their consumption some time subsequently.
- Analysis of salts used in curing.
- Investigation into deterioration to which cured fish is subject, such as “pink cod.”
- Food values of the different kinds of fish at different stages, etc.
- Analysis of fish oils and utilisation of by-products.
- Materials used for fishing gear and materials used for preservation of same.

The investigations proposed will be useful not only to the fishing industry, but also to the agricultural industry, which may be expected to benefit by the result of hydrographical observations and by any development and improvement which it may be possible to foster of those by-products of the fishing industry, such as fish-meals, oils, manures, etc., which can be used with advantage for the rearing and fattening of stock and the cultivation of the soil. Provision should therefore be made to enable the Board to conduct effectively investigations which they hold to be urgently necessary in the interests of industries of still growing importance both by reason of the capital and labour employed by them, and of the contribution they make to the food supply of the nation.

It is reported that in America President Wilson has recently “authorised an allotment of £25,000 to the Bureau of Fisheries for the establishment of a fisheries industrial laboratory, and that the saving of a large quantity of fish for food and educating the people to the various fishery products are expected to result from the laboratory’s work.” The sum in question is, however, only a small part of the total sums spent on fishery research in North America.

2. (b) *New Research Steamer*.*—The provision for the West Coast of a large and powerful research steamer, capable of remaining at sea in practically all weathers, with proper accommodation and equipment for the Scientific Staff, is essential to enable the Board to undertake exhaustive investigations as to the physical and biological conditions obtaining in the more remote areas which probably have a vital bearing on the conditions of the fisheries generally. Such a vessel would furthermore be directly employed, from time to time, in surveying work, with a view to the discovery of new fishing banks.

3. (c) *Provision of Motor Boats*.—Motor boats are necessary for investigations in shallow coastal and estuarine waters which cannot be approached by a sea-going research vessel. Such investigations have an important bearing upon the investigations as a whole, especially as regards investigations of the life-history of flat-fish, the young stages of which are to be found in close proximity to the coast, and investigations of the herring, the fry of which congregate largely in

* An Admiralty trawler of the “Mersey” class would probably be found most suitable for this purpose.

estuarine waters where quantities of them are taken in the form of white bait.

(d) *Grants to Institutions.*—Grants to certain local institutions should be continued and the system extended to some other institutions which have not hitherto received a grant. Local investigations, for instance in connection with shell-fish, can be most usefully conducted by such institutions where they exist, and efficiency and economy may be promoted by committing certain items of research requiring on the part of the workers very high qualifications of specialised knowledge and requiring no special acquaintance with the context of the research, either to a central staff placed for administrative purposes under the control of one of the Departments, or to such institutions as may be willing and qualified for the several purposes contemplated.

The investigations now advocated are on lines generally similar to those which have been in operation in Scotland for a long period of years, but the Board have been hampered in their efforts to solve the problems which have confronted them by the lack of adequate funds. From their experience it is clear that the proposals now made would result in greater opportunities of development and conservation of the industry by enabling the Board (1) to extend the scope of their operations to the whole of the waters under their jurisdiction, and especially to the waters on the West Coast—which have hitherto been practically neglected in so far as scientific research is concerned, and (2) to engage a larger and more experienced staff of investigators capable of dealing with the various important matters coming under their cognizance.

IV. CONCLUSION.

The definite proposals put forward may be classified as follows :—

- I. Those which call for legislation and improved organisation, and
 - II. Those which require also State aid for their accomplishment.
- I. (1) Increased facilities for distribution and proper storage to be provided by railway and steamship companies, local authorities, and private enterprise : revision of railway rates.
 - (2) State assistance in re-opening and expanding the outlets for cured fish, and in keeping the trade in touch with the latest developments in foreign markets.
 - (3) Institution of an inquiry to ascertain best method of securing recruits for the trawling industry.
 - (4) State influence to secure reduction or removal of tariffs on cured fish exported.
 - (5) Introduction of legislation to secure centralised and improved administration of fishery harbours.
 - (6) Revision of legislation affecting the policing of the fisheries.
 - II. (1) Government grant for provision and repair of fishery harbours and patent slips, and annual provision for the purpose of making loans to harbour authorities.
 - (2) State aid in providing motor engines for fishing boats on the West Coast and Outer Isles.
 - (3) State grants for erection of landing piers on the West Coast, and for providing motor carriers to convey catches to railheads.

- (4) Government funds to local education authorities to provide technical education for lads in fisher towns and instruction in cooking for girls at consuming centres.
- (5) Provision of additional sum for maintenance of fishery cruisers.
- (6) State aid in conducting extended scientific and industrial researches, embracing the provision of (1) an additional and powerful steamer to exploit new fishing grounds and carry out inquiries on the West Coast (which has received scant attention in this respect), (2) of motor boats for investigation of inshore fisheries and supervision of experiments in lobster hatching and storage, (3) of a laboratory for the conduct of experiments in industrial research, embracing chemistry and bacteriology and kindred subjects, and (4) of a scheme for reviving the valuable shell fisheries round the Scottish coasts.
- (7) Addition to Board's Parliamentary Vote to provide (1) for addition to their administrative and technical staffs to cope with development schemes, and (2) for a separate division of the department to deal with the collation and publication of fishery statistics and intelligence.

DAVID T. JONES,

Secretary,

Paymaster, Lieut.-Commander, R.N.R.

EDINBURGH, *November 1918.*

Approved and adopted by the Fishery Board for Scotland at their meeting held on 20th December 1918.

ANGUS SUTHERLAND,

Chairman.

EDINBURGH, *21st December 1918.*

APPENDIX II.

THE SHARE SYSTEM IN SCOTTISH FISHING VESSELS.

As considerable interest is manifested from time to time in the "share" system in vogue among Scottish fishermen, the information on this subject which was given in the annual report for 1911 is here reproduced in a slightly expanded form.

The great majority of steam drifters and liners and sailing boats engaged in the Scottish fishing industry are owned by fishermen. Nearly all the steam trawlers are owned by companies, but in recent years trawl skippers have built or purchased trawlers, and this tendency is increasing.

Vessels are acquired by the fishermen in various ways. In some places (especially the Fifeshire fishing villages) the skipper alone, or the skipper with members of his family, and in a few cases several fishermen who may or may not be related, become partners in the purchase of a vessel. In some instances they have managed to save sufficient money to buy a drifter outright, but in the majority of cases their savings fall short of the necessary sum. In the latter event they approach large firms of fish salesmen, who sell their fish for them, or general merchants, with whom they are in the habit of dealing, to become cautioners to the bank for the amount required on a "bank cash credit." The banks entertain this class of business provided the applicants are successful and reliable fishermen, and that the sureties are men of substance and good character. Should the cautioner be a fish salesman, he would naturally expect to get the sale of the fish landed at certain ports, while in the case of a merchant he would expect to get the borrower's custom in nets, coal, oil, groceries, and other stores.

The cash credit is worked in the same way as an overdrawn current account, all the boat's receipts being paid in, and the interest is charged on the day to day balances. At the end of the fishing the merchants are paid for all nets, stores, etc., and the surplus is divided into three shares—one-third being credited to the boat, one-third to the nets, and one-third divided among the crew. Each member of the crew has so many nets, and the "nets" share is divided in proportion to the number owned, while the boat's share is devoted to the reduction of the sum borrowed from the bank.

The interest charged varies according to the rate fixed by the banks, but it is always $\frac{1}{2}$ per cent. less than that charged for ordinary over-drafts. The average cash account rate in 1911 was £5 4s. 8d. per cent.

If it is necessary to employ men other than "share men" on board, they are simply engaged at a weekly wage like the engineer and stoker and cook.

In the Moray Firth the mode of borrowing the necessary money is somewhat different. There the fishermen frequently purchase vessels themselves from their savings, and from money borrowed on the mortgage of their houses. In other cases one-third of the purchase price is advanced by the banks on a first mortgage, and (according to the fishermen's requirements) part is obtained from fish salesmen, or the boat-builders allow part of the purchase price to remain on second mortgage. A current

account is opened with the banks, as in Fife. The boats are managed by the fishermen, and none of the other partners has a say in their control.

Steam Drifters.

The earnings of drifters are usually allocated as follows at the close of each of the three seasons commonly reckoned as occurring during the year.

From the gross earnings are deducted salesmen's commission, dues of every description, cost of coal, oil, engine stores, and engineers' and, as a rule, stokers' wages. In some instances the cost of insurance, provisions, and cooks' wages is also deducted.

The balance is divided into three shares—ship's share, nets' share, and crew's share, each of which is subject to deductions. For instance the cost of maintenance is deducted from the boat's share, as is also the cost of insurance where not deducted from gross earnings; the nets' share has to bear the cost of catch and, at Peterhead, stokers' wages, while from the crew's share is deducted the cost of food and, in the case of the majority of the Peterhead vessels, the cooks' wages.

Usually owners and crew find nets in equal proportions.

The system of dividing the net earnings into three equal shares, although the general rule, is not always followed. Thus in the case of the majority of the Anstruther and a few of the Fraserburgh vessels, the proportions are: Boat, four-tenths; nets, three-tenths; and crew, three-tenths; while in some cases the proportions at Anstruther are seven-nineteenths, six-nineteenths, and six-nineteenths respectively.

Steam Liners.

The steam line fleet is largely concentrated at Aberdeen, and the system in vogue there of allocating the earnings is as follows: All working expenses—cost of coal, bait, wages of engineer, etc., are deducted from the gross earnings, and the balance halved, one share going to the boat, and the other being divided amongst the crew. Fishermen who do not contribute a share of the lines, *i.e.*, hired hands, are paid at the rate of from 25s. to 30s. per week, with food. In other districts, where steam drifters are occasionally employed in line-fishing, the system of division is usually the same, *i.e.*, half of the net earnings go to the boat, and half to the crew, who each provide an equal share of lines. In Eyemouth district, the system is slightly more complicated. A fleet of nets is usually carried for the purpose of obtaining bait, and each time the lines are shot a sum of 12s. is allowed for the upkeep of nets and a similar sum for the crew, and the net earnings are divided thus: Boat, three-sevenths; crew, three-sevenths; lines, one-seventh.

Steam trawlers are sometimes temporarily fitted out as liners, the owner furnishing the equipment, and in such cases the net proceeds are divided into 14 shares, of which the skipper receives $1\frac{3}{8}$ shares and the mate $1\frac{1}{8}$. The other members of the crew are paid at fixed rates, but the deck hands receive in addition a bonus of 3d. per £1 on the net, and the firemen 6d. per £1 on the gross earnings over £40 per week. All are paid at the end of each voyage.

Motor Boats.

In the case of the large motor drifters on the East Coast, the system of division is not uniform, although the differences are slight. The *modus operandi* is the same as in the case of steam drifters, the net earnings being allocated in varying proportions to the boat, nets, and crew. The

following are the proportions at Eyemouth, Fraserburgh, and Buckie, which together account for 63 per cent. of the entire East Coast Fleet :

	Eyemouth.	Fraserburgh.	Buckie.
Boat	5/19	2/8	2/8
Gear	7/19	3/8	2/8
Crew	7/19	3/8	4/8

Sailing Boats.

The usual method is to divide the net earnings into 13 shares, of which the crew get 6, the balance being divided in varying proportions between the boat and gear. Minor differences exist at every port, however.

Clyde Skiffs.

The boats employed on the Clyde are of a smaller type than those which engage in herring fishing on the East Coast.

In some districts the crews consist of four men each, and in others, four men and a boy.

The net in common use is the seine, in the employment of which the boats work in pairs, usually two motor or two sail.

Where both are motor boats the proceeds, after working expenses have been deducted, are usually divided into 13 shares, or, in the event of the motors being fully paid up, 12 shares. In the latter case all repairs to, and upkeep of, the engine are also deducted from the gross earnings. The division in the case of sail boats, after the deduction of working expenses, is usually 12 shares.

The usual method of sharing is therefore 1 share for each net, and 1 share for each boat and engine except when the engine is paid up, when a $\frac{1}{2}$ share is allotted to the boat and engine, the remainder being divided among the crew ; boys, where employed, receiving one-half of a man's share.

Hired Hands.

With the exception referred to at Aberdeen, hired hands are very rarely employed at a fixed weekly wage. They are almost invariably placed on the same footing as the remainder of the crew, and receive an equal share with those who have an interest in the boat or nets of the proportion of the net earnings allocated for division among the crew. They are, however, frequently under contract to serve for a season.

APPENDIX III.

FISH CANNING.

From inquiries which have reached the Board there is reason to believe that increasing attention is being paid to the possibilities of developing the fish-canning industry, and the following observations on the subject may therefore be of interest.

In so far as herrings are concerned the mainstay of the industry, as is well known, has been the demand for pickled herrings in the interior of Europe, and as this demand furnished an assured outlet for the catch the home market was comparatively neglected. Little or no attempt was therefore made to popularise the herring as an article of food, and the result of relying mainly upon the continental markets was seen when, owing to the cutting off of these markets by the outbreak of war, curers were left with large stocks of cured herrings, in disposing of which great difficulty was experienced.

So long as pickled herrings continue to be esteemed as an article of food by the continental masses, the question of finding and developing new outlets for the catch—provided trade with the interior of Europe can be re-established—will doubtless not be a pressing one, yet the fact remains that pickled herrings are in demand only by populations in a lowly economic condition, and that as prosperity increases and the standard of living becomes higher the demand for herrings in their pickled form falls away. It is therefore possible to envisage a time, even if it be in the distant future, when the outlet for pickled herrings will gradually dwindle, and it is accordingly only a measure of ordinary precaution to look around and consider what alternative outlets may be developed.

The problem is undoubtedly a difficult one. The annual herring catch is so enormous, the fish is so perishable, the ports of landing are in many cases so remote from the large consuming centres, and the transport arrangements are so limited and difficult to organise, that only a fraction of it can be consumed fresh. It consequently becomes necessary to preserve the fish, and not only so, but to preserve it in a form which will appeal to popular tastes. The form of preservation which up to the present has had the greatest success is kippering, but unfortunately this method affords only a slight protection, as kippers will not keep for more than five or six days in warm weather.

This being so, tinning appears to be the only method of cure which combines the two essentials of affording permanent preservation and appealing to the tastes of the British consumer, and as the bulk of the herrings tinned hitherto have so far been exported, the home market appears to afford a promising field for exploitation.

The conditions which are usually considered necessary to successful herring tinning are (a) a reliable and lengthy fishing, with occasional gluts, (b) herrings of medium size and rich quality, (c) adequate labour, principally female, and (d) transport facilities.

With regard to the first of these conditions the seasonal nature of the herring fishing will always be a handicap. The duration of the season at the principal centres seldom exceeds fourteen weeks, and it consequently becomes necessary, if plant and capital are not to lie idle for

the greater part of the year, to import fish from other centres. In order to counteract the expenses of transit thereby entailed, it is desirable to confine purchases as far as possible to gluts, when prices are abnormally low, and as gluts cannot be predicted but may occur at any time and on any part of the coast, it becomes necessary to have some organisation whereby they may be taken advantage of—by retaining the services of purchasing agents at the various centres or otherwise. A glut of herrings is undoubtedly the tinner's opportunity.

The seasonal difficulty is not so much in evidence on the West Coast, where at Mallaig and in the Clyde herrings are landed in larger or smaller quantities practically all the year round.

As regards the second requirement, herrings of a size and quality suitable for tinning may be said to be obtainable at practically all the fishing centres. It is true that on the East Coast and in Shetland large and medium herrings predominate in the landings during the greater part of the year, but small herrings of the "mattie" class, which are eminently suitable for tinning, are landed throughout the whole season, and even if it is not always possible to obtain the necessary supplies in bulk at the quay side it should be possible to do so by arrangement with picklers, who grade their fish according to size, and who would in all probability be prepared to dispose of their small herrings.

The herrings landed at Mallaig are generally suitable for tinning, while those taken in the Clyde, while very variable in size, usually furnish a substantial proportion of the smaller sizes.

It is clear, however, that if tinning is to replace pickling to any substantial degree, it cannot be confined to the smaller fish. Up to the present herring tinning has gone along the same lines as sardine tinning, that is, it has aimed at producing something in the nature of "delikatessen." There seems to be no reason why larger herrings should not be put up in bigger packages (which would also tend to reduce working expenses) and a systematic attempt made to popularise them as a staple article of diet.

But herring fishing is full of vicissitudes, and there is a much better chance of running a canning factory regularly and uniformly if operations are not confined to herrings alone, but are combined with the tinning of other species, as occasion offers, such as sprats, mackerel, haddocks, and other white-fish and shell-fish.

Sprats are not infrequently landed in such quantities as to be un-saleable, and one need only look to the great Norwegian sardine-tinning industry to realise the potentialities in this connection. Mackerel, again, command only a limited sale in their fresh condition, and for this reason large quantities of this nourishing fish are caught annually only to be returned to the sea; consequently ample supplies of this species should be obtainable for tinning purposes at a very cheap rate. Although, too, the tinning of white fish, such as haddocks and whittings has received increased attention during the past two years, it is still practically in its infancy, and in the past it has far too frequently happened that during periods of plenty large quantities of small haddocks and other white fish have, owing to the lack of demand, been thrown back into the sea or sold to manure factories, which might have been preserved by tinning had facilities existed and so made available for food. Then again little or no attention has been given to the tinning of crabs, with which the waters off many parts of the coast abound, but which it often does not pay to market under present conditions. Crab tinning is making rapid strides in other countries, and it behoves Scotland not to be left behind in this development.

The question of labour is, of course, an important one. Unless a

factory can be kept in commission all the year round it must perforce be largely dependent upon casual labour, and must be located in consequence in or near some large industrial centre. If it is situated in a sparsely populated neighbourhood the necessary labour has to be imported, and paid for whether the factory is working or not, and it becomes doubly necessary so to organise the business as to keep the factory working as regularly and continuously as possible. The absence of *trained* labour in any district need not be a deterrent, as unskilled females may be quickly and efficiently trained in the processes of fish canning.

Adequate connection by rail or steamer with other centres is essential, for although, canned fish not being perishable, dispatch in placing the goods on the market is not all-important as in the case of fresh fish, speedy transit is a basic factor when it becomes necessary to obtain fish from other districts to augment the local supply.

In considering what localities offer the best prospects of success for any new enterprise, all of these factors would have to be taken into consideration. There is ample room for expansion at the East Coast centres of Aberdeen, Peterhead, and Fraserburgh, where all the conditions are suitable and the industry is already well established, and Shetland, where large schemes of development are afoot, also appears to offer a favourable field. On the West Coast, Mallaig, where good supplies of herrings, white-fish, and crabs are available, would be a suitable centre if the difficulties as to housing and labour supply could be overcome. The Clyde also appears to be well worth consideration in this connection.

The foregoing remarks do not, of course, do more than outline the subject. Their intention is not to present a cut-and-dried scheme, but merely to suggest broadly to any one who may contemplate embarking on this branch of the fishing industry the factors which have to be taken into consideration. The suitability of any given locality and the prospects of success therein could naturally only be decided upon after detailed investigation on the spot.

APPENDIX IV.

HARBOUR IMPROVEMENT SCHEMES.

REPORT BY MR. R. GORDON NICOL, M.INST.C.E.

I have the honour to submit, for the information of the Board, the following report on the Harbour Improvement Schemes which are being carried out under the supervision of the Board, and were in progress for the year ended 31st December 1918.

The following table gives a list of these harbours, along with the estimated cost of the schemes and the assistance in grants and loans that is to be provided from the funds at the disposal of the Development Commissioners and the Board.

Name of Harbour.	Estimated Cost of Scheme.	Assistance to be Provided.		
		Free Grants.	Loans.	Total.
Eyemouth	£4,200	£1,200	£2,500	£3,700
Fraserburgh	40,000	20,000	20,000	40,000
Gardenstown	9,500	4,000	4,000	8,000
Macduff	37,800	19,500	17,500	37,000
Banff	8,000	5,750	...	5,750
Whitehills	3,000	2,250	...	2,250
Cullen	7,160	4,000	2,300	6,300
Portknockie	8,000	3,200	2,800	6,000
Findochty	6,700	2,000	1,500	3,500
Buckie	57,750	18,000	39,750	57,750
Lossiemouth	15,034	3,000	10,000	13,000
Nairn	18,000	7,000	...	7,000
Wick	31,260	...	31,260	31,260
Total	£246,404	£89,900	£131,610	£221,510

Eyemouth Harbour.—This Improvement Scheme for the deepening of the entrance channel to the harbour by the removal of a reef of rock is still in abeyance. Operations were suspended by the contractors in August 1916, on account of the war, and have not yet been resumed.

Fraserburgh Harbour.—This Improvement Scheme is still suspended. The formation of the roadway of Faithlie Jetty has been finished and some minor repairs to the Sea Works have been executed.

Regarding their recent application to the Development Commissioners for further financial assistance, it is expected that the Harbour Commissioners will shortly be in a position to submit definite proposals for the completion of the Harbour Improvement Scheme.

Gardenstown Harbour.—Work on this Improvement Scheme, which is for an extension of the East Pier and the formation of a new harbour basin, is still suspended on account of the war.

Macduff Harbour.—The progress of this Improvement Scheme has been delayed on account of the scarcity of labour. Notwithstanding this, 10,206 cubic yards of excavation, including 8290 cubic yards of solid rock, have been removed from the site of the new harbour basin, the latter by

the aid of pneumatic drilling plant and explosives. The inner quay wall of the breakwater has been constructed of concrete for a length of 360 feet, 800 square yards of the lower layer of concrete for the roadway have been laid on this quay, a length of 200 feet of the South Quay Wall has been completed, and short sections of the breakwater parapet have been formed. During the severe storms of the early Spring and again in the Autumn the sea broke over the breakwater where the parapet is still unformed and flooded the new basin, causing damage to plant and interrupting the operations.

The estimated cost of the scheme was originally £24,100, towards which a free grant of £10,000 and an interest bearing loan of £12,000 were to be provided from the Development Fund, and a free grant of £2000 was promised from the funds of the Board. Prior to the commencement of the work this estimate was revised and raised to £26,488. For a considerable period after work was commenced it appeared that this sum would be sufficient for the completion of the scheme, but owing to the extraordinary increases that have taken place in wages and in the price of materials within the last two years, the expenditure on the work, although most carefully administered, has considerably exceeded the estimate. Revised estimates based on current rates at the end of 1917 showed that the total cost of the scheme would be about £37,800. As the Town Council were without funds to meet the extra cost they made application to the Development Commissioners for further financial assistance to enable them to complete the scheme, and in the special circumstances the Treasury on the recommendation of the Commissioners agreed to provide an additional advance of £5500 by way of free grant and £5500 by way of interest bearing loan from the Development Fund, while the Board agreed in like manner to make a further free grant of £2000 from their funds, the total advances amounting to £37,000.

During the year payments of £2000, being an instalment of the original loan, and £1168, 7s. 3d. of free grant, were made to the Council from the Development Fund, and payment of the free grant, amounting to £2000, was made from the funds of the Board.

Banff Harbour.—This Improvement Scheme includes the deepening of the inner harbour basin by the removal of rock and soft material, and the repair of the pier and quay walls. The work of excavation is now almost completed, 1243 cubic yards of rock and 1630 cubic yards of soft material being removed during this year. On three separate occasions work was suspended and water admitted to the harbour basin to enable herring drifters to be launched from the adjoining shipyard and taken out of the harbour. To effect this the upper part of the cofferdam had to be removed and replaced and the basin pumped out each time, the cost of the operations being recovered from the owners of the vessels released.

The masonry quay walls surrounding the inner harbour are very old and are founded on the surface of the underlying rock. When the rock in the basin was excavated it proved to be of such a friable nature that the exposed faces under the walls had to be faced with concrete, carried up in front of the masonry to cope level. The Engineer reported that this additional work would cost about £4000. As the Trustees were without funds to meet this unforeseen expenditure, inflated by the prevailing prices, they applied to the Board for further financial assistance. In the circumstances the Board agreed to make an additional free grant of £2750 towards the cost of the scheme, on condition that the balance was provided by the Trustees.

This work is now in progress, and by the end of the year a length of 180 feet of quay wall and the underlying rock had been faced with concrete.

During the year payments amounting to £806, 1s. 2d. were made from the funds of the Board.

Whitehills Harbour.—Work on this Improvement Scheme is still suspended on account of the war.

Cullen Harbour.—The foundations of the breakwater, which had been damaged by storms during recent years, were repaired by building up the breaches with concrete in small bags by the aid of divers. The work of repair, commenced in August of last year, was finished in July, after prolonged interruption by stormy weather.

Payment was made by the Board of the additional free grant of £700 towards the cost of the Improvement Scheme, promised on condition that the Trustees executed the repairs to the breakwaters.

Portknockie Harbour.—This scheme of Harbour Improvement is in abeyance on account of the war.

Findochty Harbour.—The commencement of the works authorised under this scheme of Harbour Improvement is still deferred on account of the war.

Buckie Harbour.—The progress of the works under this Improvement Scheme has been slow during the year, principally on account of the scarcity of men and through delays caused by stormy weather. Latterly the scarcity of men became so acute that a suspension of operations was seriously contemplated.

The rectifying of the defective joints in the blockwork of the North-West Pier has proceeded steadily when weather permitted. The work of repairing and securing the North Pier extension by surrounding the head with steel sheet piles and concrete has been completed. Several of the holes in the foundations of the North-West Pier were filled with concrete in small bags by the aid of divers. Portions of the defective concrete in the old North Pier have been cut out preparatory to effecting repairs. Concrete decking has been laid for a length of 50 feet at the outer ends of the three new jetties in the harbour to secure the roadway from scour in stormy weather, and the roadway of the South Quay, including the sewer, gas, and water mains, has been lowered to suit the new levels of the quay walls and jetties of the harbour.

The financial aspect of the scheme continues to engage the attention of the Town Council, as the cost of completion will considerably exceed the estimates, and their financial resources are practically exhausted. They are at present engaged in preparing a statement of the position for submission to the Board.

No payments have been made to the Council this year from the Development Fund or from the funds of the Board.

Lossiemouth Harbour.—Work on this Improvement Scheme was suspended in August on account of the war. The construction of the piers and breakwater is almost completed, but the dredging of the harbour basin has still to be carried out.

No payments were made to the Harbour Commissioners from the Development Fund during the year.

Nairn Harbour.—This Improvement Scheme is still under the consideration of the Town Council.

Wick Harbour.—Progress on the special repairs necessary to secure the piers and quays against further damage by storms has been slower this year, owing to the scarcity of labour and interruptions through stormy weather. It has also been necessary on frequent occasions to withdraw the men from repair work and to employ them on other work of an urgent nature in connection with the working of the harbour.

The underpinning of a portion of the inner quay wall of the North Pier, where undermined, has been completed, the work being executed by

divers. The new concrete face wall in front of the Jetty has been constructed for a length of 127 feet, and the foundations excavated for a further section. Owing to the hard nature of the boulder clay on the site of the wall, it was necessary to remove this material by hydraulic jet operated by divers. A portion of the concrete deck of the South Pier where destroyed by recent storms was renewed with fresh concrete. The men were also employed periodically in quarrying and crushing rock and dredging sand for concrete work and road repair.

Payments, amounting to £4072, 4s. 9d., have been made to the Trustees by way of loan from the Development Fund during the year.

R. GORDON NICOL,
Consulting Engineer.

APPENDIX V.

ANNUAL REPORTS BY INSPECTORS OF SEA FISHERIES
AND FISHERY OFFICERS.

GENERAL INSPECTOR.

The outstanding features in connection with the fisheries during the year 1918 were the unprecedented prices paid for all kinds of fish, and the earnings of fishermen engaged in the various fishings. In no past year were the risks to life so great or the compensation so gratifying. In herring alone the increased value as compared with 1917 was £973,286, and on all kinds, exclusive of shell-fish, £2,346,678. In pre-war times the bulk of the herring was cured for exportation. During 1918 nearly all was put on the home markets, in common with all other kinds. Certain kinds formerly of little value realised high prices. Saithe, for instance, which could be purchased for a few pence, realised 3s. to 6s. each, and are now much appreciated. To those engaged in placing the fresh article on the home market the risks were great and the profit frequently discounted by heavy losses caused by delays in transit. Those engaged in kippering did so well that this branch of the business was immensely developed. The increase in the wages of shore workers compares favourably with that in other industries.

[Although there was little change in the number of vessels employed, there was an extraordinary increase in the value of vessels and fishing gear. An outstanding feature in connection with the means of capture was the continued and gratifying increase in the number of cases in which motors were installed in the largest and strongest of the old sail boats, some of which are still available for the reception of motors. For the year the increase was 188, exclusive of 26 smaller boats built for motors. Nearly all the large motor boats were exclusively employed in herring fishing and the smaller class in line fishing. By the close of the year the number of motor craft had increased to 1337, valued at £878,170. With the powerful and reliable motors now available, the net and line fisheries can be prosecuted to much better advantage than formerly. A number of powerful steam trawlers and drifters were built to the order of the Admiralty. These are not as yet accounted for as fishing craft, but will in due course be available for fishing.]

HERRING FISHING.

The results all over for the 1918 and 1917 herring seasons and sections were as follow :—

Year.	WINTER.		EARLY SUMMER.		SUMMER.		TOTAL.	
	Crans.	Average Price.	Crans.	Average Price.	Crans.	Average Price.	Crans.	Average Price.
		s. d.		s. d.		s. d.		s. d.
1918 .	223,039	98 1	124,578	90 5	241,452	72 11	589,069	86 2
1917 .	238,223	50 8	98,745	60 1	226,559	58 7	563,527	55 6
			Crans.	Value.	Average Price.	Percentage of Total Quantity.		
				£	s. d.			
East Coast			229,265	907,589	79 2	38·9		
Shetland			27,900	49,040	35 2	4·7		
Minch			277,384	1,302,447	93 11	47·1		
Firth of Clyde			54,520	278,034	102 0	9·3		
Totals			589,069	2,537,110	86 1	100·0		

East Coast.

As in the preceding year, the great summer herring fishing on the East Coast and Shetland was much restricted by Naval requirements, Fraserburgh and Peterhead being the two centres at which the bulk of the herrings was landed. Since the outbreak of the war no herrings have been landed in Orkney, and the catch at Shetland for the summer season amounted to only 10,453 crans, or no more than a good day's catch in normal times. In the closing month of the year good results were obtained at herring fishing in the Inverness Firth. In all the other less important East Coast districts where fishing was confined to inshore waters and firths the catch for the year was very light. In the more southerly districts, notably Leith and Anstruther, prices ruled highest. The herrings caught in the Inverness Firth consisted of small fish for which there was a keen demand at an average price of £3 per cran. A considerable quantity of these was purchased for tinning, and for the first time on record a small portion of the catch was kippered.

West Coast.

On the West Coast the most productive and remunerative catch was secured in the Minch from about the middle of January to the middle of March. For the season the total was 149,506 crans, valued at £683,849. Herrings in larger or smaller quantities were landed monthly in all the West Coast districts—not so on the East Coast.

The greater part of the fleet operating in the Minch came from the East Coast and made Stornoway its headquarters, but invariably went direct to the rail heads, chiefly Mallaig, with the heaviest of their takes. Both Kyle and Oban were able to deal with a fair share of the catch, and received the bulk of the through traffic from Stornoway. At the three places referred to rail facilities were taxed to the utmost in meeting the requirements of the industry.

To the reduced number of fishermen employed, as a result of the war, the earnings for the winter fishing season were the highest on record. There being no control, prices generally ranged from £3 to £5 per cran. The highest recorded was £14, 10s. per cran. It was no uncommon occurrence for single takes to realise from £400 to £800, and one shot of 196 crans realised £1961. The gross earnings of the steam vessels generally ranged from £2700 to £7000, and of the motors from £1000 to £4000, one of the latter earning £7900. During the progress of the summer fishing on the East Coast the gross earnings of the steam vessels generally ranged from £2000 to £4500; of motors, £1200 to £4000, and of sail craft £700 to £2300. Nearly all the steam and motor drifters also fished from Yarmouth and Lowestoft during the autumn months and met with marked success. The combined earnings for the year were therefore the highest recorded, those of the most successful ranging from £10,000 to £13,000.

Firth of Clyde.

In this section there are five fishery districts, Campbeltown and Ballantrae being the most productive, with 74 per cent. of the catch for 1918 to their credit. Loch Fyne, which held the premier position for so many years, was again a failure. The herrings caught in the Clyde areas are of excellent quality, and after being landed retain their brightness of colour for a much longer period than those caught elsewhere. This can be accounted for by the great volume of fresh water annually deposited in these waters, which favours the growth of a superior kind of animalcule

on which the herrings feed. For those fish there is always a good demand in Glasgow and elsewhere, hence the high average price of 102s. per cran for the year under review. The fishing is carried on throughout the greater part of the year. The fleet consists almost wholly of small-sized motor boats manned by local men, and the method of fishing is by the seine net. Since the outbreak of war all have done well, and it is no secret that a number of the most industrious and successful fishermen have earned sufficient to keep them comfortable for a number of years.

Disposal of Catch.

With the exception of about 63,000 crans cured gutted and un-gutted, all was placed on the home markets, chiefly in a fresh and kippered condition. In pre-war times this would have been considered an impossible task, and all connected with the industry realise their indebtedness to the Government Departments, Railway Companies, and the many private individuals who took a personal interest in the undertaking.

To those who purchased the herrings as landed and placed them on the market in a fresh condition the results were at times highly satisfactory, but towards the close of the season the losses were frequently so heavy that it is doubtful if many of the buyers had a profitable season. On the other hand, to all engaged in kippering the results exceeded the most sanguine expectations, and this branch of the industry is being developed to an extraordinary extent.

LINE FISHING.

Owing to Naval requirements very little was done at great line fishing on the East Coast. Good results were, however, obtained by a number of East Coast steam and motor craft operating from Mallaig. The various kinds of large-sized fish such as cod, ling, conger, skate, etc., were plentiful in the Minch and southward. Prices throughout ruled high, and single takes frequently realised from £300 to £500. The earnings of those employed during the greater part of the year ranged up to £6000, and the value of the total landings amounted to £161,179.

Small line fishing on the East Coast, chiefly for haddock, was prosecuted with vigour and unprecedented success. In the districts of Montrose, Banff, and Findhorn the combined catch was valued at £485,351. The success was largely due to the efficiency and increase in the number of small-sized motor boats, which accounted for an increase of 62·1 per cent. in quantity and 130·8 per cent. in value. All over there was a marked increase in the quantity and value of line-caught fish.

TRAWLING.

Trawling operations were practically confined to Aberdeen, Leith, and Dundee. Contrasted with the preceding year, there was a slight decrease in the quantity landed, yet the increase in value was £416,827. The small and medium-sized vessels fished on the inshore and nearer offshore grounds, the larger vessels in Shetland waters.

OTHER FISHERIES.

Cod net fishing in the Moray Firth and elsewhere was prosecuted with good success, and as prices ruled high the earnings were highly satisfactory. The best results at sprat fishing were obtained in the Firth of Tay,

and the earnings were the highest on record. In the Inverness Firth sprats were less plentiful, but there was an abundant supply of small-sized herrings which more than compensated for the partial failure of the sprat fishing.

The shell-fisheries are the most reliable branch of the industry and vary little annually. For the year the total value of all kinds amounted to £74,895. The lobster fishery is the most valuable, and is susceptible of improvement. It is pretty much confined to the West Coast, and is prosecuted by small-sized sail craft. Until motor power is applied to fishing craft and facilities provided for bringing this much appreciated article of food to the nearest rail head no improvement can be expected.

(Signed) WM. JEFFREY,
General Inspector of Sea Fisheries.

FISHERY BOARD FOR SCOTLAND,
EDINBURGH, 18th March 1919.

Eyemouth District.

The year under review was, from a pecuniary point of view, the most successful ever experienced. The returns show a decrease on 1917 of 37,210 cwts. in quantity, but an increase of £5614 in value. The total value of all fish landed constitutes a new record. In addition to their success in home waters, a number of crews secured good results at the herring fishing on the east and west coasts, Ireland, and more particularly at Yarmouth. Fishcurers and the shore workers also shared in the general prosperity.

The slight changes in the means of capture for the English section of the district do not call for remark. In the Scottish section 3 steam drifters were lost while on Admiralty service, and a motor herring boat was sunk in collision. The motor fleet remains practically the same as in 1917. There were slight decreases in netting and lines.

The summer herring fishing opened at North Shields in the beginning of May, and about a month later at the other stations. A fair measure of success was experienced up to the middle of July, but thereafter the fishing at the northern ports was almost a complete failure. Under Admiralty orders the boats had to form two separate fleets; consequently when the northern grounds failed most of the Eyemouth fleet went to North Shields, with the result that the ports from Eyemouth to North Sunderland suffered accordingly. The fleet numbered 71 steam and 68 motor boats, the season being the first in which no sail boats have taken part. The most successful week yielded 11,012 crans, of which 10,902 crans were landed at North Shields. The total catch was 60,950 crans as compared with 88,777 crans in 1917. About 90 per cent. of the catch was landed at North Shields, all the steam vessels fishing from that port. Prices ranged from 7s. to 154s. per cran, with an average of 91s. 10d. per cran against 53s. 5d. in the previous year. Of the catch 66 per cent. was landed by steam and 34 per cent. by motor vessels. The principal fishing grounds were N.E. and S.E. of the Farne Islands. One third of the catch was kippered. The fishing came to an abrupt close on the 7th of September, by order of the Admiralty. During the season the boats were kept ashore on several occasions owing to the presence of submarines and mines.

During the year 177 barrels of herrings were cured, and these sold at controlled prices.

The haddock fishing was prosecuted by practically the same number of boats as in 1917, but with better success. The general range of takes was from 3 to 10 boxes, with occasional shots of 12 and 14 boxes. The value constitutes a record. As compared with 1917, line-caught fish represent an increase of 36 per cent. in quantity and 72 per cent. in value. Prices ranged from 40s. to 120s. per box, with an average of 66s. 8d. per cwt. as compared with 55s. 1d. in 1917.

The value of the shell-fisheries shows a large increase referable principally to lobsters.

Barrel-making was confined to one firm finishing an outside contract. Boat-builders were employed, as in 1917, in building motor yawls and installing motor engines in sail boats.

Of two motor boats which engaged in the Irish herring fishing, one was sunk in collision early in the season: the other was fairly successful. At the English autumn herring fishing 14 crews had earnings of from £1500 to £7250, with an average of £2914. The loss in gear amounted to about £1400.

The casualties were 5 men lost in the action with enemy destroyers off Dover.

DAVID ROSIE,
Fishery Officer.

FISHERY OFFICE,
BERWICK, 8th January 1919.

Leith District.

The total catch by all methods of fishing amounted to 189,551 cwts., of the value, including shell-fish, of £537,342, as compared with 184,411 cwts. and £335,212 in 1917. The value for 1918 is probably a record for the district.

Excluding shell-fish, the average price of fish was 56s. 3d. per cwt., against 36s. 4d. in 1917.

In the "Means of Capture Returns" the increase in the number of motor boats referred to in last year's report was continued, 9 being added to the local fleet. Apart from the addition of one new boat, the increase was due to the installation of motor engines in boats, mostly of the first class, that had previously been propelled by sails. Similar changes are still in progress, and the fleet of sail boats is decreasing steadily in consequence. There is also a slight decrease in the number of steam vessels, owing to losses through accidents of war.

The number of trawlers working from Granton ranged, during the year, from 15 to 19, and averaged 16 or 17 boats weekly. They worked almost exclusively on the near grounds off the Bell Rock, May Island, and St. Abb's Head. They had a most successful year, landing 143,144 cwts. of fish, valued at £415,523, an increase of 11,624 cwts. and £153,598 upon the returns for 1917. Nearly the whole of the catch was sold at controlled prices.

The small line fishing was prosecuted with more than the usual vigour and success along the Haddington coast, and especially at Cockenzie, where only motor yawls are now used. There were also fair average landings on the Fife coast, at Kinghorn and Kirkealdy; but at Newhaven little was done at line fishing.

The winter herring fishing was a failure along the south shore of the Firth, from Leith eastwards; but from Newhaven westwards, on both sides of the Firth, herrings were fairly plentiful, and fishermen had a

profitable season. For the first four months of the year the returns for the whole district showed a total of 7069 cwts., valued at £15,543, as compared with 13,893 cwts. valued at £21,227 in 1917.

Anchored net fishing for codlings and flounders, which is carried on mostly by Newhaven and Fisherrow fishermen, was generally unremunerative.

Seine net fishing for plaice, etc., was carried on for nine months of the year by some of the Cockenzie fishermen, who used their motor yawls. In the spring, when flat fish were scarce, considerable quantities of catfish were caught by the seine net, and fishermen thus earned sufficient to encourage them to continue working it. Through the summer and autumn the supply of plaice and other flat fish kept up better than might have been expected, considering the limited area that was available and the number of boats that were working. The high prices received for all kinds of fish were, however, the main inducement. For the months April to October inclusive, from 10 to 12 motor yawls worked the seine net regularly; and 5 or 6 crews continued fishing in November and December. For 1471 arrivals their gross earnings amounted to £21,769, of which plaice contributed £17,030. For 1917 the total value of seine-caught fish was £5600.

The shell-fisheries yielded over £1000 more than in 1917, the increase being principally in lobsters and mussels. There was a keen demand for mussels for bait; and in the autumn and early winter the Newhaven fishermen were profitably employed in dredging mussels.

Cockenzie and Fisherrow crews who took part in the herring fishing at other ports had, almost without exception, most profitable voyages.

Through accidents of war 2 lives were lost; and also 3 local trawlers, one of which was fishing, and the others engaged in Admiralty service. The loss of trawl gear was exceptionally heavy, owing to the number of sunken wrecks encountered in the North Sea.

Only one new fishing boat, a large motor yawl, was built in the district. Six trawlers were built—all for Admiralty service.

Barrel-making was confined to one local factory, and the output was not large.

Over 9000 herring basket measures were made and branded in the district, an increase of more than 2000 over the figures for 1917.

R. DUTHIE,
Fishery Officer.

FISHERY OFFICE,

LEITH, 25th January 1919.

Anstruther District.

The only branch of the fisheries which was successfully prosecuted in this district last year was cod net fishing, and, as usual, it was only engaged in during the first four months of the year.

The results of the winter herring fishing were very poor, owing almost entirely to the continuance of the Admiralty restrictions. The season's catch only totalled 1975 crans, valued at £17,877, as against 5659 crans and £28,934 in 1917, which was also an unproductive year.

When compared with the returns for the previous year the total quantity of white fish landed in the district in 1918 shows a shortage of 10,447 cwts., but the value an increase of £31,613.

Seventeen motor boats were added to the fleet during the past year,

making a total of 108. There was, however, a decrease of 11 large sailing boats, the majority of which were sold to other districts.

The winter herring fishing was engaged in from about the middle of January until the end of March, by about 140 craft of all kinds, with very poor success. The fishing grounds extended from Buckhaven to Crail, two miles off shore. Prices ranged from 120s. to 230s. a cran, all the catch being disposed of in a fresh condition.

Fortunately the cod net fishing, which was pursued in conjunction with the herring fishing, was again a decided success. About 100 boats were employed, and the success which attended their efforts proved a great boon, in view of the failure of the herring fishing. The season's catch amounted to 7720 cwts., valued at £37,775, as against 7499 cwts. and £13,607 in 1917. The best single shot was 300 cod, value £164. Prices ranged from £6 to £20 per score of fish, according to size and quality.

At Pittenweem about 36 crews were intermittently engaged at small line fishing, this being the only creek in the district where this method of fishing was prosecuted with any noteworthy success.

The average price over the whole year of all kinds of white fish landed in the district was 62s. 9d. a cwt., as compared with 37s. 4d. a cwt. in 1917.

The crews who took part in the Scottish herring fishings on the whole did very well, their total catch amounting to 28,925 crans valued at £110,620.

Three steam and 38 motor drifters took part in the East Anglian herring fishing and landed a total of 22,579 crans, the gross value of which was £81,384. The earnings of both types of vessels at this fishing were almost equal.

One boat belonging to the district was blown up by a mine, the crew of 5 men being killed.

The prospects for the future are generally satisfactory. The greatest drawback, which will become more apparent once the demobilisation of the fishermen on service becomes general, is the lack of a sufficient number of steam and motor boats. If these craft can be secured there is every likelihood of the industry being on a better footing than ever before. Fortunately, this phase of the situation is already receiving the attention of fishermen and fish salesmen, and a number of modern vessels have already been acquired for the fishermen who are shortly to be demobilised from the Navy.

FREDERICK FRASER,
Fishery Officer.

FISHERY OFFICE,
MONTROSE, 10th January 1919.

Montrose District.

The principal branches of the fisheries, in order of their importance, which received attention in this district last year were line fishing by motor boats, sprat fishing, and steam and motor trawling. The first two methods of fishing were very successfully prosecuted, but the same cannot be said of trawling, owing mainly to the depleted fleet operating from Dundee.

Compared with the results of the preceding year, the figures for 1918 show the large increases of 50,218 cwts., and £148,793 in the quantity and value of white fish landed in the district.

The noteworthy points in the Means of Capture Returns are a decrease

of 10 large sailing boats, most of which were sold to other districts, and an increase of 10 motor boats.

No attempt was made at the summer herring fishing. In fact, only 2 district boats fitted out for this fishing, and they worked from other ports. In view of the fact that the two curing firms at Montrose will in all probability cease curing herrings here, it looks as if this branch of the industry will come to an end in this district.

Sprat fishing in the Firth of Tay was pursued with unprecedented success during the first four months of the year. The catch and value for this period were 10,389 crans and £35,410. About 21 boats were engaged, and never in the annals of the Tay sprat fishery have the crews made such high earnings.

Small line fishing was regularly engaged in by about 90 motor crews, and notwithstanding the increased cost of all kinds of material necessary for line fishing the crews made very good earnings. Considering the small number of trawlers which were working off this coast, it was naturally thought fish would have been exceptionally plentiful, but this unfortunately was not the case. Codling and haddock were the chief kinds of fish caught, and generally the catches differed little in size from those of the preceding year.

Steam trawling was as usual carried on mainly from Dundee, but by a reduced fleet of 3 trawlers. Several Granton trawlers landed their mid-week shots at Montrose, all of which were despatched direct to Glasgow. Five motor trawlers were regularly employed from Montrose, but owing to the small size of these craft (which could only work in comparatively smooth water) and to engine breakdowns, the venture could not be termed a success. Once trawling resumes its former prosperity, it is to be feared that these motor trawlers will not pay, and will gradually cease to exist as such.

The sum earned by the most successful Dundee trawler last year was £19,783.

Contrary to all expectations, the concession which the Board granted to small trawlers to trawl during a part of the spring within territorial waters off this coast did not prove a success, with the result that many of the crews resumed line fishing after only a week's trawling.

The average price of white fish for the year was 45s. per cwt., as compared with 38s. 1d. per cwt. in 1917.

Disaster befell an Arbroath vessel in February, the boat, it is supposed, being blown up by a mine and the crew, 2 men and a boy, lost.

Regarding the future of the district fisheries, the only regrettable feature is the probable decay of the herring fishing. Steam and motor trawling and line fishing will form the mainstay of the fishermen. In due time the fleet of trawlers at Dundee will probably return to its pre-war strength, while motor line boats will go on increasing as additional craft and crews become available. In no district in Scotland, probably, does small line fishing receive so much attention as in this district, as is evidenced by the fact that last year from 22,126 arrivals 69,385 cwts. of line fish, valued at £223,922, were landed at the various creeks. In every respect the district fishermen are in a strong position, and their outlook for the future is quite bright. This happy state of matters is due solely to the marked success of the motor line boat, and of course to the perseverance of the fishermen, who faced the war risks with a splendid spirit.

FREDERICK FRASER,
Fishery Officer.

FISHERY OFFICE,
MONTROSE, 10th January 1919.

Stonehaven District.

The fishing industry of Stonehaven district was, as during the four preceding years, confined almost entirely to small line fishing. Throughout the whole year this branch was prosecuted by the fishermen available with great energy and perseverance, notwithstanding the restrictions imposed on the surrounding areas. The weather on the whole was very favourable, and seldom were the boats kept ashore. Indeed, owing to the hard work and drudgery which small line fishing entails upon the families concerned, fishermen occasionally welcomed weather which kept them ashore, as the members of their households thereby had a rest.

The results for the year are exceptionally good, and never in the history of the district have the fishermen been in such good circumstances. Compared with the previous year's catch, there was a considerable increase in the quantity of fish landed, while the money value was more than doubled. The earnings of motor boats ranged from £2500 to close upon £4000, and of sail boats from £600 to £1000. These high earnings being realised at their own homes make the year a very lucrative one to fishermen. Of course the expenses in the way of mussels for bait and oil for the motor engines were very heavy, but these were more than counterbalanced by the high controlled prices obtained for the fish. The bulk of the mussels was brought from England, and very often, owing to the delay in railway transport, the shell-fish were dead before reaching their destination. This meant a considerable loss to the fishermen.

The instalment of motor engines into existing sail boats has given a considerable impetus to the line fishing of the town of Stonehaven. While in 1914 there was not a single boat with a motor engine, at the present time there are 19 of these craft belonging to the port. It may therefore be said that the success of the line fishing industry during the past three years is chiefly due to the fact that fishermen have now a firm belief in the efficiency of the motor boat.

The herring fishing in this district has been entirely suspended during the war, and it is to be feared that fishermen will be unable to resume this branch of the industry when it becomes feasible to do so, having sold their boats and nets owing to the highly tempting prices which have prevailed during the past two years. Such a policy does not seem very wise, as it will be almost impossible to replace these boats and nets for some time to come.

The local firm of net manufacturers report a good year's output. The year, however, ended with a distinct falling off in business owing to the possibility of lower prices in the near future and the consequent disinclination of buyers to place orders. The firm have not, however, slackened in their manufacture, and are indeed prepared to employ more hands, as stocks of fishing gear in the country must be low, and a considerable demand for nets is anticipated at an early date.

Crab fishing, which was chiefly carried on at the creeks lying to the south of Stonehaven, proved to be very remunerative to the fishermen. The total value of shell-fish was, however, slightly under that of 1917.

WALTER DUFF,
Assistant Inspector of Sea Fisheries.

FISHERY OFFICE,

ABERDEEN, 21st January 1919.

Aberdeen District.

As far as the fishing industry of the Aberdeen district is concerned, the year 1918 has been a busy and a prosperous one. This is remarkable in view of the fact that the ranks of the fishermen were depleted by two-thirds who patriotically volunteered to serve their country. The remaining third, however, carried on their vocation so energetically and with such good results that, in spite of the very inferior vessels at their command and the restrictions imposed upon them, they managed to make of the fishing a signal success.

Although a considerable decrease is observed in the quantity of fish landed compared with that of the previous year, the value shows a large increase. In fact, the difference in the value compared with pre-war times is very slight. The catching power was only about a fourth of what it was previous to the outbreak of war, only from 50 to 60 trawlers being available, and when the total value of the landings of these vessels is divided among them their average high earnings can be realised. The two most successful trawlers, working principally off the Shetlands, with four and two trips respectively from Faroe, grossed £37,000 and £36,000. Trawlers over 25 tons, fishing exclusively in the North Sea, earned from £9,000 to £15,000. The price of the material required and the working expenses were of course exceedingly high, but were trifling in proportion to the value of the catches.

The restriction of the areas available for carrying on the industry told greatly on the quantity landed. There was no Icelandic fishing, and the trips to the Faroe grounds were very few. Many of the trawl fishermen who were left to man the vessels were of the Sunday-observing class, who stipulated that they should be ashore during the week-end. All these things considered, the results of the past year are exceptionally good.

Motor and sail line fishing was also carried on with exceptional success, and all the fishermen concerned did exceedingly well. All the small line boats, except a few manned by old men and boys, who fished during the summer months on the inshore grounds, were fitted with motors and proved of great value to the fishing.

A considerable decrease is observed in the number of steam vessels belonging to the port of Aberdeen. Apart from those trawlers, liners, and drifters lost through mines and enemy action, many have been sold by local owners at the enhanced war values, and when released from service will go to their new ports. It is calculated, now that the war is over, that vessels will be built at an appreciably smaller cost, but the refit of the returned vessels will occupy a considerable time.

Owners of motor boats have also been taking advantage of the high war values, with the result that 18 of these craft were sold out of the district during the year.

Although a decrease is noticeable in the number of boats and fishing vessels on the register, the shipbuilding firms have been exceptionally busy in the construction of fishing vessels on behalf of the Admiralty. Altogether, 22 trawlers, 42 steam drifters, and 2 motor boats (the latter on behalf of fishermen) have been launched from the various yards. Trade in this connection continues brisk, and all the yards have plenty of work in hand.

The position of the fish buyers is somewhat similar to that of the trawl and line fishermen. They all acknowledge that they have had an exceptionally good year, with much less trouble and risk than in normal times. The demand for all kinds of fish was keen, and consigners had merely to forward at the controlled prices.

Great developments have taken place during the year in herring kippering, and there is a considerable increase in the number of curers who have taken part in placing upon the market herrings treated in this way. From the facts that the demand was always greater than the supply, and that merchants invariably obtained the controlled price, it may be concluded that all have had a good year. As few herrings were landed at Aberdeen, the supplies for kippering purposes were brought from fishing centres on the West and East Coasts and from Yarmouth.

In the case of fish-workers, the very fact that there was such a demand for hands is evidence that they have been exceptionally well paid both for normal hours and overtime.

Prior to the war, the Germans, owing to their superior vessels, had acquired almost a monopoly of providing cod, etc., for drying purposes, and it is to be hoped that our own fishermen will now keep that industry in their own hands and hold their own against all foreign competition.

Very considerable extensions are necessary before the various Trawling Companies can complete the programme which is no doubt being mapped out with regard to acquiring and repairing vessels for the Icelandic waters, whence the bulk of the cod was brought for curing and drying. A most important task is therefore before them, and with adequate funds it is hoped and believed that this branch will have every success.

The loss of life and fishing vessels was not so severe as in the previous year. Only 3 trawlers were sunk or otherwise lost, compared with 20 in 1917. The loss of life was also comparatively small, there being only 8 cases against 32 in the previous year.

WALTER DUFF,

Assistant Inspector of Sea Fisheries.

FISHERY OFFICE,

ABERDEEN, 21st January 1919.

Peterhead District.

As in the three previous years, fishing operations during 1918 were carried on under Admiralty restrictions. Only a small proportion of the men and means of capture belonging to the district were available for fishing purposes. A large number of the fishermen and shore-workers were in the service of the Admiralty, and the only fishing craft available for fishing purposes were those which were unsuitable for naval work.

The more enterprising of the fishermen commenced the year's work with the prosecution of the herring fishing on the west coast, where great success was attained. In all 39 steam drifters and 11 motor drifters from this district engaged at that fishing. Their earnings varied from £2000 to £7000 in the case of steamers, and from £1000 to £3000 in the case of motor boats.

At Peterhead the summer herring fishing was carried on by a fleet varying from 100 to 120 craft. Up to the middle of August very fair success was attained, considering the restricted fishing area which was available. The season practically ended at the close of August, the results during the latter half of the month being very disappointing. Steam drifters' earnings ranged from £1840 to £4160, motor drifters' from £1600 to £4400, and sailers' from £800 to £2150. One of the motor boats landed a take which realised £817 and constituted a record for the port.

High prices, varying from 30s. 6d. to 120s. per cran, prevailed throughout the season, the average being 84s. 8d. per cran, compared with 50s. 7d. in 1917.

The bulk of the catch was kippered and freshed. Extensive preparations were made for an increased kippering business, the number of kippering establishments at work being 40, or 13 more than in the previous year. When fully staffed and supplies were available, those establishments could kipper over 1000 crans per day.

Quite a number of kippering establishments were erected during the year, and at the same time considerable improvements and extensions of existing buildings were carried out. Smoke-houses which had been out of use for years were renovated and used.

During the early months of the year kippering firms drew supplies of herrings from the West Coast. In October and November regular supplies were brought by rail from Yarmouth and Lowestoft.

A new departure in the trade of the port of Peterhead was the importation of Norwegian fresh herrings in the months of February and March. In all 13 large cargoes were imported, and high prices were realised throughout. Considerable quantities were kippered locally, and curers from other districts also purchased for kippering, but a large proportion was bought for despatch to the southern markets in a fresh condition.

Forty steam and 16 motor drifters were fitted out for the East Anglian herring fishing. Notwithstanding the serious interruption which was caused by crews being incapacitated owing to influenza, which was very prevalent at the ports of Yarmouth and Lowestoft, a very successful season was experienced. Steam drifters had earnings of from £1050 to £5100, while motor vessels earned from £700 to £4200.

Towards the close of the year considerable quantities of white fish were landed at Peterhead by Admiralty trawlers. Their catches consisted of the usual mixed assortment of fish, principally cod, codling, haddock, whiting, plaice, dabs, gurnards, and skate. With the exception of gurnards and dabs, those fish were invariably disposed of at the maximum controlled prices, and were eagerly sought after by a large number of buyers.

Owing to the scarcity and high cost of all material used in the construction of whole and half pickle barrels and the paucity of coopers, few firms have produced barrels and half barrels during the year, and the output has in consequence been a meagre one. A large amount of machinery which is made use of in connection with barrel-making is at present practically idle.

The price of all classes of material required for the conduct of the industry has advanced to an abnormally high level, and were it not that the earnings of fishermen have been unprecedented, these prices would have been disastrous.

One of the Peterhead steam drifters earned about £16,000 for the year, having been engaged solely at herring fishing. That of itself constitutes one of the records of the district. At herring fishing one of the motor drifters earned about £11,000 for the whole year.

Curers and buyers belonging to the district have followed the herring fishings carried on at the more important stations in Scotland and England, and it can safely be said that the fishermen and buyers have in general had a very remunerative year.

In spite of all the war risks, no loss of life took place in connection with the industry, either at home or in other districts. When about completing the passage from Yarmouth, a motor drifter was wrecked at the south entrance of Peterhead harbour. This is the only loss which falls to be recorded for the year.

Throughout the year line fishing was prosecuted on the inshore grounds by the older class of fishermen, who were not required on herring

drifters. During the most favourable months of the year they were very successful, good takes of white fish being secured, for which very high prices were realised. The results were most satisfactory, and much in excess of the former year

JAMES RITCHIE,
Fishery Officer.

FISHERY OFFICE,
PETERHEAD, 6th January 1919.

Fraserburgh District.

The most remarkable features in connection with the fisheries of the district were the high earnings of fishermen and the success of the summer herring fishing, which as regards value was the best in the history of the port, notwithstanding all the restrictions and the limited areas in which fishing was allowed. There was also a great increase in the value of fishing vessels and all kinds of fishing gear, more especially when compared with the values which prevailed before the war.

The high earnings of the fishermen are evidenced by the fact that almost every dwelling-house which has been sold during the past two years has become the property of fishermen, at a considerably enhanced value.

The summer herring fishing began in the third week of May, when 48 vessels were employed, this number gradually increasing until the third week of July, when 348 vessels were fishing from the port. The fishing was fairly successful, but would have been much more so if it had not been for the restriction of the fishing areas and the insistence by the Admiralty authorities on the Fraserburgh and Peterhead fleets fishing as one fleet in the same restricted area, which was generally from 7 to 10 miles square. Fishermen complained throughout the season that the area selected was too far south, especially when it was found that fish were more plentiful in the northern part of the eastern area. The fishing was again carried on under the permit system, and in similar areas to the previous year. Early in the season, when the controlled price was introduced, a scheme of rationing was adopted, whereby each buyer got a portion of the catch in accordance with the number of his employees. The catch of 125,272 crans realised £481,309. Compared with the previous year, these figures show an increase of 3640 crans and £216,829. The average price per cran for steamers was 82s. 9d., for motor boats 78s. 9d., and for sail boats 63s. 9d. The latter were frequently later in arriving, and consequently failed to secure the higher prices which generally prevailed earlier in the day. The average price for the season's catch was 76s. 10d. per cran. On Thursday, 13th June, a strong gale from the N.W. sprang up suddenly after the fleet had shot their nets, and a considerable loss of fishing gear was sustained, practically every crew having their fishing gear more or less damaged. Fortunately there was no loss of life, vessels, or fishing gear through enemy submarines. Owing to the demand for fish in the home markets and the restrictions on curing and exporting there was a larger number of freshing and kippering firms engaged than in any former year. The quality was good throughout the season, and there was a keen demand, especially towards the end of the season, when, owing to the restrictions on fishing, the catch fell off considerably. Fully 81,000 crans were despatched from the district in a fresh or sprinkled condition, 30,468 crans were kippered, 5646 crans were tinned, and 1380 crans were made into reds. The Railway Company gave all possible facilities by providing a large

number of special trains to carry away such a huge quantity of food, and although there was some grumbling by consigners when a heavy day's fishing had to be despatched, the railway officials deserve credit for the facilities provided. All the home markets got a fair proportion of the catch, especially London, the Midlands of England, and Glasgow. It was quite common during the busy season for from 140 to 200 railway trucks to be loaded and despatched daily. During the season about 20,000 tons of herrings were despatched from the railway station in 8000 trucks.

Large quantities of mackerel and saithe were also caught during the herring fishing season, and for these good prices, frequently reaching the maximum controlled prices, were paid.

Line fishing was regularly carried on by 100 motor "Baldie" boats and yawls for about seven months of the year. These boats were manned chiefly by the older class of fishermen. As regards value, the line fishing was also the best in the history of the port, the quantity landed being almost double, and the value nearly three times as much as in the former year. The medium sized motor boats were again remarkably successful at line fishing, daily earnings of from £20 to £40 being of frequent occurrence.

Government mine sweepers with otter trawls on board landed 2939 cwts., valued at £9164, of trawled fish, mostly haddocks and plaice.

Boat-builders were kept busy at high wages throughout the year building and repairing vessels for the Government. Except during the herring fishing season, the cooper trade was dull throughout the year.

There was again a large increase in the number of motor boats, 39 additional vessels, most of which were of the largest size, having had motors installed. The number of motor boats registered in the district is now 151. At the end of the year there were about 20 large boats in the harbour whose crews have ordered motors waiting until they can be procured from the makers. The favourite engine is the "Kelvin," and twin engines of 30 h.p. with two propellers have been found most suitable.

Only a small quantity of saithe was cured dried. There was such a keen demand for fresh fish of all kinds in the home markets that it was found more profitable to despatch them at once. Herring curing was very much restricted owing to the controlled price, and only 7183 barrels were cured gutted and 12,876 uncut, a portion of the latter being intended for making "reds."

The fish offal produced locally was easily dealt with by the Company here. They have also extracted the oil from, and turned into manure, a large proportion of the Iceland cured herrings which have been stored here for several years.

Now that the war is over, fishermen and all others connected with the trade are looking forward to the time when the men and vessels that have been in Government employ will be released, and the restrictions on fishing removed, so that the industry may again resume its normal condition.

GEO. CORMACK,
Fishery Officer.

FISHERY OFFICE,
FRASERBURGH, 10th January 1919.

Banff District.

Notwithstanding the stringent nature of the naval restrictions at sea, the results of the district fisheries for the past year have been most gratify-

ing, and it is doubtful if the local fishermen ever had a more prosperous year.

A comparison of the returns of fish landed with those of the preceding year, which showed the best financial results for more than 20 years, shows a further increase of 24,176 cwts. in the quantity and £72,577, in the value of all fish landed.

Practically all kinds of fish contributed to this improvement, and it is interesting to note, in this respect, that the improvement from year to year in the catch and value of fish landed corresponds with the increase in the number of motor boats now operating from this district at line fishing.

The number and tonnage of motor boats in the "Means of Capture Returns" show a considerable increase over the figures of 1917, whilst the number and tonnage of sailing boats exhibit a corresponding decrease. This change was brought about by fishermen having motor power installed into their sail boats.

The radical transformation in this respect during the past few years will be apparent when it is stated that, in 1913, sailing boats landed more than four times the quantity landed by motor boats, whereas during the past year 86 per cent. of the catch and value of line-caught fish is credited to the latter craft.

There is every likelihood that all the first- and second-class sailing boats still in the district which are worth putting engines into will be fitted with motor power at an early date.

During the year 88 steam drifters and 5 large motor boats were in the employment of the Admiralty, but towards the end of the year, as the result of the armistice, fishermen and drifters were being released from Admiralty service, and will soon resume fishing operations again.

During the opening months of the year, cod net fishing received most attention. The number of boats which participated in this fishing was 47 (37 motor and 10 sail), compared with 67 (35 motor and 32 sail) in 1917.

The results obtained were decidedly good from the fishermen's point of view, for although the catch was considerably less than that landed by the larger fleet employed at this fishing during the preceding year, the value, owing to the abnormal prices being paid, was £2211 better.

The average price per cwt. paid for net-caught cod was £4, 18s., compared with 40s. in 1917 and 31s. in 1916.

Small line fishing, however, is by far the most important branch of the district fisheries, and accounted for 84 per cent. of the value of all fish landed during the year.

Compared with the returns for 1917, the results from line fishing show an improvement of 24,110 cwts. in the quantity, and £85,485 in the value, of fish landed.

For this welcome improvement part of the credit is due to the well-equipped motor fleet belonging to the district, and also to the fact that the fishing grounds in the Moray Firth have become more prolific during the enforced close time, haddocks, whiting, and codling having been more plentiful than they have been for many years.

The herring fishing opened on the 20th of May, and was carried on by a fleet of about 12 small motor boats and 10 sail boats until the third week in August.

Owing to the restricted fishing area and to the Admiralty orders controlling the movements of the fleet, the landings throughout the season were generally light.

The high prices, however, which were paid for herrings compensated fishermen for their light takes, and their average earnings for the short season were considered good.

The best week's fishing for the season was during the week ending 3rd August, when 536 crans of excellent quality were landed. For the season the total catch amounted to 3217 crans, valued at £11,867, compared with 2605 crans valued at £6197 in 1917.

Of the total catch, 2541 crans were converted into kippers and 575 crans freshed, only 125 barrels being cured gutted.

The bulk of the herrings kippered and freshed was consigned to London, Glasgow, and the Midlands, and as the returns were always good, kipperers and freshers had a very successful season.

The few barrels of herrings which were cured were soon disposed of in the locality.

The boat-building trade was brisk throughout the year, but owing to the builders at Banff and Macduff being busily employed on Admiralty work, refitting and building steam drifters, they were unable to undertake orders from fishermen.

From the building yards at Banff and Macduff, 8 new steam drifters were launched during the year for the Admiralty, whilst 2 motor boats of over 30-foot keel and 1 sail boat of 18-foot keel were built at Gardens-town for fishing purposes. Barrel-making, on the other hand, received little attention, and only one cooper was employed at this work for a part of the year.

Unfortunately, among the losses to be recorded for the year there is that of a steam drifter which, whilst engaged in fishing, was sunk by an enemy submarine, while one of the crew (a man belonging to Gardens-town) was killed by the explosion or by the enemy's gun-fire.

The loss of gear at the Scottish fishings was small, but the amount of netting lost by some of the motor boats which participated in the herring fishing at Yarmouth was above the average.

A. J. MUNRO,
Fishery Officer.

FISHERY OFFICE,
MACDUFF, 6th January 1919.

Buckie District.

The returns of fish landed show that the various fishings carried on within the limits of this district during the past year were attended with good results. The total landings show an increase of 11,643 cwts., while the value exceeds that of 1917 by £64,161. The increase is chiefly due to herrings, and codfish landed by nets.

It can hardly be said that the prosperity of the fishing community in the district is due to the success attending the local fishings, which are carried on generally by the older class of fishermen from the various creeks, the majority of the fishermen being employed at herring fishing for the greater part of the year on the East and West Coasts of Scotland, English and Isle of Man waters, where they have had a most prosperous year's work.

A considerable number of the district fishermen are still employed in Admiralty service.

The cod net fishing, which commenced in January, was taken part in by 4 steam, 31 motor, and 38 sail boats in the restricted area allowed them in the Moray Firth by the Admiralty, and was continued with good results until the close of March. The average price received for the fish landed was 97s. 11d. per cwt., compared with 41s. 11½d. in 1917, and the average earnings per boat £956, against £407 in the previous year.

The fish landed were all sent in a fresh state to the home markets, chiefly to London and Midland towns, the prices ruling being much too high for pickling or drying purposes during the whole season.

The herring fishing in home waters was taken part in by a fleet varying from 30 to 40 sail boats during June and July, and by local vessels coming home from other districts for week-ends. The total quantity of herrings landed in the district was 9111 crans, valued at £32,608. Compared with the previous year, the total catch shows an increase of 3370 crans in quantity, and in value of £19,607, or an average of 71s. 11d. per cran, as against 48s. 4d. per cran in 1917. The herrings were chiefly kippered and freshed and sent to the home markets.

At the close of the season at home 30 steam and 70 motor vessels fitted out for the English herring fishing at Yarmouth. The gross earnings of steam drifters employed there ranged from £3000 up to £6500, and of motor boats from £2000 to £2500. These vessels had also equal success in Scottish waters, and their aggregate gross earnings for herring fishing during the year would exceed £480,000.

The small line and hand-line fishings each received more than the usual amount of attention, and gave steady employment to the older class of fishermen who follow them in the spring and autumn months. The number of small boats employed was from 30 to 50, and their landings show a decrease in quantity compared with the preceding year, but an increase in value of £1916. The fish were generally sold at controlled prices, and the average price for the year was 52s. 1d. per cwt., as compared with 40s. 3½d. in 1917.

Barrel-making in the district was in abeyance, the coopers being employed chiefly in the kippering of herrings, despatching fish to market, and other work in connection with the trade.

Boat-builders were unusually busy during the year. Four steam vessels were launched, which were taken over by the Admiralty when completed, and a considerable amount of work was done in repairing and overhauling vessels in the Admiralty service, and in installing motor power in sailing boats. Motor engines were installed into 18 first-class sail boats, and orders are still uncompleted for other boats.

Unfortunately one sail boat when engaged at cod net fishing foundered with her crew of 8 men during a gale in February, and another boat was wrecked. The loss of fishing material was trifling.

A retrospect of the year closed reveals the fact that it has been the most remunerative on record for those who prosecuted the district fisheries, while those who prosecuted the herring fishings throughout the whole year from the various fishing stations around the coast were also exceedingly successful. The earnings of workers in other branches of the industry were equally remunerative.

JAMES STEWART,
Fishery Officer.

FISHERY OFFICE,
BUCKIE, 18th January 1919.

Findhorn District.

It is satisfactory to report that during the fourth year of war, when the food supply was of such vital importance, the yield of the district fisheries was more than double that of 1917, the actual increase in the quantity landed amounting to 72,540 cwts. The result was due to (1) the excellent results obtained at the small herring fishing at Inverness, (2) the

increase of 95 in the number of fishermen employed, and (3) the rapid installation of motor engines into fishing boats.

In common with other districts, an outstanding feature of the year was the abnormal prices prevailing for all kinds of fish, which resulted in remarkably high earnings for the fishermen and which are reflected in the total value of fish landed, which shows an increase of £131,092 as compared with 1917. This large increase would undoubtedly have been greater were it not for the action taken early in the year by the Ministry of Food in fixing maximum prices for fish.

The principal feature in connection with the means of capture was the large increase, amounting to 93 per cent., in the number of motor boats, chiefly of the second class, which are found most suitable for line fishing. Several orders were placed for motor engines for the large sailing boats, and were it not for the long delay experienced in getting these orders fulfilled the number equipped would have been considerably increased.

Fifty-four district crews prosecuted herring fishing for periods varying from a few weeks to nine months, the earnings from this source being fully £40,000 in excess of the amount earned during 1917. Operations were conducted chiefly at Fraserburgh during the summer season with considerable success, while the few steam drifters and large motor boats available also earned large sums at the West Coast, English, and Isle of Man fishings. The most successful crew earned upwards of £13,000 at herring fishing during the year.

During the early summer fair catches of herrings were obtained in the Moray Firth, and for a few weeks a number of the small motor boats were employed in drift net fishing, but as catches proved disappointing line fishing was resumed.

At Inverness herring fishing was prosecuted during the first two and last four months of the year with exceptional results, the increase as compared with 1917 amounting to 49,644 cwts. and £40,264 in quantity and value respectively. Over 40 crews from Avoch, Cromarty, Ardersier, and Nairn were employed, and earnings ranged from £1000 to £3000. Prices ranged mostly from £2 to £6 per cran, although for a short period during the autumn, when the English fishing yielded heavy supplies, prices at Inverness fell as low as 10s. per cran. Three-fourths of the catch were despatched to the principal English centres, while local requirements and tinning and other requirements from other districts absorbed the remainder.

Line fishing was vigorously prosecuted throughout the year by a fleet of from 80 to 100 boats, and accounted for an increase of 16,732 cwts. in the quantity landed as compared with 1917. While an increased number of men were employed, the rapid installation of motor engines into the boats employed materially affected landings, particularly from the distant grounds, which invariably yielded best results. Three-fourths of the line catch consisted of haddocks, and as showing how prices advanced it may be stated that the average price per cwt. for haddocks during 1918 was 56s. against 44s. in 1917. Increased attention was also devoted to great line fishing during the summer season by the motor boats, and good catches of cod, ling, skate, and halibut were landed.

Cod net fishing was prosecuted during the spring months by 9 motor and 12 sailing boats, and for a short period by 2 steam drifters, and although heavy catches were seldom secured, the abnormal prices prevailing, ranging as high as £23 per score, resulted in large earnings being made, ranging from £500 to £2000 per crew. Compared with the previous season, the results showed an increase of 2893 cwts. in quantity and £18,951 in value.

The few boat-builders in the district were kept fully employed, but the output of new craft only amounted to one steam drifter and seven motor boats, which were for local owners. Barrel-making was almost wholly suspended, and with the urgent demand for labour for war work operations at the Lossiemouth boat shelter were totally suspended early in the year. A large amount of work in connection with deepening remains yet to be accomplished, but this will be proceeded with as soon as demobilisation permits.

Unfortunately 5 lives were lost in connection with fishing as a result of a motor boat employed in cod net fishing being run down and sunk by a destroyer. One of the local steam drifters employed in Admiralty service was also sunk, but fortunately all the crew were saved.

WILLIAM SINCLAIR,
Fishery Officer.

FISHERY OFFICE,
LOSSIEMOUTH, 13th January 1919.

Cromarty District.

During the year under review the fisheries of this district were prosecuted by a slightly increased number of men as compared with the previous year, and while line fishing showed improved results and yielded substantial earnings to those engaged, the fishermen who prosecuted drift net fishing in the Inverness and Beaulie Firths were exceptionally fortunate and secured record earnings. Encouraged by the high earnings secured at this fishing during the closing months of 1917, operations were continued by 20 Avoch crews during January, February, and part of March with good results, prices ranging up to £7 per cran. Operations were again resumed early in September, and the number of Avoch crews employed gradually rose to 30. Good catches were steadily obtained up to the close of the year, and, except for a short period during the progress of the English fishing, when prices fell to 10s. per cran, a good demand prevailed, and the general range of prices was from £2 to £6 6s. per cran. The best results were obtained in December, when the average earnings of these second-class boats amounted to £700.

Six first-class sailing boats were fitted out for the summer herring fishing, and prosecuted operations for a short period on the West Coast and afterwards at Fraserburgh with good results, the average earnings amounting to £1200 per crew.

At the close of the herring fishing in the Inverness Firth in March several crews prosecuted cod net fishing in the Moray Firth for a few weeks and landed fair catches, chiefly at Portmahomack.

Line fishing results were slightly improved as compared with 1917, the quantity and value showing an increase of 1584 cwts. and £8628 respectively. Plaice were found to be scarcer than during the previous year, and increased attention was consequently devoted to haddock fishing, which accounted for nearly 80 per cent. of line fish landings. The proportion of small haddocks landed was considerably less than during the previous year, and prices showed a marked advance, the average price per cwt. of haddocks being 14s. above that of 1917.

The Means of Capture Returns show a further decrease in the number of boats, chiefly of the larger classes. The majority of the large-sized sailing boats have been laid up since the outbreak of war, and have consequently deteriorated to a considerable extent. Three small boats were fitted with

motor power during the year, and it is expected that several of the larger boats will shortly be similarly equipped.

There was a considerable increase in the output of mussels, particularly from the Tarlogie beds, and during the year a number of boat loads were taken to adjoining districts.

Fortunately there was no life lost during the year in connection with fishing, and the damage to boats and loss of fishing gear were not excessive.

WILLIAM SINCLAIR,
Fishery Officer.

FISHERY OFFICE,
LOSSIEMOUTH, 14th January 1919.

Helmsdale District.

During the year 1918 the number of motor boats belonging to owners in Helmsdale district was increased by 10, bringing the total for the district up to 25 vessels valued at £6950, as compared with 4 vessels valued at £1398 in the year 1914. The additional motor boats were made up of 1 large herring boat, 8 line boats of 22 to 30 feet keel, and 1 boat under 18 feet of keel. Six were purchased by the fishermen from owners in other districts, and 4 engines were installed in locally owned boats. The returns for the year 1918 show a falling off in the number of sail boats, due principally to the fishermen having sold, or installed motors in them.

There were employed in the fisheries of Helmsdale district in the year 1918, 25 motor and 35 sail line boats, manned by 195 fishermen and boys. Haddock, or small line fishing, was the principal branch of the fisheries engaged in, and this species accounted for 72 per cent. of the total quantity of fish landed within the district. Exclusive of shell-fish, the total quantity of fish landed was 28,140 cwts. and the total value £68,999—an increase as compared with the returns for 1917 of 8681 cwts. in the quantity and £35,192 in the value.

These results give high average earnings to the fishermen employed, but it must be remembered that when engaged at the haddock fishing the fisherman has to be assisted by one or two persons (in accordance with the number of lines he is using) who are employed ashore gathering bait and baiting and preparing the lines for the following day's fishing. This assistance is usually given by the fisherman's wife and daughters, but if he had to employ others to carry out this necessary part of the business his earnings would be greatly reduced.

Owing to the geographical situation of the district of Helmsdale, which lies well inside the line of traffic between Scapa Flow and the Naval Base at Cromarty, it was possible while the war was in progress to permit of fishing being carried on within a wide area off the coasts of this district. The permits held by the fishermen authorised them to fish within 8 miles off the coast from Dunbeath to Tarbet Ness. With the aid of motor boats, they were able to fish that area more thoroughly and with greater regularity than could have been possible with sail boats. The landings from motor boats accounted for 68 per cent. of the total quantity of fish landed, and the great success which attended the prosecution of the haddock fishing in the year 1918 was due, not only to the high prices received for the fish, but also to the enterprise and energy of the crews which manned these vessels.

Of the district fishermen, those belonging to Helmsdale possessed

the largest number of motor boats, and consequently they secured the lion's share of the total, £30,351, or 44 per cent. of the total value of all fish landed within the district, being attributable to these vessels.

The total quantity of fish landed in the district from line boats was 24,337 cwts. and the total value £57,556, as against 23,819 cwts. and £33,937 in the year 1917. As is usual, the principal kinds of fish caught by lines were cod and codling, haddock, and plaice. The average prices received per cwt. for the different kinds were, cod and codling 43s. 3½d., haddock 46s. 7½d., and plaice 112s. 1d., compared with 28s. 2d., 36s. 9½d., and 50s. respectively in the year 1917.

From February to April, 13 small motor and 9 small sail boats were employed for 10 weeks at cod net fishing from Golspie, Brora, Helmsdale, and Dunbeath. For the second year in succession this fishing was greatly hindered by stormy weather. Cod were fairly plentiful, however, and when able to haul the nets the crews usually secured good average catches. That, together with the high prices ruling for fish, insured very satisfactory earnings. The average gross earnings of the crews of the motor boats for the ten weeks fishing was £555, and those of the sail boats £445. The average price received by the fishermen for net-caught cod was 61s. per cwt., as against 27s. 8½d. per cwt. in the preceding year.

Occasional trials at inshore herring fishing were made from Dunbeath by the crews of several small boats. These were unsuccessful and yielded only 52 crans, which were landed at Dunbeath. No other landings of herrings were made within the district.

A large motor boat manned by a Dunbeath crew engaged in the summer herring fishing at Wick, with satisfactory results.

Except for a comparatively small quantity which was consumed locally, all the fish landed within the district were despatched fresh to the southern markets.

The total value of the district shell-fisheries was £323—chiefly referable to mussels, cockles, and wilks gathered at Little Ferry. Crab and lobster fishing was almost entirely neglected, probably because the fishermen grudged baiting the creels with high-priced fish.

During the year satisfactory progress was made with the repair and improvement of the pier at Golspie. This work was arranged for by the County Council of Sutherlandshire. The pier has been thoroughly repaired, and 30 feet have been added to the arm which extends from the point in a S.S.W. direction. The inside of the pier, which is built of wood, has been filled up with stones, giving it greater strength and stability and also sheltering the harbour from S.E. storms. Formerly during these storms the waves passing under the pier created motion in the basin of the harbour. The fishermen have now arranged for the arm of the pier being extended other 10 feet, and this work is to be carried out early in the year 1919. Altogether, including the further extension, the work will cost about £1000, and when completed the fishermen of Golspie will have a well-sheltered harbour and will be able to further increase their fleet of motor line boats.

In August 3 fishermen belonging to Golspie were unfortunately drowned in Muckle Ferry. They were returning home with a cargo of mussels when their small yawl struck a sand bank, and turning over threw the crew into the sea. One man was saved.

ALEXANDER WOOD,
Fishery Officer.

FISHERY OFFICE,

WICK, *March* 1919.

Lybster District.

During the year 1918 the fishermen resident in the district of Lybster were employed at small line, hand line, and occasionally, during the summer months, at drift net fishing. These fisheries were all carried on in the inshore waters off the coasts of the district, and in their prosecution only small boats, mostly sail boats under 18 feet of keel, were used.

Although the fishing areas available for the fishermen in the year 1918 were very limited, the restrictions on fishing off the coast of Lybster district were not so great as in the previous year. Haddock and codling fishing were regularly carried on from Lybster, and the landings at that creek account for 73.5 per cent. of the total quantity and 86 per cent. of the total value of fish landed in the district in the year 1918.

The total quantity of fish landed within the district of Lybster in the year 1918 was 3226 cwts., and the value £7399, an increase of 256 cwts. and £3674 as compared with the results obtained in the year 1917.

Haddock and codling were the principal kinds of fish landed from the line boats, and these species accounted for 76 per cent. and 85 per cent. respectively of the total quantity and value of fish landed during the year.

From each of the creeks of the district during the summer months a number of crews occasionally tried the inshore herring fishing in their small boats. In August as many as 16 boats were employed irregularly at this fishing. Herrings, however, continued scarce throughout the summer, and the total quantity landed in the district amounted to only 202 crans. Of the total catch, 60 crans were cured gutted by the fishermen, and the remainder was railed to Wick and sold at the fish market there.

Although the fisheries of Lybster district were not very productive in the year 1918, the earnings of the fishermen were, as a general rule, very satisfactory, owing to the high prices received for fish.

The average prices received for the principal kinds were, herrings 28s. 5½d., codling 50s. 5d., and haddock 53s. 10½d. per cwt., as against 15s. 2d., 26s. 1d., and 32s. 6½d. per cwt. respectively in the year 1917.

The Means of Capture Returns for Lybster district show, as compared with those of the previous year, an increase of 2 in the number of motor boats (2 engines having been installed into small line boats), and a falling off of 5 in the number of sail boats, chiefly the result of boats having been sold from the district.

ALEXANDER WOOD,
Fishery Officer.

FISHERY OFFICE,
WICK, March 1919.

Wick District.

The most outstanding features in the annual returns of Wick district for the year 1918 are a considerable increase, as compared with the figures for 1917, in the number of motor boats, and the high value of the fish landed. The total quantity of fish landed was 58,988 cwts. and the total value £134,346, an increase of 20,746 cwts. and £80,905 as compared with the results obtained in the preceding year. Of the total quantity and value of fish landed, motor boats accounted for 75 per cent. and 77 per cent. respectively.

During the year there was a keen demand for motor boats, and altogether 31 motor engines were installed, chiefly into locally owned sail boats. Makers, in a number of cases, booked orders for engines, but were unable to promise delivery until the following year. The engines

installed were of all sizes, from 7 h.p. to 80 h.p., and of various makes, including "Invincible," "Beardmore," "Gardner," "Gleniffer," "Parsons," "Kelvin," and others. As compared with the year 1917, the Means of Capture Returns show an increase of 26 in the number of motor boats, viz. 10 large herring boats, 2 of the first class (30 to 45 feet keel), 12 of the second class, and 2 of the third class. Two motor boats of the largest size were sold to owners in other districts, and 3 motor line boats were lost. During the progress of the war the number of motor boats accredited to Wick district increased from 56 vessels valued at £15,655 in the year 1914, to 94 vessels valued at £63,210 in the year 1918. In the number of sail boats the returns for 1918 show a falling off of 37, due principally to the installation of motors into these vessels.

Line fishing (principally hand line) was the most important of the fisheries carried on in local waters in the year 1918, and this branch furnished remunerative employment throughout the whole year to a considerable number of the fishermen. It accounted for 45 per cent. of the total quantity of fish landed within the district, and 49·5 per cent. of the total value. Cod and codling made up 76 per cent. of the total quantity landed from line boats, the remainder being principally haddock, saithe, skate, and halibut. As compared with 1917, the returns of line-caught fish show an increase of 2704 cwts. in the quantity and £32,534 in the value. The increase in the quantity was the result of a more general use of motor line boats, the high prices which ruled in 1918 accounting for the great increase in the value.

Cod net fishing commenced in the Moray Firth early in January. Few landings were made at Wick during that month owing to stormy weather, which hindered fishing operations, and heavy falls of snow, which delayed the transportation of fish to the southern markets. By the first week of February the fishing was in full swing, and proved a most successful one for the fishermen engaged. Only 8 motor boats and 2 sail boats manned by Wick crews participated in the cod net fishing, and their earnings were in each case very satisfactory. Those of the motor boats varied from £1356 to £5230, the average gross earnings of the sail boats being £702. The total quantity of net-caught cod landed at Wick (of which 55 per cent. was landed from stranger boats) amounted to 13,059 cwts., valued at £44,445, as against 9815 cwts. valued at £15,515 in the year 1917.

In the summer an area in the Moray Firth was opened for drift net fishing, and for the first time since 1914 large boats were permitted to carry on herring fishing from Wick. A fleet composed of 1 steam drifter, 9 motor boats, and 2 sail boats, manned by local crews, commenced operations in this area early in July. These crews also held permits for areas on the south side of the Firth, and occasionally landed their catches at Fraserburgh. The fishing did not prove a productive one, and the catches of the crews engaged were throughout the season light and disappointing. The total quantity landed at Wick amounted to only 4228 crans, which included occasional shots landed by stranger boats and the landings of a few small local motor boats which for a time during August and September fished with little success in the inshore waters between Clythness and Dunbeath. Although as regards the catch the fishing left much to be desired, the gross earnings of the crews employed, owing to the high prices they received, were by no means unsatisfactory. They varied from £884 to £3402, the average being £1515.

With the exception of 384 barrels which were cured gutted and disposed of within the district, and 292 crans which were used in a fresh state, all the herrings landed in Wick district during the year were kip-

pered in the kippering establishments at Wick, as also were 1749 crans which were received by rail from other ports. In these establishments during the first quarter of the year 12,025 barrels of Norwegian cured herrings belonging to the Government were converted into reds. In August those reds were exported to London for transhipment to their destination.

The value of the shell-fisheries was £4663, an increase of £2152 on the results obtained in 1917. The increase was in lobsters, which in 1918 were more plentiful and higher priced than in the previous year. Usually the crabs given in the returns for Wick district are landed chiefly by the fishermen of Keiss, who in 1918 gave little attention to this branch of the fisheries, and thus there was a considerable falling off in the quantity and value of these shell-fish.

Practically all the fish (other than herrings) landed in the district in the year 1918 were despatched fresh to the southern markets, as also was the great bulk of the herrings kippered. London was the principal market.

During the year a number of Wick crews engaged in herring fishing on the West Coast and also at England. From January to March, 1 steam drifter was employed for 10 weeks at the herring fishing at Stornoway, during which period her gross earnings amounted to £4,453. The gross earnings of 6 motor boats and 1 steam drifter for 5 weeks from May to June at the West Coast herring fishing ranged from £560 to £1300. At the late autumn herring fishing at Stornoway 7 motor boats met with varying success. Their gross earnings ranged from £85 to £1275, the average being £605. Five motor boats took part in the English herring fishing, where their gross earnings ranged from £1600 to £3906. At the English herring fishing a steam drifter belonging to Wick owners, but manned by an English crew, for 10 weeks fishing landed at Yarmouth a total catch of 2070 crans. The gross earnings of this crew amounted to £9371, which was probably the record for the season.

There was a regrettable loss of life in connection with the fisheries during the year. In August a number of small fishing boats employed at herring fishing off the North Coast were caught in a severe storm. Two of the boats were driven ashore and their occupants, 7 men belonging to Portskerra, were drowned. In October, when returning home to Stroma after landing a catch of fish at Wick, a small motor boat encountered stormy weather in the Pentland Firth and was swamped and her crew of 3 men drowned.

In April a Wick steam drifter in the Admiralty service was lost through colliding with another vessel in the Firth of Forth. Her crew was saved.

The following statement shows for the years 1914 to 1918 the average prices received by the fishermen for the principal kinds of fish landed in Wick district, and to what extent prices were affected by the war.

Year.	Herrings. per cwt.	Cod and Codlings. per cwt.	Haddocks. per cwt.
1918	25s.	58s. 4d.	40s. 8d.
1917	16s. 10½d.	29s. 4½d.	27s. 8½d.
1916	14s. 2d.	14s. 11¾d.	11s. 2d.
1915	8s. 9½d.	10s. 5¾d.	8s. 5¼d.
1914	6s. 0¾d.	7s. 6¼d.	7s. 7¼d.

ALEXANDER WOOD,
Fishery Officer.

FISHERY OFFICE,
WICK, March 1919.

Orkney District.

The unavoidable restrictions which had such a serious effect on the fisheries of the Orkney district during the first three years of the war were maintained throughout 1918, with the same adverse effect, and the value of all fish landed, though slightly better than in the previous year, only amounted to about 10 per cent. of the average value of fish landed in normal years.

The enforced suspension of the herring fishing is entirely responsible for the great shrinkage.

In normal years the herring fishery in the Orkney waters was of considerable importance and accounted for about 90 per cent. of the quantity and value of all fish landed, whereas under present conditions no herrings are being landed.

The only branches of the industry which were prosecuted during the year were line and lobster fishing, and from certain creeks the restrictions were so rigid that even these branches had to be suspended.

When boats were at sea, the results obtained from line fishing were generally good, considering the fact that the fishing grounds were limited to within 2 miles from land. Most of the boats, however, were generally manned by crofters, old men and boys, who only went to the fishing when they were not employed on the land; consequently the fishing was only prosecuted in a desultory manner.

The few crews who prosecuted the fishing regularly did very well, and the results from this branch of the industry exceed those of the previous year by 1763 cwts. in the quantity and £4857 in value.

The demand for white fish was always good, and in addition to those landed by district fishermen, supplies had to be brought into the district from Shetland, Aberdeen, and other places in order to supply the demands of the Navy.

The lobster fishing, on the other hand, yielded poorer results than in 1917; not, however, because the grounds were less prolific, but owing to a number of the crofter fishermen being called up for active service, so that fewer crews participated in this fishing than during the preceding year.

Those who did operate met with much better results than usual, securing better takes of lobsters and receiving better prices.

During the year prices for lobsters ranged from 10d. to 2s. 8d. each, whilst the average price was 1s. 8d., compared with 1s. 6d. in 1917 and 1s. 2d. in 1916.

Owing to the local herring fishing fleet having been composed entirely of sail boats unsuitable for Admiralty service, and to the majority of those who formed their crews being in the navy, most of the boats have been lying idle since the outbreak of the war.

The high prices offered by Moray Firth and other fishermen for herring fishing sail boats in order to have them installed with motor engines during induced a number of the Orkney fishermen to sell their boats, and have the year 14 first-class boats were disposed of along with the fishing gear, the means of capture for the district being thus considerably reduced.

Only one boat belonging to the district was fitted out for the herring fishing during the year. This boat operated from Peterhead, Fraserburgh, and Wick during the great summer herring fishing, and the gross earnings amounted to over £1000.

Boat-builders were busily employed throughout the year on Admiralty work, and were unable to accept any orders for fishing boats; consequently none was built.

There were no lives lost during the year in connection with the fisheries and very little damage done to boats or gear.

A. J. MUNRO,
Fishery Officer.

FISHERY OFFICE,

6th January 1919.

Shetland District.

The effects of war-time conditions on the chief Shetland fishery were more apparent in 1918 than in any other year since the outbreak of hostilities.

The presence of enemy submarines on the northern grounds off Flugga prevented fishermen from attempting herring fishing there in winter, and March was well advanced before these grounds were visited, and then by only a few crews.

The situation regarding the disposal of the summer pickled herrings was so uncertain that preparations for curing, even by resident curers, were on a very limited scale. Fishermen, however, hoped that, in view of the shortage of food stuffs, facilities would be provided for sending an appreciable part of the catch to market in a sprinkled state. With that in prospect, efforts were made to fit out as many boats as possible in May, and in all 74 vessels were at work early in June. Herrings were very abundant both on the Lerwick and Scalloway grounds, but it was soon discovered that the comparatively small fleet of local boats would land more herrings than were likely to be conveniently dealt with. Kipperers bought as many herrings as they could deal with from day to day, but as they could only absorb on an average from 120 to 180 crans per day, and freshing facilities were inadequate and often lacking, great difficulty was experienced in getting the bulk of the catch disposed of. In June the climax was reached when, on two successive days at Lerwick and Scalloway, a number of crews with heavy takes could not get their fish disposed of and had to throw them overboard. The quantity thus lost amounted to over 2000 crans. The herrings were prime large and medium matjes rich in fat, but owing to the delicate nature of the fish and the uncertainty of finding a market for them in a cured state, curers were not disposed to risk much capital in the business. The unfortunate turn of events had a depressing effect on fishermen, and the majority of the crews decided to remain ashore for a period, while the Scalloway motor boat crews abandoned operations and fitted out their boats for great line fishing. The transport arrangements were a worry to all concerned, and at the height of the season the intervals between the sailings south frequently extended to a week. Consignments of kippers often deteriorated waiting shipment and in course of transit to market, and quantities were condemned on arrival or sold at greatly reduced rates. Of the total catch of 27,900 crans, 10,288 crans were kippered and 3217 crans freshed. About 7000 barrels were cured ungutted, the greater part of which was afterwards smoked and sold in home markets. A larger proportion would have been packed ungutted, but for the fact that the June and early July herrings were so rich in fat and tender that curers anticipated they would not stand soaking for conversion into reds, and subsequent experience proved that they were right. Over 1000 barrels of these fat herrings remained on hand at the close of the year.

Early in May fresh herrings realised from 24s. to 67s. per cran, and as high as 144s. per cran on one occasion. As the fleet increased and supplies

became heavier in June, prices fell to a figure as low as 5s. per cran, and remained at 5s. to 27s. per cran for three weeks.

Fortunately for curers, the United States Government decided to allow cured herrings to be imported into that country in August, and curers were able to dispose of the greater part of their cured gutted herrings at prices which left a fair margin of profit. Coincident with the removal of the embargo, the shoals of herrings disappeared from the coast, and prices of fresh herrings advanced to 40s. per cran and centred round that figure, gradually advancing till at the end of the season, in September, 126s. was reached.

Sailing boats grossed generally from £300 to £600, while one crew earned £1400. One steam drifter had £3500, and the most successful motor boat had £2850 at the summer fishing. The unexpected disappearance of the shoals early in autumn was a great disappointment to the crews of sail boats, largely composed of crofter fishermen, who hoped to profit by the advance in the prices offered for fresh herrings at that time. The earnings did not fully compensate them for the comparatively high outlay incurred in fitting out their boats for herring fishing.

Fishermen who prosecuted line fishing throughout the year had higher earnings than ever before in their experience. Halibut fishing alone, which was resorted to by Scalloway and Burra Isle motor crews chiefly, brought the men engaged £15,425. In 1917 the value of halibut landed in the district was £825. Haddock fishing was also very remunerative to the crews of both motor and sail boats. The quantity of haddocks landed was similar to the catch of the preceding year, but £12,231 more were realised for the produce. The greater part of the halibut and haddock catch was sent gutted and iced to Aberdeen, where maximum prices were generally secured.

Fisher girls who usually found employment as gutters and packers and were not engaged in that capacity in 1918 turned their attention to the knitting of woollen goods, which brought an ample livelihood.

The most noteworthy fact in connection with the fisheries was again the success of second-class motor boats at line fishing, resulting in a further increase in the number of these boats. Line fishing was chiefly concentrated at Lerwick and Scalloway, and the majority of the regular fishermen at both places now have motor engines installed in their boats.

ALEX. E. M'KENZIE,
Fishery Officer.

FISHERY OFFICE,
LERWICK, 10th January 1919.

Stornoway District.

The year's fishing operations were conducted on the usual lines, drift-netting for herrings taking the leading place. Great and small line fishings were engaged in, but only in a desultory fashion, while there was nothing calling for special mention regarding the operations of the lobster crews.

The waters in which the fleet was permitted to work were prescribed by Admiralty Orders, and were the same as in 1917.

There is not much material change in the catching power of the district fleet. Two first-class and one second-class motor boats were sold to ports outside the district, while against this two first- and four second-class old sail boats got motors installed. The engines of the former are called the "Clyde" and cost £1000 each, while those of the latter are known as the "Kelvin," and the price paid was £163 each. There is, however, a

very considerable increase in the values of steam drifters and motor boats and their gear due to the abnormal prices which prevailed for all kinds of material used in connection with the fisheries, as well as to the opportunities created by the war for mechanically driven craft to earn twice or thrice the normal amount in a season. These high values are not expected to continue very long at their present level, and with less strenuous times vessels and material will probably be obtainable at less inflated prices.

The winter herring season proper began about the middle of January, although a number of boats were operating at the end of the preceding year. A special recommendation was issued to the fishermen to continue fishing until the middle of March, so as to produce as much food for the country as possible. But certain circumstances militated against this injunction being fully carried out. The fleet was composed mostly of stranger third-rate craft, and defects developed in their engines and hulls. Added to this, many of the crews had secured excellent results, the quality of the fish was deteriorating, prices were falling, and the men became restive, desiring to go home for repairs or to fit out for other fishings, and although a number of boats continued working till the close of March about half the fleet had left the district by the 9th of the month. The catch for the season is short of the quantity landed during the corresponding period of the preceding year by 25,051 crans, but the fishermen were more than compensated for this deficiency by the higher values obtained, the increase amounting to no less than £84,486. Several of the steam drifters earned as much as £7000 each, while on the other hand it is known that one boat cleared expenses only. The general run of earnings was from £1500 to £4000. Stormy weather prevented the motor craft from being at sea as regularly as the drifters, consequently their earnings were not so good. But if their earnings were less, so were their expenses. These craft earned from £1100 to £3000.

In pre-war times the bulk of the catch was cured pickled for export, but since limitations were put upon this avenue of disposal the herrings were kippered, freshed, and cured ungutted for reds, being more acceptable in these forms by the home consumer. The quantities dealt with in this way were unprecedentedly large. Special steamers were provided for the transport of the goods to the railway termini, but not infrequently the railways were unable to cope with the traffic as expeditiously as could be wished because of insufficient labour and rolling stock. On one or two occasions the capacity of the carrying steamers available was inadequate, with the regrettable result that the fish had to remain at the port of landing for several days before being shipped, and consequently fish lightly sprinkled or not sprinkled at all arrived tin market in faulty condition, loss to the shipper and disappointment to the consumer being thereby entailed. Notwithstanding these mishaps, it is remarkable how few consignments were spoiled. Packages, however, often went amissing, some being delivered to wrong salesmen and others going to towns other than those to which they were consigned, while in some instances no trace of the fish could be found after being discharged from the carriers. There is little doubt that these occurrences were partly due to negligent labelling by the senders and pressure on the railways.

For several years past no voluntary close time has been observed, and no objections were raised against the landing of herrings caught between the dates of 10th April and 10th May. During this period practically all the boats were undergoing overhaul preparatory to commencing the summer herring fishing, but notwithstanding this an occasional boat or two went to sea now and again, and 343 crans were landed, which were all kippered and despatched to the English markets.

With the exception of a few stranger boats which called at the port occasionally, the summer fleet consisted principally of sailing craft belonging to the district. An extra good season was experienced, the returns from April to September showing increases in catch and value of 4307 crans and £34,946. The most successful sail boat earned £1188, while the average earnings were about £700.

Two local drifters earned for the whole year fully £9000 each. The motor boats were working irregularly in some cases owing to engine defects. Others were sold outside the district after working part of the year, and new engines were installed in some old craft towards the close of the summer fishing proper. At the same time they did exceedingly well.

Most of the catch was kippered. Comparatively few barrels were cured gutted, while freshing was out of the question owing to the perishable nature of the herrings, the season of the year, and the distance from the consuming centres. The gutted herrings were disposed of in Glasgow, London, and America.

Although there was never an entire lack of packages these necessities were sometimes scarce, and all sorts of receptacles, such as biscuit and flour barrels, were requisitioned. Sawdust and chips for smoking purposes, too, were often difficult to obtain, but the kipperers, by borrowing and lending one to another as circumstances permitted, kept operations going fairly well, few of the firms having any idle time through lack of supplies.

About the middle of August the local coopers applied for a rise of 10s. per week in wages. The employers refused to concede the demand. But after the men had been a week or so on strike a proposal was made to them that if they went back to work the increase asked for would be granted them as from the start of the winter fishing. On these terms the men went back to work, and they now have the same wages as the East Coast coopers, namely 65s. per week. There is only one apprentice cooper in Stornoway, most of the others being journeymen of mature age. Barrel-making was almost non-existent, the men being engaged about the kipper houses, on the quays dealing with "fresh," and repairing returned empties, most of which arrived back—when they came back at all—in a dilapidated condition. It was found cheaper and more convenient to purchase packages from the barrel factories on the East Coast than to import wood and make them here.

Never in the history of the district fisheries has so much money been turned over. Fishermen were very successful, while freshers and kipperers reaped a rich harvest, as prices for fresh herring seldom touched the control price—indeed they were very often not much more than half that amount—whereas the returns from the English and other markets were almost invariably maximum prices. Expenses in connection with each branch of the industry were certainly heavy, but the margin of profit left to the operators was highly satisfactory.

Wharfage for the delivery of fish from the fleet, and for shipment by the carriers, was cramped owing to so much quay space being occupied by Admiralty vessels. More accommodation, however, is expected to be available for year 1919, as the number of naval craft is gradually getting less. The lack of proper repair shops was greatly felt, facilities for dealing with minor defects only being available at the port, and not enough of these. But in the near future this drawback is likely to be remedied, as will be seen farther on.

Lord Leverhulme, who recently purchased the Lews, has several schemes on the tapis for the amelioration of the economic position of its people. Amongst these are the manufacture of guano and other products from fish offal. He has already purchased the Fraserburgh Guano Coy.'s premises here. A fish canning establishment is to be set up, and a

company has been formed with a capital of £200,000. Preparations for landing the machinery, &c., have already begun. His Lordship has also formed another company, with a capital of half a million, to purchase trawlers, liners, and drifters, so that the preserving works will not be dependent on casual landings, but will have an independent supply of their own. An ice factory is also to be built. Stores containing goods of all kinds are to be opened for supplying the work people, fishermen, and others with all requirements. One of the tweed mills has been purchased for, it is said, £14,000. It was desired to take over another tweed mill, together with the only boat-repairing slip in Stornoway, but his Lordship failed to negotiate the bargain, the owner not being disposed to sell at the terms offered. The Lewis people were allotted, approximately, 29,000 £1 shares in the companies. Some applicants were disappointed in not getting the full number allotted to them for which they applied. No prospectus was issued in connection with either company.

Other schemes are contemplated, such as the extension of the existing piers, and the building of new ones capable of accommodating the largest sized cargo vessels. It is also proposed to build harbours at Carloway, Port of Ness, Skigersta, and Portnaguran, linking up these places by railway with Stornoway. It is understood that Lord Leverhulme intends making application to the Development Commissioners for a loan free of interest, so as to enable him to carry out the proposals. Lord Leverhulme believes that the solution of the Lewis problem lies in industrialism as opposed to crofting. And it is presumed that by putting these schemes into operation he expects that in time the people will leave their patches of land, from which only a bare existence is obtained, to become all-the-year-round fishermen or workers in the factories which he is prepared to institute for them. If many of the Lewis people are of the opinion of a man who applied the other day for release from service, it is to be feared his Lordship will find the present generation hard to bring round to his views. The applicant stated that he was drawing for himself, his wife and family nearly £20 per month, but he would much rather do without the money so long as he was his own master. He could do what he liked at home, but he could not do that in the Navy, and no amount of money would induce him to give up his independence.

Four lives were lost in connection with the fisheries, 3 through the swamping of a small craft at the mouth of Loch Gravir, and the fourth through a man being knocked overboard by sail at the entrance to Stornoway harbour.

W. M. WARES,
Fishery Officer.

FISHERY OFFICE,
STORNOWAY, 16th January 1919.

Barra District.

The fisheries of Barra district for the year 1918 show a decline from the results of the previous year. This decline may be accounted for by the restrictions on the export of cured herrings, which tended to discourage East Coast boats from fishing from Castlebay and also led the best of the local crews to fish from Mallaig, where better prices could be obtained for their catches. The aggregate results for the year amounted to 15,896 cwts., valued at £9700, exclusive of shell-fish, compared with 19,980 cwts. valued at £9485 for the year 1917.

In the Means of Capture Returns the motor fleet shows an increase of 7 boats, while the number of sailers is reduced from 295 to 277.

The winter herring fishing was carried on from the end of January to the middle of March, chiefly from Castlebay and Lochboisdale, by a fleet of 6 motor boats and 25 sailers. The weather was stormy, and fishing operations were thereby greatly hampered. The Castlebay fleet worked from Muldoanich to Barra Head, and the Lochboisdale fleet off Ushinish and in Loch Eynort. Catches ranged from 40 crans downwards. The quality was good, and prices ranged from 20s. to 61s. per cran. Herrings were found in Loch Skipport and Loch Carnan during the months of January and February, and a number of small open boats made a successful fishing in these lochs. The herrings were disposed of by carrying steamers from Mallaig at prices ranging from 40s. to 50s. per cran. The winter fishing closed with a total of 1727 crans valued at £3960. Of the catch, 718 barrels were cured gutted, 406 barrels cured uncutted, and 851 crans freshed, the last being chiefly bought by carrying steamers.

The early summer herring fishing commenced about the end of April, but little was done until the end of May. The fleet consisted of 11 local motor boats and 16 sailers. Herrings were found fairly plentiful from Ushinish to Barra Head, but the motor boats with the best catches invariably proceeded to Mallaig, where prices ranging from 40s. to 70s. in excess of the price paid at Castlebay or Lochboisdale could be obtained.

The quality of the herrings was rather poor at the commencement of the season, but improved as the season advanced. Prices ranged from 12s. to 60s. per cran. The season closed about the 1st of August with a catch of 1636 crans valued at £3264. Of the catch, 1156 barrels were cured gutted, 26 barrels were cured uncutted, and 754 crans carried away in a fresh state, chiefly by carrying steamers, to Mallaig and Oban. The earnings of boats fishing from Castlebay and Lochboisdale ranged from £500 downwards for motor boats and £200 for sailers. The few motor boats that worked from Mallaig earned for the year from £500 to £950.

Line fishing is very much neglected by the fishermen of this district. A few boats—chiefly motor—were fitted out for great line fishing, but landed their catches at Mallaig. Several sail boats made a slight attempt to work great lines and landed a few small shots at Eriskay, where the fish were cured dried. The total quantity of line fish landed amounted to 2478 cwts., valued at £1894.

Lobster fishing was carried on at most of the creeks throughout the district. The total number of lobsters landed for the year was 52,788, valued at £6563, an increase of 15,259 lobsters and £4320. The value of unclassified shell-fish shows an improvement to the extent of £87.

Fortunately there were no lives lost in connection with the fisheries of the district. The mail steamer "Plover" was attacked by a German submarine off the island of Rum on the last day of July, shots being exchanged between the submarine and mail steamer. The action was broken off by the submarine.

JAMES YOUNG,
Fishery Officer.

FISHERY OFFICE,
OBAN, 16th January 1919.

Loch Broom District.

A further decrease in the total quantity of fish landed in this district falls to be recorded for 1918 as compared with 1917. White fish were more plentiful and the landings were much better, but herrings were

very scarce except in the northern lochs, where practically half of the total catch was secured. There was, however, quite an abundance of herrings quite close to the coast, running from just north of Stoer Head to south of Rhuda Rea, during the first quarter of the year. The weather was too rough for second-class skiffs to work, and the operations were confined to large East Coast boats which ran their catches to Kyle, Mallaig, and Stornoway, except a few who came to Ullapool with light shots when the weather would not permit of their going elsewhere. Herrings accounted for more than the whole decrease in the total catch, but the catch of other white fish by nets shows a large increase and reduces the leeway considerably. Prices were, however, much higher, especially for cod, haddock, saithe, eels, and skate, so that while the year's catch shows a decrease of 7564 cwts. the total value is better by £6777, and when the comparison includes shell-fish the increase is £10,611. When compared with the figures for the pre-war year 1913, the total catch for the past year is 2258 cwts. short, whereas the total value shows an increase of £18,697, and including shell-fish an increase of £20,332. The general results of the year's operations have thus been very satisfactory for the fishermen engaged.

The only noteworthy change in the Means of Capture Returns is the addition of 4 boats to the motor fishing fleet. Two second-class sailing skiffs had "Kelvin" engines of 12-14 h.p. installed, and another of the same class had a second-hand "Kelvin" of 8-10 h.p. fitted, while a "scaffle" of 32-foot keel had a "Gleniffer" engine of 18-22 h.p. installed.

Herring fishing in the southern half of the district was a complete failure, and in the northern half the best results were obtained in Loch Inchard and Loch Laxford during January, October, November, and December. During these months the fishermen belonging to the localities mentioned made splendid earnings, which would average £220 per boat with 4 of a crew. The shoals of herrings were dense, and as many as 41 crans were on one occasion secured by a small boat of 17-foot keel with 7 nets. The quality during January was mixed, but in the last three months it was very good. Part of the catch was purchased by a firm at Lochclash for curing, but the bulk was purchased by carrying vessels and taken to Kyle, Mallaig, and Stornoway at prices ranging from 40s. to 70s. The total catch recorded from these lochs was 2652 crans, but in addition to these a considerable quantity was sold to steam drifters and motor boats at from 30s. to 60s. per cran, while others agreed to accept half the price realised at the port of delivery. Nothing was done at Lochinver until October, when the local boats had a splendid week's fishing at the entrance to the loch. Occasional landings were made at Ullapool, principally in February, by East Coast boats which were operating in the Minch, but this took place only when the boats could not make a passage to other ports. The total landed in the first three months was 1019 crans at from 15s. to 40s., or an average of 23s. 3d. per cran. Very little was done in the summer months. The total catch of herrings for the district was 5577 crans, against 8477 crans for 1917. Quality on the whole was satisfactory, but as most of the herrings had to be purchased by carrying vessels and taken to other ports the prices realised were low in comparison with those ruling in other districts, the range being from 15s. to 70s. per cran and the average 34s. 9d. per cran, a decrease of 1s. 7d. per cran from that of 1917.

The annual cod and saithe fishing by nets conducted in the spring from Badachro gave splendid results to fishermen, the earnings being far in advance of anything ever obtained at this fishing. Operations were late in commencing owing to the difficulty in getting crews, but a fleet of 22 boats eventually assembled as compared with 30 in 1913. Fish were

not very plentiful, but good weather was experienced and regular landings made and the season's catch shows an increase on that of last year of 3101 cwts. The average catch per boat, however, was 72 cwts. less than it was in 1913. Gross earnings ranged up to £650 for motor skiffs and to £480 for sailers, while the average over the fleet would be about £400 per boat. Only a small proportion of the catch was cured for drying. There was a keen demand for freshing, and prices ranged generally from 5s. to 10s. each for cod and 3s. to 5s. each for saithe.

Line fishing was keenly prosecuted by a few fishermen in all sections of the district, and the value of the catch by this method has been largely enhanced by the despatch of the fish to the southern markets by the fishermen themselves. The returns received by one motor skiff totalled close on £450, while the crew of a small boat of 16-feet keel earned £320 at small and great line fishing. The total catch was 392 cwts. less than last year, but the value shows an increase of £3785.

Lobster fishermen had a record year's work. Notwithstanding the shortage of men, there was an increase of 5 boats engaged, the high prices received being a great incentive. The result was that the catch exceeded that of 1917 by 27,837 lobsters and the value by £3768. There were 47 crews employed, who had an average of £114 per boat, the highest earnings being £300. The average catch for the year was 1091 lobsters, whereas that of 1914 was only 591.

Herring curing was carried on at Lochclash, Lochinver, Ullapool, and Badachro for the home market by seven firms.

Very little boat-building was done, and no barrels were manufactured in the district.

The loss of life and loss of and damage to boats was unfortunately much heavier than usual. A large motor boat used as a carrying vessel was run into and sank with the loss of one of the crew, and a crew of 3 men belonging to Aultbea lost their lives through the foundering of their boat while engaged in line fishing in Loch Ewe.

The fishing community of the district are in prosperous circumstances as a result of the conditions obtaining during the war. During the past three years the number of fishermen left to man the boats has gradually grown less owing to naval and military requirements, but the increased values received has encouraged those left to a more vigorous prosecution of the industry. Fishing gear has been both scarce and costly, but even when due allowance is made for this and the fact that, except in the case of lobsters and line fish sent to market by themselves, the fishermen, owing to the lack of transport facilities in the district, received only from 50 per cent. to 60 per cent. of the prices paid in other districts more fortunately situated, the earnings were such as to enable the people to live in comfort in spite of the heavy cost of food. All the first-class and a large number of the second- and third-class boats have been laid up for want of crews, but with demobilisation now in progress it is hoped that the catching power of the district will soon return to normal.

JAS. MAIR,
Fishery Officer.

FISHERY OFFICE,
ULLAPOOL, 14th January 1919.

Loch Carron and Skye District.

Although the quantity of fish landed shows a decrease of 25,192 cwts. as compared with last year, the fisheries of the district continue to be

most successfully prosecuted. The decrease was chiefly due to the Admiralty's taking over Kyle pier in February, thereby bringing the winter herring fishing at the port to a premature close. The value of fish increased by £35,906 owing to the high prices prevailing. Shell-fish also increased in value from £4985 to £7399. Herrings and hake are the principal kinds showing a decrease in quantity, but all kinds increased in value.

The number of motor boats belonging to the district is now 78, an increase of 8 during the year. Sailing boats decreased by 29, nearly all being old boats unfit for use. The value of boats and gear shows a considerable increase owing to the high prices of material.

The winter herring fishing was very successful. Heavy takes were obtained all along the coast from Handa Island to Ru Rea and landed at Kyle. The fishing in Loch Snizort was also good. Operations continued in full swing until 16th February, when the Admiralty requirements at Kyle had the effect of greatly reducing the railway facilities for the despatch of fish. After that date only a limited supply was allowed to be landed to keep the local firms employed. Most of the fleet had therefore to land their catches at Mallaig or Oban, and the stranger buyers left for other centres. The season closed at the end of March with a total of 21,096 crans valued at £117,678, as compared with 27,270 crans and £72,248 in 1917. Prices ranged up to £12 per cran, the average being 11s. 6d. against 52s. last year. About 50 East Coast steam drifters and motor boats were working from Kyle, and their earnings ranged from £2000 to £5000. One vessel landed a shot of 196 crans, which realised £1961 6s. for one night's fishing. Local motor boats' earnings were from £200 to £800 with an average of £400.

The summer herring fishing was again a failure. A few crans were occasionally obtained in the Skye lochs and at Raasay. At the end of November herrings were located in Loch Snizort, and for a month good takes were got by a fair fleet of East Coast and local boats. Most of the catches were landed at Kyle and sold at 126s. per cran.

The great bulk of the herrings landed was freshed to other districts and to England. Two thousand six hundred and sixty crans were kippered at Kyle, and the total cured was 2260 barrels.

Ground net fishing occupied the attention of 25 motor boats for the first three and last two months of the year. Stormy weather greatly hindered operations. The principal kind of fish landed was saithe, but fair takes of hake, lythe, and cod were occasionally obtained. Prices were very high, and the earnings ranged from £300 to £500 per boat.

Mackerel fishing was only prosecuted for a few weeks in the autumn from Portree and Kyle. The results were considerably better than last year. The average price increased from 15s. 1d. to 26s. 11d. per cwt.

Lobster fishing was carried on from the creeks on the west side of Skye with greater success than formerly. The number landed was larger, and better prices were obtained.

Line fishing shows little change as regards the quantity of fish, but the value shows a large increase. Most of the fish caught at the smaller creeks are consumed locally. At Kyle good catches of cod and saithe were landed, and were despatched to Glasgow and the English markets.

There were no lives lost in connection with the fisheries of the district.

GEORGE DOWNIE,
Fishery Officer.

FISHERY OFFICE,
KYLE, 16th January 1919.

Fort-William District.

The principal returns of the fisheries of Fort-William district show a year of unprecedented development. The various branches were actively engaged in, but the chief feature is the success of the drift net and great line fishings. Results show an aggregate catch of 533,381 cwts. valued at £920,246 exclusive of shell-fish, an increase of 140,540 cwts. valued at £489,238 over the preceding year, which was a record one. Shell-fish, however, show a decrease of £332.

The Means of Capture Returns differ little from those of the previous year, the number of boats being only 2 less, while the amount of netting and other gear remains practically the same. There was no change in the method of fishing. One steam yacht was converted into a fishing craft and fitted out for great line fishing, while the motor fleet shows an increase of 2 boats of the smaller class.

The winter herring fishing commenced about the first of January, and was carried on from start to finish with marked success both from Mallaig and Oban. The fishing grounds operated on were from Loch Inchar to Rhu Re, and Coll Bank. Heavy shots ranging from 60 to 240 crans were the rule, the best results being obtained on the former grounds. The fleet reached its maximum strength about the end of February, when 55 steam drifters and about 90 motor boats participated. As much as £1575 was realised for a shot of 116 crans, while shots which realised from £400 to £800 were common.

Both steam drifters and motor boats shared equally in the high earnings. One motor boat made £7900, while the least successful boats earned £2000. Prices throughout the season, notwithstanding the heavy fishing, invariably ruled high, ranging from £3 to as high as £14 10s. per cran, and only when congestion occurred on the railways through the heavy traffic did the price fall to 20s. per cran.

The season closed about the end of March, with a total of 89,136 crans valued at £492,752.

After a short suspension of fishing for the purpose of repairing and refitting boats, the early summer herring fishing was commenced in April by a few craft.

A fleet numbering 69 steam drifters, 133 motor boats, and 10 sailers was again at work by the first week of May, operating from Mallaig and Oban. The fishing grounds were from Tiree to Canna and off Muldoanich.

The herring fishing at this period, unlike the winter season, is as a rule of a partial character, and fishermen with a long experience of the West Coast are usually the most successful.

The fishing turned out fair, and resulted in a total of 31,629 crans, valued at £197,386, from 1st April to 30th June. The most successful boat earned £1200, but the earnings of the bulk of the boats ranged from £200 to £400.

The control of fish prices became operative about this time, and restricted the maximum price to £7 14s., the range of prices being from that figure down to 40s. per cran.

The quality of the herrings was poor at the commencement of the season, but improved as the season advanced. Shots ranged from 98 crans downwards, but the average catch was about 10 crans. The bulk of the boats left for the East Coast fishing about the first week of June.

After a lapse of several months the herring fishing was again commenced by a fleet of from 40 to 60 boats in the Skye lochs and in the lochs on the north-west coast of Sutherlandshire about the middle of November, and continued to the close of the year with fair results.

Great line fishing was carried on successfully by a number of Aberdeen

steam liners at Mallaig practically throughout the whole year, and by a number of Fraserburgh motor boats at Oban during the spring and summer months.

The Mallaig fleet operated from Loch Laxford to Rhu Re, in Loch Dunvegan, and from Ardnamurchan Point to Canna. The Oban fleet operated chiefly from the south coast of Mull to near Gigha. Eels, skate, cod, ling, and dogfish were the principal kinds of fish landed. Prices for all kinds ruled high during the spring months, but fell to a rather low figure during the summer months owing to the heavy supplies of herrings sent to the markets from the East Coast ports, and excessively hot weather. Individual shots ranged up to £550, and the best fished liner earned about £6000. The great line fishing during the last two months of the year was unremunerative. Fish of all kinds were found scarce, the grounds worked on showing signs of depletion, no doubt owing to continuous fishing over restricted areas.

Small line fishing was not prosecuted to any extent, but the few crews engaged in this branch of the fisheries made remunerative earnings.

Lobster fishing resulted in a catch of 17,212 lobsters valued at £1145, a decrease of 8581 lobsters and £358 compared with the results of the previous year. Unclassified shell-fish show an increase of £164.

The bulk of the fish landed was despatched, in a fresh state chiefly, to the principal English and Scottish centres.

Fish merchants who carried on business in the district had a profitable season.

It is regrettable that, notwithstanding the great success of the fisheries, only a few of the district fishermen reaped much benefit.

The earnings of local crews were on a much more moderate scale than those of their East Coast neighbours. The district boats are of a medium and small size, and therefore were unable to participate fully in the great success of the herring fishing.

There was no loss of life among the local fishermen, but the loss of an East Coast steam drifter off the island of Rum through the action of a German submarine, by which 2 of the crew lost their lives, has to be recorded.

JAMES YOUNG,
Fishery Officer.

FISHERY OFFICE,
OBAN, 14th January 1919.

Campbeltown District.

The total landings of all kinds of fish in the district were 89,546 cwts., valued at £132,478, as compared with 98,894 cwts. and £136,407 in 1917.

In the means of capture there is a slight decrease in the number of boats employed and also in the quantity of fishing material. In the value of both, however, there is a considerable increase. None of the motor fleet was requisitioned by the Admiralty either for mine sweeping or patrol duty, as the craft, owing to their small size, were unsuitable for this work.

Throughout the year there was a big demand for boats and fishing material from practically all parts of the Firth of Clyde and North-West Highland creeks—with the result that the transactions which took place showed large increases over pre-war prices. Towards the close of the year boat-builders were approached with a view to booking orders, but owing to the high cost of material and the uncertainty as to the cost of labour no contracts were entered into.

With short intervals in summer and autumn, practically the whole of the year is devoted to herring fishing. The chief method adopted is the seine net.

Early in January some excellent catches were secured in the bays and shallow waters on the Kintyre and Arran coasts. Machrie Bay, Arran, the haunt of many a shoal, proved the most productive fishing ground. The individual hauls throughout the year from this direction often ranged in value from £450 to £900.

In February the majority of the fleet proceeded to the fishing grounds off the Ayrshire coast, making Stranraer their headquarters. The success which attended their operations was most gratifying. As a result of the high prices, the amount of money brought home by them for the few weeks they were employed was £20,400.

The most successful pair of seiners for the year earned upwards of £7000. At one of the creeks in the district the net earnings of the fleet (7 pairs of seiners) are estimated at £5000 per pair.

There was no curing owing to the high prices paid for the green article, and kippering also fell off to a large extent owing (1) to the difficulty in obtaining suitable packages for the despatch of the goods to market and (2) to a number of workers being laid aside for several weeks during the best period of the season owing to an epidemic of influenza.

In the freshing industry 7 steamers were employed. These vessels followed the fleet to sea and conveyed their catches to the nearest railway terminus for despatch to the southern markets. Three of the steamers had a carrying capacity of 100 tons, and the other 4 from 30 to 70 tons. Up to the end of 1917 it was the practice to dispose of herrings at sea by the box—which held approximately two-fifths of a cran—but early in 1918 and under the Defence of the Realm Act an order was issued by the Ministry of Food that the sale of herrings was to be by weight, with the result that the buyers on board these steamers had to adopt the official quarter cran basket which contained practically 7 stones weight. This arrangement was satisfactorily adopted throughout the year.

Throughout the season some excellent catches of mackerel were landed. The fish, although of large size and good quality, were not so abundant as in 1917. Notwithstanding a shortage of 1343 cwts. in the quantity landed, the value shows an increase of several thousand pounds. There was a brisk demand for the fish. The average price was 22s. 11d. per cwt., as compared with 12s. 4d. in 1917 and 6s. 6d. in 1916.

Great line fishing was prosecuted by a few small boats working from several of the creeks in the district. The fish landed were chiefly cod, for which there was an ever increasing demand. The average price was 48s. 9d. per cwt. as compared with 22s. 2d. in 1917.

The shell-fisheries of the district were greatly handicapped owing to fewer men being employed. In the catch of lobsters there is a decrease of 2355, but an increase of £645 in value. The average price was 1s. 10½d. each as compared with 1s. 3¼d. in 1917.

The weather throughout the year was of the most erratic description and on several occasions seriously interrupted the progress of the fisheries.

It is gratifying to report that there has been no loss of life in connection with the fisheries.

J. SKINNER,
Acting Fishery Officer.

FISHERY OFFICE,
CAMPBELTOWN, 14th February 1919.

Inveraray District.

Although the returns of fish landed in the district show a decrease of 2200 cwts. in quantity as compared with the figures of the preceding year, in value there is an increase of £2632.

The landings of fish in the district, however, give no indication of the true results obtained by the fishermen, as during the greater part of the year operations were conducted in the waters of the neighbouring districts with a large measure of success.

In the Means of Capture Returns there is a marked falling off—chiefly in second- and third-class boats. Many have become old and useless for fishing and have been removed from the register. During the year under review 4 sailing boats have been fitted with motors.

With few exceptions the herring fleet is now propelled by motor power, with the result that full advantage is taken of the shoals of herrings which strike in upon the coasts of the neighbouring districts. In recent years, and particularly during the period of hostilities, the herring fishing claimed the attention of the fishermen practically all the year round—no doubt owing to the high prices obtained for the fish.

Early in February the fleet proceeded to the herring fishing on the Ayrshire coast. The success of their efforts in that direction was most gratifying. The earnings of half a dozen pairs of seiners for the few weeks they were employed ranged from £1000 to £1800, while the remainder of the fleet earned from £250 to £900.

Throughout the spring and summer months attention was directed to the home waters, where several of the most enterprising crews were rewarded with good catches. In autumn the fishermen were reporting large bodies of immature herrings in the vicinity of Skipness Point. Gradually the shoals moved into Lochfyne. So large a body of fish had not been seen in Lochfyne for a period of twenty years. Unfortunately the fish were of small size, running from 1500 to 2000 to the cran. In November the main body of the shoal entered the Kyles of Bute. Operations in this direction, owing to the sheltered waters, were carried on under all conditions of weather, and some heavy hauls were secured. For practically two months the fishermen of the district enjoyed a lucrative fishing, and notwithstanding the poor quality of the fish there was on several occasions a brisk demand at from 5s. to 10s. per quarter cran basket. In pre-war times the same class of fish would barely have realised sufficient to meet the cost of carriage. Large quantities of these small herrings, it was reported, were despatched to the southern markets and used for tinning purposes.

Upwards of 300 barrels were cured for consumption in the district. The rate for gutting and packing was 4s. per barrel, which in view of the size of fish and the time occupied in their preparation was not considered excessive.

Although the shoals of mackerel in Lochfyne were not so plentiful as in 1917, the fish were of large size, rich in quality, and in good demand. The results as compared with those of the previous year show a decrease of 6485 cwts. in quantity and £2780 in value. Unsuitable winds and weather greatly interfered with the success of this fishing. The whole of the catch was despatched to the markets in a fresh state.

In the shell-fisheries of the district there is an increase of £284 in value as compared with the preceding year. Lobster fishing was confined to the western seaboard of the district, and notwithstanding that fewer boats and men were employed the catch shows an increase of 1700 fish.

There was no loss of life in connection with the fisheries, and the damage to boats and gear was immaterial.

J. SKINNER,
Acting Fishery Officer.

FISHERY OFFICE,

CAMPBELTOWN, 14th February 1919.

Rothesay District.

The results of the fisheries of Rothesay district for the year under review show an increase of 25,978 cwts. in quantity and £25,339 in value on the returns for 1917. Rather more than the total increase in quantity was attributable to the improvement in the herring fishing, while the increase in value was also chiefly derived from the same source.

The number of sailing boats belonging to the district showed a decrease of 3 second-class and an increase of 2 third-class on the figures for the previous year. Six motor boats were added to the register during the course of the year, and one was withdrawn from the fishing. Five of these were second-class boats with 6-8 to 10-12 h.p. engines, and one third-class with a 3-4 h.p. engine. Two of the boats were previously employed in fishing—one at Tarbert and the other as a sailing boat—while the remaining 4 were formerly used for pleasure.

The herring fishing was light and disappointing up to the end of October. In the beginning of November a large shoal of herrings was located in the Kyles of Bute, and the fishing was successfully prosecuted by a fleet of from 20 to 70 and 80 boats belonging to the Clyde districts, to the end of the year.

The total landings for these two months alone amounted to 7746 crans, valued at £20,450. Although of a small size, the herrings were readily disposed of to carrying steamers on the fishing grounds and to buyers on shore at Rothesay. For the year the average price worked out at 56s. per cran as against 71s. 5d. in the previous year.

A certain proportion of the catch was retailed in the district and in Glasgow, but the bulk, especially in the latter part of the year, was sent to England, where there appeared to be quite a good demand for that class of herrings.

The quantity of mackerel taken was 479 cwts. less than in 1917, while the value was £774 more, the average price being 22s. 6d. per cwt. as compared with 12s. 10d. in the preceding year. As in the case of herrings, England and Glasgow were the chief markets to which mackerel were sent.

Apart from herrings and mackerel, cod, including codling, and saith were the principal kinds of white fish taken. The total landings under the various headings amounted to 5917 cwts. of a value of £14,475—a decrease of 790 cwts., but an increase of £3633 on the returns for the previous year.

Each creek contributed its quota to the landings, but the chief places were Rothesay, Dunoon, and Loch Long. Part of the catch was sold locally and the remainder was sent to market—chiefly Glasgow.

As supplies were generally rather limited, prices were high throughout the year. Cod and codling averaged 67s. 9d. per cwt., saithe 34s., eel 59s., flounder and plaice 120s., as compared with 41s. 3d., 20s. 7d., 19s., and 100s. 8d. per cwt. respectively in 1917.

The total value of shell-fish was £72 greater than in the preceding year. The number of lobsters captured was nearly double, but there was a shrinkage in the quantity of mussels and unclassified shell-fish landed.

No lives were lost during the year, but the loss of and damage to fishing boats and gear was greater than in 1917.

There was an increase of 2 in the number of fishing boats built within the limits of the district.

In some instances a certain amount of difficulty was experienced in getting proper crews to man the boats through men being in naval and military service, but this difficulty was got over as far as possible by engaging temporary assistance.

WM. NISBET,
Fishery Officer.

FISHERY OFFICE,
GLASGOW, 7th February 1919.

Greenock District.

Compared with the returns of the previous year, the quantity and value of fish (excluding shell-fish) landed in this district during 1918 show an increase of 14,202 cwts. in quantity and £33,733 in value. This increase is chiefly attributable to the landings by steam trawlers and herring fishing boats.

In so far as the Means of Capture Returns are concerned, 5 steam trawlers were sold to English owners during the year, but as these were not removed from the register, the number at the credit of the district remained the same as in 1917.

Seven motor boats were added to the local fishing fleet. Of these, one which was previously used as a pleasure yacht, 51 feet of keel, was purchased by Aberdeen owners and converted into a fishing boat. The remaining 6 were of the second class, one being new, and the others being either pleasure boats or fishing boats purchased from other districts. The list of sailing boats registered in the district showed a decrease of two second and one third class.

A quite unusual feature was the landing of fish by steam trawlers on Admiralty service in the Clyde and adjacent waters. When other duties permitted, a certain number of these vessels were employed in fishing and landed their catches at Clyde ports, whence the fish were railed to Glasgow and other markets for sale and distribution.

As will be seen from the returns, the quantity and value of trawled fish landed were considerable, and helped to augment supplies arriving from other parts of the coast.

Although the quantity of herrings landed was greater than in 1917, which was an exceptionally poor year, it could not be said that the results were very satisfactory. Herrings were scarce in local waters throughout the year, and a good proportion of those which were landed were caught in other districts. Generally speaking, the herrings were of a small size, and were disposed of in a fresh state, chiefly in Glasgow and the southern markets. The average price realised by the fishermen was 58s. per cran, as compared with 79s. in the preceding year.

Mackerel were less plentiful than in 1917, the average price being 23s. per cwt. as against 12s. 10d. in the previous year. They were chiefly sent to the English markets in a fresh condition. Considerable quantities of herrings and mackerel from other Clyde districts were landed at Wemyss Bay, Fairlie, and Ardrossan by regular trading and herring-carrying steamers for despatch by rail to the different markets.

The results of the net and line fishing for white fish by motor and sail boats were rather better than in the preceding year. The total catch amounted to 1495 cwts. valued at £3688, as compared with 1185 cwts.

and £2494. A good proportion of these fish was disposed of in the localities where landed, the remainder being sent to market, chiefly Glasgow.

Cod and codlings averaged 55s. 9d. per cwt., saith 28s. 3d., and flounder and plaice 71s. 4d., as against 40s. 11d., 19s. 8d., and 72s. 3d. per cwt. respectively in 1917.

The output of mussels from the Clyde beds was the smallest recorded for many years. Those of good size and quality were unobtainable on the nearer banks, and there was great difficulty in getting crews to man the boats for the purpose of dredging the mussels; in fact, a number of the boats were unemployed throughout the year. It is hoped, however, that the nearer banks will produce supplies of better mussels in the near future.

Owing to less attention having been given to the gathering of winkles, the quantity landed was little more than half of that of the previous year. The persons employed in this branch of the fisheries were not wholly dependent for their livelihood on this occupation, and consequently only part of their time was devoted to it.

Comparatively few herrings were cured gutted, but kippering was carried on by the various firms whenever herrings suitable for the purpose were obtainable. For the most part these kippers were disposed of in the district and surrounding neighbourhood.

Apart from the drying of cod-fish imported in a wet salted state from Iceland, no curing of this description was done by the local curers.

The cured herrings were exported chiefly to America and Ireland, and the total quantity shipped from the district was fully 6000 barrels more than in 1917.

The quantity of dried cod-fish exported fell off to the extent of 10,924 cwt., this shortage being chiefly in the shipments to Spain.

Although much less than in pre-war times, considerable quantities of fresh and smoked herrings and various other kinds of fish were disposed of in Glasgow market. The aggregate number of packages which actually passed through the market was about 90,000 more than during the previous year.

No fishing boats were built during the year, but one motor boat is under construction in one of the district yards.

There was no loss of life in connection with the fisheries, but one motor boat, valued at £530, was completely wrecked at Wemyss Bay through being driven ashore during a gale early in October.

Most of the firms engaged in the fishing industry experienced great inconvenience through their employees being engaged in the Army and Navy, but this difficulty should soon be overcome by the return of these men to their ordinary employment.

WM. NISBET,
Fishery Officer.

FISHERY OFFICE,
GLASGOW, 4th February 1919.

Ballantrae District.

A retrospective survey of the fisheries of this district during the fourth year under war conditions reveals the undoubted prosperity of those engaged. Although the landings show no outstanding change from the previous year, the high prices ruling throughout the period increased the total value to the extent of £87,363, and ensured substantial earnings to the fishermen engaged. The controlled prices introduced early in the year, while checking the abnormal inflation of values, left a remunerative

level to the catcher, and in some measure assured the wholesale buyer a profitable return for his outlay and labour, thereby practically indemnifying the industry against loss. Unfortunately, from the consumers point of view, the maximum retail price almost invariably became the minimum, except in a few instances for very small herrings.

The area of operations being practically confined to the Clyde area, the fishermen of the district were more fortunate than those elsewhere in that they were able to pursue their calling almost unhampered by Admiralty restrictions.

In spite of the rise in value of all material connected with the industry and the heavy withdrawal of men for naval service, the Means of Capture Returns were well maintained, boats and gear having been acquired by a number of amateur and occasional fishermen. Further, the fleet of motor boats at some of the creeks has been substantially improved by the replacement of some of the older craft by new, larger, and more efficient vessels in anticipation of the more strenuous times expected with the return to more normal conditions. During the year Dunure, for example, has acquired no less than six new motor boats, all larger and more powerful than those displaced.

The Ayrshire coast section of this district is supported chiefly by herring fishing, this branch being prosecuted all the year round, except for a varying short interval in the early summer as circumstances and prospects dictate. When the year opened a fairly successful herring fishing was in progress at Ayr, which lasted through January. In February the venue of operations changed to Loch Ryan and vicinity, and later the Ballantrae Bank, and for the next six weeks an irregular but remunerative fishing was carried on. Exploitation of the latter fishing ground was severely hindered by adverse weather, but success was usually attained when the weather was propitious. In this fishing about 100 motor boats, principally from Campbeltown and Loch Fyne districts, participated, some of the Dunure and Maidens crews preferring to continue operations on the upper section of the Ayrshire coast. The season, perhaps from a monetary point of view the most successful on record, closed in the middle of March.

The quality at Stranrear was generally good, and prices ranged from 30s. to 53s. per basket, but the landings at Ayr consisted mostly of small herrings, which realised proportionately lower prices.

In the middle of April a fresh start was made at herring fishing by the Dunure fleet in Culzean Bay, which did not prove very productive, but continued for some time with varying success. From this time on to the end of November the district boats from the Ayrshire creeks operated with drift and seine nets in various parts of the Clyde area with moderate results, when a successful fishing was reported in the Kyles of Bute which drew all the motor crews thither. Most of them participated in this fishing with considerable success until the end of the year, when operations were still prosperous.

With the coming into force of the Fish Prices Order, 1918, prices took a lower level, but where quality was anything like fair, maximum prices generally ruled.

As already indicated, line fishing is not prosecuted to any considerable extent by district crews, this branch being largely left to a few odd small boats scattered throughout the district. Some three to four crews from the Maidens operate with small lines for some months, but during the year under review this fishing was not so productive as in 1917, although the value was higher.

From Stranraer eastwards, along the coast of the Solway Firth, including Luce and Wigtown Bays, various kinds of flounder nets are

the principal instruments of capture, and a considerable quantity of shell-fish is also landed, chiefly mussels, shrimps, and whelks, all of which shared in the enhanced values.

The production of oysters from the Loch Ryan beds was slightly larger than in 1917.

At Annan the fleet is almost entirely engaged in beam trawling for flounders and shrimps, and landings were well maintained.

Except for ling and haddocks, all kinds of fish show an increase in value, while cod, ling, haddocks, whiting, turbot, and skate show a slight falling off in quantity.

The average price for all kinds throughout the year works out at 43s. 9d., against 26s. per cwt. in 1917.

Owing to the high prices ruling, no herrings were put into cure, but kippering was carried on at Girvan to the same limited extent as before by the local fishmongers. The quantity so treated was somewhat less than in 1917.

The year's operations were marred by the drowning of a fisherman whose boat was swamped on leaving the harbour: otherwise, there were unusually few accidents or losses of gear.

JOHN GLEN,
Fishery Officer.

FISHERY OFFICE,
GIRVAN, 11th *January* 1919.

APPENDIX VI.

SALMON FISHERIES.

MR. CALDERWOOD'S REPORT.

FISHERY BOARD FOR SCOTLAND,
March 1919.

I have the honour to submit the following report to the Fishery Board for Scotland.

PRESSING LEGISLATIVE NEEDS.

With a return to more normal conditions, and the general aspiration after a fuller development in salmon fisheries as in other national enterprises, it seems fitting to attempt a review of the more pressing needs which have arisen during the long period since the passing of the last Scottish Salmon Fishery Act.

I refrain from reference to the recognised necessity for additional powers both to the Central Authority and to District Boards or to the necessity of the Central Authority being able to act when a District Board does not exist, and confine myself to other requirements which have come prominently before my own notice in an experience which now represents a period considerably longer than that of my two predecessors put together.

Knowledge as to actual catch, so valuable in the case of the large marine fisheries, still has to be gained from uncertain data in the case of Salmon Fisheries. Actual statistics of catch are not obligatory, and are available in only a very few cases. The annual statement of weight of salmon carried by railways is the only means of arriving at an estimate of the total annual marketed stock of salmon. The drawbacks are that no means are at command for estimating the state of any given Fishery District concerning which it may be highly necessary to form a judgment; and also that a statement of total weight gives no indication as between a possible large number of small or young fish and a paucity of heavy fish. The objection, on the part of those who hold netting rights, to giving a regular return, is the effect this might have upon rental. This does not appear to be a very genuine or sound objection, as most tacks-men have means of finding out how any particular fishing has been doing, and in any case it could be easily provided against by making the return confidential, like a return for Inland Revenue purposes, and by an agreement that no individual return be published.

The general policy, which has been advocated by the Board for years,

of regarding the sea as the chief salmon-netting place, and of limiting netting in fresh water so as to allow a proportion of every run of fish to ascend and be secured to the upper waters and for breeding purposes, cannot be established on a sure footing until the various points fixed in rivers, each judged on its own merits, above which netting shall be disallowed, obtains statutory sanction. Improvement in the stock of breeding fish, secured by the wise action of a District Fishery Board or body of proprietors, may be vitiated by the selfish but perfectly legitimate action of one person holding a right of fishing. In certain districts also, the dominating power in the District Fishery Board rests so exclusively with one section of fishery proprietors, that much injury is done to the other section, while the general welfare of the fisheries, which cannot be guarded by the Central Authority, suffers.

Methods of salmon fishing have become wonderfully stereotyped, so that now, with few exceptions as regards the coasts of Scotland other than the Solway Firth, the fixed net means the bag net or the fly net, according as the shore is deep or shallow. By the House of Lords decisions in the Tay Hang net and Toot and Haul net cases, netting in fresh waters and estuaries may be said to be only by means of sweep net, *i.e.* net and coble fishing. In the Solway there still are within the limits of estuaries certain ancient nets used which would be perfectly illegal elsewhere. I refer to the Yair nets of the Dee estuary, and the Shoulder net fished in several of the rocky pools of the river below Tongland. Whammelling also, *i.e.* drift net fishing, in the Upper Solway is also a method of fishing which would be illegal in other estuaries in Scotland. It seems highly desirable that a consolidation of the recognised methods of fishing by net be brought about, so that any alterations or proposed alterations may be general in application, and be under control. Much harm has resulted elsewhere for want of this power.

In the operation of the weekly close time some rather curious anomalies have arisen. In certain districts where netting is severe, fish are unable to pass the belt of nets in the period, or, if they pass the usual belt of nets, the benefit to the river is nullified by the fishing of one or two extra pools higher up the river on the Monday morning. If, as seems abundantly clear, and as has been provided since the very earliest legislative enactments, a weekly close time is a vital necessity in rivers which are netted, then the close time should be operative and the benefit of it secured to the river. The limiting of the netted zone in fresh water so as to secure a proportion of every run of fish, already referred to, also secures the effective operation of the weekly close time. If such a provision cannot be brought about, it would become necessary to prolong the weekly close time. Further, if a weir should occur in the lower reaches of a river, and the net be used up to the weir, it inevitably happens that during a considerable part of the summer season the fish cannot escape the nets owing to lack of water to ascend the weir. The weekly close time in such cases makes no difference to the interests of any party. As in a notorious case in one river where a channel up which salmon ascend has been permanently closed, the fish simply congregate till it suits the convenience of the netsman to take them out. It is a live box into which the salmon go of themselves.

The regulations as to erecting fish passes at obstructions, and especially at artificial obstructions, are quite insufficient to allow an adequate ascent of fish, and are in many districts disregarded without the possibility of any penalty. In this connection the provision secured in England that no netting shall take place within 50 yards above or 100 yards below a weir unprovided with an approved fish pass, seems of great advantage.

The Hang net in the Tay estuary was regarded as a fixed engine by the House of Lords, and on that account became illegal in any estuary. The estuary of the Solway is not all in Scotland, and even if it were it seems that the legality of the Whammel net, as a fixed net, is arguable, but this cannot be said for the use of a fixed net in an estuary in the West Highlands, where, owing to the absence of any District Fishery Board, and to the fact that the proprietors commit the illegal act, no commitment is possible. It is uncommon to find people persisting in destroying their own property and at the same time breaking the law. It is much more common for one class of proprietors to injure another class, either through lack of proper consideration or absence of preventative action.

There are 52 districts without Boards at the present time, and as the existing machinery for carrying out the provisions of the Salmon Acts operates through District Fishery Boards, and in certain important particulars only through District Fishery Boards, it is clear that in such districts many provisions of the Acts cannot be applied. In the absence of any local authority it should be possible to substitute some other competent body to do the duty. For instance, in the 52 districts referred to it is impossible to secure any change of close time, or to proceed concerning any of the bylaws attached to the Act of 1868 regulating nets, fish passes, hecks, cruives, and so on. Further, in the case of a great number of small districts in the West Highlands unprovided with Boards, there would be great advantage in adopting a system of grouping. They then could be policed and regulated by united action. A desire for some such arrangement has several times been expressed to me. With the whole country thus brought more completely under the operation of the Salmon Acts, and especially with improvements in these Acts, local bylaws could be passed by Boards, covering certain matters about which local control has rightly a predominating say, and powers would be available for bringing into action existing legislative machinery.

Questions concerning the Border districts, the Tweed and the Solway, have inevitably to be included in any review of prospective needs. These are to some extent outwith the supervision of the Fishery Board for Scotland, and involve adjustment with interests across the Border. The particular points are now well known, however, and it seems to me we have reason, at the present time, for approaching them without undue apprehension as to the result.

The very serious menace of pollution demands urgent attention, as I have already indicated it in more than one recent report. A great mass of evidence and a full treatment of the problem in its many varied aspects are ready to hand in the Reports of the Sewage Disposal Commission. The problems to be solved are very largely financial, but the question also involves the extent to which purification is necessary in given circumstances. Domestic sewage acts for the most part on fish life as a de-oxygenating agent in the water, while trade wastes not only absorb the oxygen but are frequently in themselves highly toxic.

The leading recommendation put forward by the Sewage Disposal Commission is the setting up of standards of purification, it being evident that a like amount of treatment is unnecessary in all cases. This involves arriving at a standard for every kind of pollution, but after a very complete consideration of the whole question it is regarded as the best means of resolving the difficulties which have to be reckoned with. In the Ninth Report, 1915, p. 172 *et seq.*, therefore a classification is made between pollutions for which (A) efficient purification is practicable and (B) those

for which this can scarcely yet be said to be the case. The following is the list:—

In Class A—

Coal washing	}	In these adequate reduction of solids in suspension may be regarded as efficient purification.
Tin mining		
Lead and zinc mining		
China clay works		
Stone quarrying		
Stone polishing		
Wood pulp paper works		

Brewing	}	In these dissolved impurities should also be removed.
Malting		
Distilling		
Tin plating		
Galvanising		
Wire drawing		
Shale-oil distilling		
Wool scouring		
Tanning		
Leather dressing		
Fellmongering		
Dairying		

In Class B—

Bleaching	}	These are all much improved by clarification.
Waste bleaching		
Paper works (excepting paper from wood pulp)		
Cotton dyeing		
Cotton printing		
Woollen dyeing		
Woollen piece and yarn scouring with dye liquor		

Sulphite cellulose manufacture
Gas and coke production.

The two last mentioned are in reality manufactures in which the waste liquors cannot yet be satisfactorily treated, and are separated in the Commissioners' list "because we are not aware of any method of so treating them that the effluents could properly be discharged direct into streams."

The general standard recommended for sewage effluents corresponds with that recommended for distillery wastes, viz. 3 parts suspended solids and 2 parts dissolved oxygen absorption in 5 days. Tin, Lead, and Zinc Mines, and Stone Quarries and Polishing Works are all classed as requiring reduction to 6 parts suspended solids per 100,000, this being regarded as sufficient to obviate danger to cattle or fish. Coal washings are given as $\frac{1}{4}$ parts per 100,000 of solids.

In the case of Paper Works the recommendation is 6 parts, as it is also in the case of Cotton Printing and Dyeing. In the case of Wool Dyeing $\frac{1}{4}$ parts in 100,000 is recommended.

The subject has received exhaustive treatment, not only as to the actual pollutions and their reduction, but as to the changes in the law which are necessary to bring about the necessary reforms. For the consummation of the matter, what is requisite is the courage of application.

With regard to the matter of administration, it is proper to notice that both the Commission just referred to and the Salmon Fisheries Com-

mission which reported in 1902 recommend Watershed Boards which will embrace not only fisheries but pollutions and water supplies, and that the Water Power Resources Committee have arrived at a somewhat similar finding.

I may perhaps quote the passage from the Salmon Fisheries Commission Report (p. 12) :—

“ It might even be possible to create a Watersheds Board of still larger authority. There are three great subjects for all of which, in our opinion, the watershed is the proper administrative area, *i.e.* pollution, water supplies, and fisheries. If it were possible to give adequate representation to all the interests concerned in one body, we should have a board of great influence capable of interfering authoritatively in all matters affecting the district, while by the formation of separate Committees the administration of each of the subjects above named might be left in the hands of representatives best qualified to carry it on. The Government alone can decide whether anything of this kind is practicable, but we have thought it right to make the suggestion to mark our sense of the interdependence of the different interests specially concerned in the preservation of the purity of our rivers.”

Under the title of “ water supply,” as above, may be classed abstraction of water, a subject which calls for careful attention at the present time. Apart from the necessary demands of cities and towns for water supply, there is the growing demand for industrial purposes and for the generating of electric or other power.

The most serious difficulties arise when water is entirely removed from a catchment basin. Less serious consequences are likely to follow when, after removal for temporary use, the water is returned to the natural channels. In the great variety of engineering arrangements which are possible in the use of water, it is, however, also possible to adjust a considerable number of plans for the safe-guarding of the fishing interest, and for the minimising of injury. Again, power may be developed from water drawn from areas which salmon cannot at present reach; or, on the contrary, proposals may involve interference with the natural flow of a valuable salmon-inhabited river. Where no great fall of water level is requisite, an intake at a point well above the power-house or factory may render it unnecessary to erect a dam dyke, as in several instances which could be cited in the upper Don, and in the Leven between Loch Lomond and Dumbarton.

Considerable developments have, however, been made in recent years in the adjustment of effective fish passes where dam dykes are erected. The general principles upon which efficient passes have to be constructed are more clearly understood than formerly, and in approaching problems which may arise in the future it should be possible to secure a fair amount of compensation by adjustment of plans, if only proper provision be made for the consideration of the claims of the fisheries. In this connection I need hardly point out that compensation in the form of money paid to those who can substantiate claims is of no service whatever to the general interests as expressed by the upkeep of the stock of fish. It is a solatium to the man, but does not benefit the fish.

In the matter of the generation of power, however, much depends upon whether the power or the water is conveyed away. If water from impassable falls be used, and immediately returned without pollution, practically no harm can result to the fishing interest. I would venture strongly to urge, however, that in all cases where dams and other works are proposed, involving interference with the run of fish to their natural spawning grounds, full opportunity be secured for the adjustment of the best possible plans for safeguarding the fishing interest.

DISTRICT RENTALS OF SALMON FISHERIES.

The depressed state of the salmon catch displayed in the tables of weight of fish sent to market and in the chart of curves accompanying the Board's Report (p. xxi.) appears to be reflected in the rentals of almost all the districts in Scotland. Taking the districts in which a rental of four figures and over is shown, in so far as the returns at disposal allow one to go, the following list can be given. It contains all the important river districts on the east coast of the country, with the exception of a few of the northern areas where it has never been easy to separate salmon-fishery from other rentals. The period covered is that affected by the war.

	1915	1916	1917	1918	Difference between first and last year.
	£	£	£	£	
Tweed . . .	16,104	16,124	15,686	15,268	-1,036
Tay . . .	24,105	23,622	22,849	21,599	-2,506
South Esk. . .	3,438	3,361	3,356	3,418	-20
North Esk. . .	7,830	7,637	7,637	7,351	-479
Dee . . .	18,953	18,641	17,673	17,405	-1,548
Don . . .	4,351	4,205	4,319	4,214	-137
Deveron . . .	3,379	3,268	—	3,033	-346
Spey . . .	11,507	9,844	9,867	9,793	-1,714
Findhorn . . .	3,867	3,867	3,967	4,147	+280
Conon . . .	3,205	3,205	3,137	—	—
Kyle . . .	4,545	4,425	4,353	4,370	-75
Annan . . .	2,272	2,262	2,262	2,124	-148
					8,009
					280
					<hr/> -7,729 <hr/>

In the twelve important districts referred to, the only one in which a rise of rental has occurred is the Findhorn. The total reduction in rental is £7729. In the case of the Findhorn, the rise is not accompanied by any corresponding increase in the take of salmon, there being as a matter of fact a decided drop in the catch during the four years under review. Netting in this district is carried on both on the coast and in the estuary as far up as the Broom of Moy. In the river also, on Monday mornings, the net is used from the Red Craig down to the Broom of Moy, so as to capture such fish as may have passed the usual gauntlet of nets during the weekly close time. It follows from this that unless the river is in specially good running order and fish get through to Sluie, the weekly close time is rendered largely inoperative.

OBSTRUCTIONS IN THE RIVER FINDHORN.

The middle section of the river is in a deeply cut gorge, and many parts are unapproachable to the angler. Fish ascending to the lower end of the gorge are met by several natural obstructions which greatly hinder their ascent, especially in spring when the water is cold. The more important obstructions are the Muckle Ess, and the Little Ess. The first was blasted in a more or less surreptitious manner, between thirty and forty years ago, and is not now a very serious obstacle, but at the foot, or run out, of the pool below the obstacle the river narrows

to some eight or nine feet, and the pressure of water is commonly excessive. The highest cliff in the gorge stands immediately above, and a high rock stands in the centre of the channel. Relief to the pressure could here be secured by deepening a cleft at the left bank so as to make an island of the high rock at ordinary levels of water. It will be understood that, confined as the river is in its gorge, a rapid and great rise of water takes place in times of flood.

The more serious obstruction is the Little Ess, a short distance upstream. The height which fish have to surmount here is, in normal levels, about five feet. The water is very heavy at the fall, and no spring fish would attempt the ascent. Two large rocks exist just above on the left bank, and these, and other rocks on the same side, send the bulk of the water to the right bank. The water is also much broken up in its flow by the rough nature of the bed behind the rocks. On making an examination of this part of the river, it appeared to me that a channel of easy gradient could be constructed without much difficulty, round the large rocks at the left bank, and in addition, by opening a channel through a great mass of broken rock which has fallen from the side of the gorge. The upper end of this channel would come to a piece of black unbroken water below the head of the pool above, and would be well protected. Such a channel would be about 56 feet.

A narrow rapid situated about 300 yards below the Little Ess should at the same time be widened to relieve the pressure and supraeration of the water. One or two other rapids, and notably one at the head of the Muckle [Ess] pool, also might be widened with great advantage to the river.

The object of these operations would be to allow the free run of early fish to the upper waters, so that the available stock would become more evenly distributed over the spawning areas, since no spawning of any moment can possibly take place in the rocky section of the river. The operations would also secure that fish be not crowded in the pools below the obstructions, where, even if they have escaped the nets, they soon become stale and, as I have witnessed at times, much diseased.

NUMBER OF PACKAGES OF SALMON delivered at or near Billingsgate in 1918, and the average prices for the same.

The Fishmongers Co. of London have kindly supplied the following return.

Month.	English.	Irish.	Scotch.	Canadian.	Totals.	English.	Irish.	Scotch.	Canadian
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
January . . .	...	35	...	84	119	5 8	5 8	...	1 9
February . . .	125	223	142	42	532	3 0	3 1 ¹ / ₄	3 0	1 9
March . . .	159	511	463	6	1,130	3 0	3 0	3 0	2 2
April . . .	79	387	459	...	925	3 0	3 0	3 0	2 2
May . . .	113	404	728	...	1,245	3 0	3 0	3 0	...
June . . .	1 53	1,630	1,435	...	3,218	2 8	2 8	2 8	...
July . . .	315	1,035	1,667	...	3,017	2 8	2 8	2 8	...
August . . .	69	36	516	...	621	2 8	2 8	2 8	...
September . . .	12	...	80	...	92	2 8	...	2 8	1 10
October . . .	...	...	...	15	15	...	...	...	1 10
November . . .	...	...	...	15	15	...	...	...	1 10
December . . .	...	...	...	15	11	...	...	...	1 10
Totals . . .	1,016	4,261	5,490	173	10,940	...	...	...	...

POLICING OF DISTRICTS.

During the war, this duty has been largely impaired by the calling-up of water bailiffs for military service. No doubt the necessity of close supervision has been less obvious, since those in the various districts who were likely to commit offences under the Salmon Acts were also away serving their country. But since demobilisation has commenced, it appears that a very serious outbreak of poaching has occurred in one or two places. This applies not only to ruthless methods of capturing fish on their way to the spawning beds in the autumn, but to operations by means of nets in the sea and at the mouths of rivers.

For the recruiting of efficient water bailiffs it is possible that District Fishery Boards may find excellent material in the persons of ex-N.C.O.'s and other ranks of the regular army, in cases where former men are no longer available. It is important, apparently, that this matter of suitable policing be attended to. If unlawful practices are joined in by considerable companies of poachers it may presently happen that an ordinary number of water bailiffs is quite insufficient to deal with the situation.

I have the honour to be, Gentlemen,

Your obedient Servant,

W. L. CALDERWOOD.

APPENDIX VII.

ANNUAL CLOSE TIMES APPLICABLE TO THE SALMON RIVERS IN SCOTLAND.

N.B — Observe that, in the following List, the days fixing the commencement and termination of the Annual Close Time for Net-fishing and for Rod-fishing, respectively, are in all cases inclusive, as in the case of the Add, the first river in the List.

Name of River.	Annual Close Time for Net-fishing.	Annual Close Time for Rod-fishing.
Add	From Sept. 1 to Feb. 15, both days inclusive.	From Nov. 1 to Feb. 15, both days inclusive.
Aline	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Alness	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Annan	From Sept. 10 to Feb. 24.	From Nov. 16 to Feb. 24.
Applecross	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Arnisdale (<i>Loch Hourne</i>)	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Awe	From Aug. 27 to Feb. 10.	From Oct. 16 to Feb. 10.
Aylort (<i>Kinloch</i>)	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Ayr	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Baa and Goladoir	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Badachro and Kerry (<i>Gairloch</i>)	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Balgay and Shieldag	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Beaully	From Aug. 27 to Feb. 10.	From Oct. 16 to Feb. 10.
Berriedale	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Bervie	From Sept. 10 to Feb. 24.	From Nov. 1 to Feb. 24.
Bladenoch	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Broom	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Brora	From Aug. 27 to Feb. 10.	From Oct. 1 to Jan. 10.
Carradale (<i>in Cantyre</i>)	From Sept. 10 to Feb. 24.	From Nov. 1 to Feb. 24.
Carron	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Clayburn, Finnisbay, Avenangeren, Strathgravat, North Lacastile, Scalladale, and Mawrig (<i>East Harris</i>)	From Sept. 10 to Feb. 24.	From Nov. 1 to Feb. 24.
Clyde and Leven	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Conon	From Aug. 27 to Feb. 10.	From Oct. 16 to Jan. 25.
Cree	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Creed or Stornoway, and Laxay (<i>Island of Lewis</i>)	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Creran (<i>Loch Creran</i>)	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Croe and Shiel (<i>Loch Duich</i>)	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Dee (<i>Aberdeenshire</i>)	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Dee (<i>Kirkcudbrightshire</i>)	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Deveron	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Don	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Doon	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Drummachloy or Glenmore (<i>Isle of Bute</i>)	From Sept. 1 to Feb. 15.	From Oct. 16 to Feb. 15.
Dunbeath	From Aug. 27 to Feb. 10.	From Oct. 16 to Feb. 10.
Earn	From Aug. 21 to Feb. 4.	From Nov. 1 to Jan. 31.
Eckaig	From Sept. 1 to Feb. 15.	From Nov. 1 to Feb. 15.
Esk, North	From Sept. 1 to Feb. 15.	From Nov. 1 to Feb. 15.
Esk, South	From Sept. 1 to Feb. 15.	From Nov. 1 to Feb. 15.
Ewe	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.

Name of River.	Annual Close Time for Net-fishing.	Annual Close Time for Rod-fishing.
Fincastle, Meaveg, Ballanachist, South Lacastile, Borve, and Obb (<i>West Harris</i>)	From Sept. 10 to Feb. 24.	From Nov. 1 to Feb. 24.
Findhorn	From Aug. 27 to Feb. 10.	From Oct. 11 to Feb. 10.
Fleet (<i>Sutherlandshire</i>)	From Sept. 10 to Feb. 24.	From Nov. 1 to Feb. 24.
Fleet (<i>Kirkcudbrightshire</i>)	From Sept. 10 to Feb. 24.	From Nov. 1 to Feb. 24.
Forss	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 24.
Forth	From Aug. 27 to Feb. 10.	From Nov. 1 to Jan. 31.
Fyne, Shira, and Aray (<i>Loch Fyne</i>)	From Sept. 1 to Feb. 15.	From Nov. 1 to Feb. 15.
Girvan	From Sept. 10 to Feb. 24.	From Nov. 1 to Feb. 24.
Glenelg	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Gour	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Greiss, Laxdale, or Thunga	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Grudie or Dionard	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Gruinard and Little Gruinard	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Halladale, Strathy, Naver, and Borgie	From Aug. 27 to Feb. 10.	From Oct. 1 to Jan. 11.
Helmsdale	From Aug. 27 to Feb. 10.	From Oct. 1 to Jan. 10.
Hope and Polla or Strathbeg	From Aug. 27 to Feb. 10.	From Oct. 1 to Jan. 11.
Howmore	From Sept. 10 to Feb. 24.	From Nov. 1 to Feb. 24.
Inchard	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Inner (<i>in Jura</i>)	From Sept. 10 to Feb. 24.	From Nov. 1 to Feb. 24.
Inver	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Iorsa (<i>in Arran</i>)	From Sept. 10 to Feb. 24.	From Nov. 1 to Feb. 24.
Irvine and Garnock	From Sept. 10 to Feb. 24.	From Nov. 1 to Feb. 24.
Kannaaird	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Kilchoan or Inverie (<i>Loch Nevis</i>)	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Kinloch (<i>Kyle of Tongue</i>)	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Kirkaig	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Kishorn	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Kyle of Sutherland	From Aug. 27 to Feb. 10.	From Oct. 1 to Jan. 10.
Laggan and Sorn (<i>Island of Islay</i>)	From Sept. 10 to Feb. 24.	From Nov. 1 to Feb. 24.
Laxford	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Leven	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Little Loch Broom	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Lochy	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Loch Duich	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Loch Luing	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Loch Roag	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Lossie	From Aug. 27 to Feb. 10.	From Oct. 16 to Feb. 10.
Luce	From Sept. 10 to Feb. 24.	From Nov. 1 to Feb. 24.
Lussa (<i>Island of Mull</i>)	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Moidart	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Morar	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Mullanageren, Horasary, and Lochnaciste (<i>North Uist</i>)	From Sept. 10 to Feb. 24.	From Nov. 1 to Feb. 24.
Naim	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Naver and Borgie. <i>see</i> Halladale.		
Nell, Feochan, and Euchar	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Ness	From Aug. 27 to Feb. 10.	From Oct. 16 to Feb. 1.
Nith	From Sept. 10 to Feb. 24.	From Dec. 1 to Feb. 24.
Orkney Islands (<i>River from Loch of Stenness, &c.</i>)	From Sept. 10 to Feb. 24.	From Nov. 1 to Feb. 24.
Ormsary (<i>Loch Killyport</i>), Loch Head, and Stornoway (<i>Mull of Cantyre</i>)	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Pennygowan or Glenforsa, and Aros	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.

Name of River.	Annual Close Time for Net-fishing.	Annual Close Time for Rod-fishing.
Resort	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Ruel	From Sept. 1 to Feb. 15.	From Nov. 1 to Feb. 15.
Sanda	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Scaddle	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Shetland Islands (<i>River of Sandwater, &c.</i>)	From Sept. 10 to Feb. 24.	From Nov. 16 to Jan. 31.
Shiel (<i>Loch Shiel</i>)	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Sligachan, Broadford, and Portree (<i>Isle of Skye</i>)	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Snizort, Orley, Oze, and Drynoch (<i>Isle of Skye</i>)	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Spey	From Aug. 27 to Feb. 10.	From Oct. 16 to Feb. 10.
Stinchar	From Sept. 10 to Feb. 24.	From Nov. 15 to Feb. 24.
Tay (except Earn)	From Aug. 21 to Feb. 4.	From Oct. 16 to Jan. 14.
Thurso	From Aug. 27 to Feb. 10.	From Oct. 6 to Jan. 10.
Torridon, Balgay, and Shieldag	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Tweed	From Sept. 15 to Feb. 14.	From Dec. 1 to Jan. 31.
Ugie	From Sept. 10 to Feb. 24.	From Nov. 16 to Feb. 24.
Ullapool (<i>Loch Broom</i>)	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Urr	From Sept. 10 to Feb. 24.	From Nov. 30 to Feb. 24.
Wick	From Aug. 27 to Feb. 10.	From Nov. 1 to Feb. 10.
Ythan	From Sept. 10 to Feb. 24.	From Nov. 1 to Feb. 10.

APPENDIX VIII.

LIST OF CHAIRMEN AND CLERKS OF SALMON FISHERY DISTRICT BOARDS IN SCOTLAND.

DISTRICT.	Name and Address of Chairman.	Name and Address of Clerk.
Alness . . .	Andrew Mackenzie, Esq., Dalmore House, Alness.	William J. Duncan, Solicitor, Dingwall.
Annan . . .	John T. McGlasson, Esq., Newbie Villa, Annan.	J. C. R. Macdonald, 84 Irish Street, Dumfries.
Ayr . . .	Richard A. Oswald, Esq., of Auchincruive, Ayr.	C. Young, W.S., County Buildings, Ayr.
Balgay . . .	C. R. Manners, Esq., C.E., 12 Lombard Street, Inverness.	Duncan Shaw, W.S., 15 High Street, Inverness.
Bervie . . .	David Scott Porteous, Esq., of Lauriston, as Mandatory of the Commissioners of Woods and Forests.	W. C. Walls, Solicitor, Montrose.
Broom . . .	W. Ewing-Gilmour, Esq., of Inverlael, per A. W. G. Aitken, Esq., S.S.C., Edinburgh.	W. R. T. Middleton, Solicitor, Dingwall.
Carron (W. Ross)	Baron von Schroder of Attadale.	Arthur H. Duncan, Solicitor, Dingwall.
Conon . . .	John Little Mounsey, Esq., W.S., 5 Thistle Street, Edinburgh, Commissioner for Col. J. A. F. H. Stewart Mackenzie of Seaforth.	W. R. T. Middleton, Solicitor, Dingwall.
Cree . . .	The Earl of Galloway, Cumlodan, Newton-Stewart.	A. B. Matthews, Solicitor, Newton-Stewart.
Dee (Aberdeen)	The Lord Provost of Aberdeen.	Alex. Duffus, Advocate, Aberdeen.
Dee (Solway) .	Thomas Cross, Esq., Mandatory for St. Charles Hope Dunbar, Bart., of St. Mary's Isle.	John Gibbon, Solicitor, Kirkcubright.
Deveron . . .	Wm. MacIntosh, Esq., Fife Lodge, Banff.	Wm. Simpson, of Messrs. Morrison & Co., Solicitors, Banff.
Don . . .	George Davidson, Esq., Wellwood, Aberdeen.	Alex. Duffus, Advocate, Aberdeen.
Doon . . .	Marquis of Ailsa, Culzean Castle, Maybole.	C. Young, W.S., County Buildings, Ayr.
Dunbeath . . .	Mandatory of Commissioners of Woods, etc., London.	D. W. Georgeson, Solicitor, Wick.
Esk (North) . .	W. Douglas Johnston, Esq. (as Mandatory for Proprietors of Morphy Fishings), Montrose.	J. R. Findlay, Solicitor, Montrose.
Esk (South) . .	J. Noel Johnston, Esq., Montrose.	D. S. Campbell, Solicitor, Montrose.
Fechoan . . .	The Marquis of Breadalbane, Taymouth Castle, Aberfeldy.	(Vacant.)
Findhorn . . .	Sir R. C. Munro Ferguson, Bart., of Novar, per J. J. Meiklejohn, Esq., factor.	C. Grant Mackenzie, Solicitor, Forres.
Forth . . .	Mandatory of Commissioners of Woods, etc., London.	Henry Robb, 11 Barnton Street, Stirling.
Girvan . . .	John Campbell Kennedy, Esq., of Dunure.	T. Gerald Tait, Solicitor, Girvan.
Gruinard and Little Gruinard	Alfred N. G. Aitken, Esq., S.S.C., Edinburgh, Factor and Commissioner for Hugh Mackenzie, Esq., of Dundonnell.	W. R. T. Middleton, Solicitor, Dingwall.
Kyle of Sutherland	Sir Charles Lockhart Ross, Bart., of Balnagowan.	John M'Crone, Solicitor, Dornoch.

APPENDIX VIII.—(continued)—LIST OF CHAIRMEN AND CLERKS OF SALMON FISHERY DISTRICT BOARDS IN SCOTLAND.

DISTRICT.	Name and Address of Chairman.	Name and Address of Clerk.
Little Broom .	Alfred N. G. Aitken, Esq., S.S.C., Edinburgh, Factor and Commissioner for Hugh Mackenzie, Esq., of Dundonnell.	W. R. T. Middleton, Solicitor, Dingwall.
Lochy . . .	Factor and Mandatory for the Trustees of the late Lord Abinger, Inverlochry Castle, Fort-William.	Duncan Maclachlan, Solicitor, Fort-William.
Nairn . . .	Brodie of Brodie, Brodie Castle, Forres.	H. T. Donaldson, Solicitor, Nairn.
Ness . . .	Colonel E. C. Ellice of Glengarry, Fort-Augustus.	Anderson & Shaw, Solicitors, Inverness.
Nith . . .	The Provost of Dumfries.	J. E. Blacklock, Solicitor, Irish Street, Dumfries.
Sligachan, Broadford, & Portree (Skye)	G. M. Fraser, Esq., Solicitor, Portree, Mandatory for Lord Macdonald.	A. W. Mackinnon, Solicitor, Portree.
Snizort, Orley, Oze, and Drynock (Skye)	G. M. Fraser, Esq., Solicitor, Portree, Mandatory for Lord Macdonald.	A. W. Mackinnon, Solicitor, Portree.
Spey . . .	The Duke of Richmond and Gordon, Gordon Castle, Fochabers, per George Muirhead, Esq., Commissioner.	T. R. Mackenzie and A. F. Macdonald, Solicitors, Elgin.
Stinchar . . .	The Earl of Stair, Lochinch, Wigtownshire.	Stair M'Harrie, Rephad, Stranraer.
Tay . . .	P. D. Malloch, Esq., Mandatory for the Tay Salmon Fisheries Co., Perth.	Condie, Mackenzie, & Co., Solicitors, Perth.
Thurso . . .	Peter Keith, Esq., Mandatory for Sir Archibald H. M. Sinclair, Bart., of Ulbster.	David Keith-Murray, Solicitor, Thurso.
Torridon . . .	C. R. Manners, Esq., C.E., 12 Lombard Street, Inverness.	Duncan Shaw, W.S., 15 High Street, Inverness.
Tweed (Police Committee of the Commissioners)	The Duke of Roxburgh, K.T., Floors Castle, Kelso.	David W. B. Tait, W.S., Kelso.
Ugie . . .	Lieut.-Col. Ferguson, of Pitfour, Mintlaw.	David Troup, Solicitor, Peterhead.
Wick . . .	Mrs. Duff Dunbar, of Hempriggs, Ackergill Tower, Wick.	D. W. Georgeson, Solicitor, Wick.
Ythan . . .	Earl of Errol, Slains Castle, Aberdeenshire.	D. M. A. Chalmers, Advocate, Aberdeen.

NOTE.—In addition to the districts specified above, the Duke of Sutherland is sole proprietor of the Brora, and is joint proprietor, along with Mr. F. W. Wignall and Dr. T. H. Ward, of the Fleet. Messrs. Young and Macandrew are proprietors of the Halladale, and Messrs. Birtwistle and Midwood of the Naver; Mr. Barnett is proprietor of the Borgie. The Duke of Westminster is sole proprietor of the Laxford, and Mr. Geo. Morrison of the Inchard. Sir Wm Coats Cross and Captain Alex. Cross and Mr. Alex. Morrison are proprietors of the Kinloch. Mr. J. W. Stewart is sole proprietor in the Inver and Kirkaig districts (in charge of his factor, Mr. Murdo Kerr, Assynt Estate Office, Lochinver); Mr. W. E. Gilmour of Rosehall is sole proprietor of the rivers Dionard, Polla, Strathy, and Armadale, and part owner, with Mr. J. D. Milburn, of the River Hope district (Mr. A. Gunn, Overseer, Durness, by Lairg, acts for Mr. Gilmour); Lord Lovat has practically sole rights of fishing in the river Beaully (under the charge of his factor, Mr. J. T. Garrioch, Estate Office, Beaully); and the Countess of Cromarty is sole proprietrix of the district of the river Kannaird (under the charge of her factor, Mr. Alex. Taylor, Cromarty Estate Office, Kildary).

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TABLE A.—No. I.

MEANS OF CAPTURE.—Particulars relating to the Vessels, Gear, and Men actually employed in the Scottish Fishing Industry in the Year 1918.

I. SAILING VESSELS.

No.	District.	Number of Vessels.					Value of Vessels	Value of Fishing Gear.	Total Value.	No. of Fishermen and Boys.
		1st Class.		2nd Class.	3rd Class.	Total.				
		45 feet keel and upwards.	30 to 45 feet keel.	18 to 30 feet keel.	Under 18 feet keel.					
EAST COAST.						£	£	£		
1	Eyemouth . . .	...	2	15	8	25	820	1,216	2,036	35
2	Leith . . .	17	20	85	96	218	6,839	13,391	20,230	552
3	Anstruther . . .	...	6	78	10	94	5,944	7,500	13,444	289
4	Montrose . . .	...	23	32	20	75	1,671	980	2,651	132
5	Stonehaven . . .	...	...	13	14	27	470	3,028	3,498	71
6	Aberdeen . . .	...	...	21	6	27	405	2,195	2,600	71
7	Peterhead . . .	12	1	24	95	132	6,745	9,959	16,704	125
8	Fraserburgh . . .	39	...	6	254	299	21,270	47,390	68,660	310
9	Banff . . .	18	...	25	25	68	4,525	15,294	19,819	202
10	Buckie . . .	67	...	90	36	193	23,420	34,170	57,590	579
11	Findhorn . . .	18	...	28	25	71	6,480	17,180	23,660	209
12	Cromarty . . .	6	...	37	30	73	3,710	7,520	11,230	220
13	Helmsdale . . .	...	...	16	19	35	414	1,780	2,194	93
14	Lybster . . .	...	2	2	21	25	278	590	868	55
15	Wick . . .	2	...	...	86	88	1,050	1,700	2,750	180
East Coast Totals .		179	54	472	745	1,450	84,041	163,893	247,934	3,123
Orkney and Shetland.										
16	Orkney . . .	1	...	8	392	401	4,500	5,671	10,171	893
17	Shetland . . .	62	1	19	109	191	22,815	38,480	61,295	895
Orkney and Shetland Totals .		63	1	27	501	592	27,315	44,151	71,466	1,788
WEST COAST.										
18	Stornoway . . .	26	32	35	37	130	8,316	15,802	24,118	665
19	Barra . . .	...	14	60	46	120	2,510	4,600	7,110	420
20	Loch Broom . . .	...	1	22	120	143	3,940	5,787	9,727	276
21	Loch Carron & Skye . . .	...	...	60	124	184	2,492	6,124	8,616	335
22	Fort-William . . .	...	1	15	65	81	710	2,100	2,810	243
23	Campbeltown . . .	...	...	30	34	64	800	768	1,568	160
24	Inveraray . . .	...	...	23	29	52	754	884	1,638	104
25	Rothesay . . .	...	...	13	45	58	516	1,410	1,926	56
26	Greenock . . .	...	...	12	31	43	524	716	1,240	49
27	Ballantrae . . .	...	...	63	26	89	1,781	2,403	4,184	178
West Coast Totals .		26	48	333	557	964	22,343	40,594	62,937	2,486
Grand Totals for 1918		268	103	832	1,803	3,006	133,699	248,638	382,337	7,397
Grand Totals for 1917		317	100	860	1,890	3,167	128,493	147,461	275,954	7,395
Increase in 1918 .		...	3	...	...	...	5,206	101,167	106,373	2
Decrease in 1918 .		49	...	28	87	161	...	...	...	...

TABLE A.
MEANS OF CAPTURE.—Particulars relating to the Vessels, Gear, and
III. STEAM

No.	District.	Steam Liners and Steam Drifters.				Steam	
		No. of Vessels.	Value of Vessels.	Value of Fishing Gear.	Total Value.	No. of Fishermen and Boys.	No. of Vessels.
EAST COAST.			£	£	£		
1	Eyemouth . . . .	...	...	...	...	...	...
2	Leith . . . .	...	...	...	...	...	18
3	Anstruther	4	16,000	4,350	20,350	32	...
4	Montrose . . . .	...	...	...	...	...	3
5	Stonhaven . . . .	...	...	...	...	...	...
6	Aberdeen	{ 16 *7	56,000 35,000	16,448 3,233	72,448 38,233	151 63	66
7	Peterhead	{ 32 †5	88,000 13,750	43,086 ...	131,086 13,750	329 ...	1
8	Fraserburgh	13	46,800	13,950	60,750	91	...
9	Banff	1	4,000	1,115	5,115	9	...
10	Buckie	{ 44 †1	176,000 4,000	44,880 1,020	220,880 5,020	294 8	...
11	Findhorn	{ 3 *2	10,500 2,300	3,600 300	14,100 2,600	27 10	...
12	Cromarty . . . .	...	...	...	...	...	...
13	Helmsdale . . . .	...	...	...	...	...	...
14	Lybster . . . .	...	...	...	...	...	...
15	Wick	1	3,400	510	3,910	9	...
East Coast Totals		129	455,750	132,492	588,242	1,023	88
Orkney and Shetland.							
16	Orkney . . . .	...	...	...	...	...	...
17	Shetland	{ 1 †7	2,500 19,600	820 5,740	3,320 25,340	9 70	...
Orkney and Shetland Totals		8	22,100	6,560	28,660	79	...
WEST COAST.							
18	Stornoway	{ 9 †31	18,000 77,500	5,320 17,345	23,320 94,845	81 279	...
19	Barra . . . .	...	...	...	...	...	...
20	Loch Broom . . . .	...	...	...	...	...	...
21	Loch Carron and Skye . . . .	...	...	...	...	...	...
22	Fort-William	{ *1 †1	900 1,000	120 120	1,020 1,120	8 8	...
23	Campbeltown . . . .	...	...	...	...	...	...
24	Inveraray . . . .	...	...	...	...	...	...
25	Rothsay . . . .	...	...	...	...	...	...
26	Greenock . . . .	...	...	...	...	...	4
27	Ballantrae . . . .	...	...	...	...	...	...
West Coast Totals		42	97,400	22,905	120,305	376	4
Grand Totals for 1918		179	575,250	161,957	737,207	1,478	92
Grand Totals for 1917		219	494,765	88,034	582,799	1,755	100
Increase in 1918 . . . .		...	80,485	73,923	154,408	...	...
Decrease in 1918		40	...	...	...	277	8

* Steam liners as distinct from steam drifters.

† Steam drifters other than Scottish.

‡ Steam liner other than Scottish.

—No. I.—continued.

Men actually employed in the Scottish Fishing Industry in the Year 1918.

VESSELS.

Trawlers.				Total Steam Fishing Vessels.					No.
Value of Vessels.	Value of Fishing Gear.	Total Value.	No. of Fishermen and Boys.	No. of Vessels.	Value of Vessels.	Value of Fishing Gear.	Total Value.	No. of Fishermen and Boys.	
£	£	£			£	£	£		
...	...	...	...	...	...	...	...	...	1
135,000	3,600	138,600	162	18	135,000	3,600	138,600	162	2
...	...	...	...	4	16,000	4,350	20,350	32	3
27,000	750	27,750	27	3	27,000	750	27,750	27	4
...	...	...	...	...	...	...	...	...	5
396,000	19,800	415,800	631	89	487,000	39,481	526,481	845	6
4,620	210	4,830	9	38	106,370	43,296	149,666	338	7
...	...	...	...	13	46,800	13,950	60,750	91	8
...	...	...	...	1	4,000	1,115	5,115	9	9
...	...	...	...	45	180,000	45,900	225,900	302	10
...	...	...	...	5	12,800	3,900	16,700	37	11
...	...	...	...	...	...	...	...	...	12
...	...	...	...	...	...	...	...	...	13
...	...	...	...	...	...	...	...	...	14
...	...	...	...	1	3,400	510	3,910	9	15
562,620	24,360	586,980	829	217	1,018,370	156,852	1,175,222	1,852	
...	...	...	...	...	...	...	...	...	16
...	...	...	...	8	22,100	6,560	28,660	79	17
...	...	...	...	8	22,100	6,560	28,660	79	
...	...	...	...	40	95,500	22,665	118,165	360	18
...	...	...	...	...	...	...	...	...	19
...	...	...	...	...	...	...	...	...	20
...	...	...	...	...	...	...	...	...	21
...	...	...	...	2	1,900	240	2,140	16	22
...	...	...	...	...	...	...	...	...	23
...	...	...	...	...	...	...	...	...	24
...	...	...	...	...	...	...	...	...	25
32,000	1,400	33,400	36	4	32,000	1,400	33,400	36	26
...	...	...	...	...	...	...	...	...	27
32,000	1,400	33,400	36	46	129,400	24,305	153,705	412	
594,620	25,760	620,380	865	271	1,169,870	187,717	1,357,587	2,343	
461,290	17,360	478,650	900	319	956,055	108,394	1,061,449	2,655	
133,330	8,400	141,730	...	...	213,815	82,323	296,138	...	
...	...	...	35	48	...	...	...	312	

TABLE A.—No. I.—*continued.*

MEANS OF CAPTURE.—Particulars relating to the Vessels, Gear, and Men actually employed in the Scottish Fishing Industry in the Year 1918.

IV. ALL VESSELS.

No.	District.	No. of Vessels.	Value of Vessels.	Value of Fishing Gear.	Total Value.	No. of Fishermen and Boys.
EAST COAST.			£	£	£	
1	Eymouth	87	64,830	31,750	96,580	294
2	Leith	307	178,239	31,991	210,230	1,034
3	Anstruther	199	125,644	61,850	187,494	818
4	Montrose	184	100,421	9,130	109,551	579
5	Stonehaven	46	14,520	5,200	19,720	135
6	Aberdeen	149	508,805	47,312	556,117	1,086
7	Peterhead	198	131,395	64,258	195,653	591
8	Fraserburgh	452	271,630	177,460	449,090	951
9	Banff	165	64,565	43,372	107,937	606
10	Buckie	313	308,420	149,820	458,240	1,390
11	Findhorn	152	48,510	36,980	85,490	550
12	Cromarty	76	4,160	7,760	11,920	232
13	Helm-dale	60	6,224	5,298	11,522	195
14	Lybster	28	528	725	1,253	66
15	Wick	163	34,710	11,220	45,930	414
East Coast Totals		2,579	1,862,601	684,126	2,546,727	8,941
Orkney and Shetland.						
16	Orkney	425	6,680	6,486	13,166	950
17	Shetland	236	72,760	55,772	128,532	1,186
Orkney and Shetland Totals		661	79,440	62,258	141,698	2,136
WEST COAST.						
18	Stornoway	181	110,816	42,634	153,450	1,095
19	Barra	136	8,050	7,500	15,550	521
20	Loch Broom	161	8,215	7,816	16,031	346
21	Loch Carron and Skye	262	22,802	18,690	41,492	625
22	Fort-William	104	6,590	4,112	10,702	347
23	Campbeltown	124	10,800	7,008	17,808	430
24	Inveraray	114	13,794	4,384	18,178	352
25	Rothesay	77	4,046	4,190	8,236	113
26	Greenock	68	37,904	3,902	41,806	147
27	Ballantrae	147	16,681	10,233	26,914	363
West Coast Totals		1,374	239,698	110,469	350,167	4,339
Grand Totals for 1918		4,614	2,181,739	856,853	3,038,592	15,416
Grand Totals for 1917		4,609	1,486,914	415,253	1,902,167	14,800
Increase in 1918		5	694,825	441,600	1,136,425	616
Decrease in 1918 . . . . .		...	...	...	...	...

TABLE B.—No. I.

FISH LANDED.—STATEMENT of the Total Quantity and Value of **Herrings** landed by Steam, Motor, and Sailing Boats respectively in **Scotland** during the various Seasons of the Year 1918.

No.	DISTRICTS.	Winter. (1st Jan. to 31st Mar.)								Early Summer. (1st April to 30th June.)	
		Steam.		Motor.		Sail.		TOTAL.		Steam.	
		Cwts. Landed.	Value.	Cwts. Landed.	Value.	Cwts. Landed.	Value.	Cwts. Landed.	Value.	Cwts. Landed.	Value.
	EAST COAST.		£		£		£		£		£
1	Eyemouth . . .	..	..	1,619	4,017	..	..	6,551	14,553	..	..
2	Leith . . .	..	..	5,207	13,456	4,932	10,536	6,912	17,877	..	..
3	Anstruther . . .	..	..	..	..	1,705	4,421	2,422	4,733	..	..
4	Montrose . . .	..	..	..	..	2,422	4,733	..	..	..	..
5	Stonehaven . . .	..	..	..	..	..	..	..	..	..	..
6	Aberdeen . . .	11	28	..	..	..	..	11	28	1,566	1,582
7	Peterhead . . .	145	230	..	..	..	..	145	230	37,702	52,992
8	Fraserburgh . . .	..	..	..	..	..	..	..	..	29,054	38,109
9	Banf . . .	..	..	..	..	..	..	..	..	539	719
10	Buckie . . .	611	943	217	327	..	..	828	1,270	3,501	4,831
11	Findhorn . . .	..	..	42	79	2,499	5,031	2,541	5,110	102	145
12	Cromarty . . .	..	..	..	..	..	..	..	..	..	..
13	Helmsdale . . .	..	..	..	..	..	..	..	..	..	..
14	Lybster . . .	..	..	..	..	..	..	..	..	..	..
15	Wick . . .	..	..	404	568	119	70	523	638	637	240
	East Coast Totals } carried down . . .	767	1,201	7,489	18,447	11,677	24,791	19,933	44,439	73,101	93,618
	ORKNEY AND SHETLAND.										
16	Orkney . . .	..	..	35	79	224	447	693	1,175	5,983	6,192
17	Shetland . . .	434	649	..	..	..	..	..	..	..	..
	Orkney and Shetland } Totals cd. down . . .	434	649	35	79	224	447	693	1,175	5,983	6,192
	WEST COAST.										
18	Stornoway . . .	175,759	187,597	99,975	91,967	21,038	17,669	296,772	297,233	6,495	8,960
19	Barra . . .	..	..	2,356	1,977	3,638	1,983	6,044	3,960	..	..
20	Loch Broom . . .	1,306	427	3,497	1,423	3,134	1,799	7,937	3,649	..	..
21	Loch Carron & Skye . . .	23,926	43,022	44,611	68,879	5,299	5,777	73,836	117,678	..	..
22	Fort-William . . .	185,529	295,614	123,475	191,418	2,975	5,720	311,979	492,752	39,940	77,130
23	Campbeltown . . .	..	..	19,257	37,903	91	242	19,343	38,145	..	..
24	Inveraray . . .	..	..	42	35	..	..	42	35	..	..
25	Rothesay . . .	..	..	98	118	..	..	98	118	..	..
26	Greenock . . .	..	..	3,290	4,233	266	511	3,556	4,794	..	..
27	Ballantrae . . .	..	..	39,639	87,395	709	1,856	40,398	89,751	..	..
	West Coast Totals } carried down . . .	386,520	526,660	336,290	485,898	37,200	35,557	760,010	1,048,115	46,435	86,090
	TOTALS brought down.										
	East Coast . . .	767	1,201	7,489	18,447	11,677	24,791	19,933	44,439	73,101	93,618
	Orkney & Shetland . . .	434	649	35	79	224	447	693	1,175	5,983	6,192
	West Coast . . .	386,520	526,660	336,290	485,898	37,200	35,557	760,010	1,048,115	46,435	86,090
	Grand Tls. for 1918 . . .	387,721	523,510	343,314	504,424	49,101	60,795	780,636	1,093,729	125,519	190,900
	Grand Tls. for 1917 . . .	443,076	296,243	306,246	244,797	79,459	62,166	833,731	603,206	88,892	83,654
	Increase in 1918 . . .	..	222,267	37,568	259,627	..	..	..	490,523	36,627	107,246
	Decrease in 1918 . . .	60,355	..	..	..	30,358	1,371	53,145	..	..	..

TABLE B.—

FISH LANDED.—STATEMENT of the Total Quantity and Value in Scotland during the

No.	DISTRICTS.	Early Summer— <i>continued</i> . (1st April to 30th June.)						Great Summer and Autumn. (1st July to 31st Dec.)			
		Motor.		Sail.		TOTAL.		Steam.		Motor.	
		Cwts. Landed.	Value.	Cwts. Landed.	Value.	Cwts. Landed.	Value.	Cwts. Landed.	Value.	Cwts. Landed.	Value.
	EAST COAST.		£		£		£		£		£
1	Eyemouth . . .	5,953	5,672	..	..	5,953	5,672	..	..	5,834	7,918
2	Leith . . .	114	38	774	1,104	888	1,142	..	..	..	..
3	Anstruther . . .	408	949	92	193	500	1,142	..	..	..	..
4	Montrose . . .	..	..	..	..	..	..	14	24	..	..
5	Stonehaven . . .	..	..	..	..	..	..	..	..	..	..
6	Aberdeen . . .	..	..	..	..	1,566	1,582	1,588	1,631	..	..
7	Peterhead . . .	12,954	18,360	7,336	10,514	57,992	81,866	73,574	84,271	48,699	56,043
8	Fraserburgh . . .	71,679	90,013	23,667	27,187	124,400	155,309	69,909	78,754	174,269	186,569
9	Banff . . .	1,684	2,303	1,611	1,470	3,864	4,492	850	948	3,528	3,669
10	Buckie . . .	3,695	4,579	6,574	5,153	13,770	14,563	6,966	6,457	6,258	6,551
11	Findhorn . . .	511	555	1,596	1,969	2,209	2,669	70	61	3,155	3,152
12	Cromarty . . .	..	..	..	..	..	..	..	..	..	..
13	Helmsdale . . .	14	25	..	..	14	25	..	..	85	99
14	Lybster . . .	..	..	35	63	35	63	..	..	17	17
15	Wick . . .	1,743	1,101	28	28	2,408	1,369	1,354	2,129	11,412	15,861
	East Coast Totals } carried down . }	98,755	123,595	41,743	47,681	213,599	269,894	154,325	174,275	253,257	279,879
	ORKNEY AND SHETLAND.										
16	Orkney . . .	..	..	..	..	..	..	..	..	..	..
17	Shetland . . .	11,255	6,058	43,029	12,485	60,267	24,735	1,008	703	4,413	3,413
	Orkney and Shetland Totals cd. down . }	11,255	6,058	43,029	12,485	60,267	24,735	1,008	703	4,413	3,413
	WEST COAST.										
18	Stornoway . . .	6,405	8,941	12,802	16,065	25,702	33,966	25,270	25,648	10,129	11,504
19	Barra . . .	1,298	574	2,927	1,397	4,225	1,971	..	..	633	461
20	Loch Broom . . .	18	4	50	26	68	30	..	..	1,183	617
21	Loch Carron & Skye . . .	605	803	548	343	1,153	1,146	5,170	9,130	19,534	24,506
22	Fort-William . . .	66,363	114,737	4,458	5,576	110,761	197,443	9,411	16,180	25,251	40,311
23	Campbeltown . . .	12,129	20,264	49	62	12,178	20,326	..	..	47,956	59,571
24	Inveraray . . .	46	28	20	12	66	40	..	..	5,610	6,505
25	Rothsay . . .	679	819	119	111	798	930	..	..	30,083	23,696
26	Greenock . . .	826	1,206	161	204	987	1,410	..	..	8,628	4,711
27	Ballantrae . . .	5,843	10,833	378	618	6,221	11,451	..	..	13,514	15,389
	West Coast Totals } carried down . }	94,212	158,209	21,512	24,414	162,159	263,713	39,851	50,958	162,531	187,271
	TOTALS brought down.										
	East Coast . . .	98,755	123,595	41,743	47,681	213,599	269,894	154,325	174,275	253,257	279,879
	Orkney & Shetland . . .	11,255	6,058	43,029	12,485	60,267	24,735	1,008	703	4,413	3,413
	West Coast . . .	94,212	158,209	21,512	24,414	162,159	263,713	39,851	50,958	162,531	187,271
	Grand Tls. for 1918 . . .	204,222	287,862	106,284	84,580	436,025	563,342	195,184	225,936	420,201	470,563
	Grand Tls. for 1917 . . .	155,552	157,858	101,164	55,239	345,608	296,751	208,303	188,387	326,916	309,960
	Increase in 1918 . . .	48,670	130,004	5,120	29,341	90,417	266,591	..	37,549	93,285	160,603
	Decrease in 1918 . . .	..	..	..	..	..	..	13,119	..	..	..

No. I.—continued.

of Herrings landed by Steam, Motor, and Sailing Boats respectively various Seasons of the Year 1918.

Great Summer and Autumn—contd. (1st July to 31st Dec.)				TOTALS.								GRAND TOTAL.		No.
Sail.		TOTAL.		Steam.		Motor.		Sail.		Cwts. Landed.	Value.	Cwts. Landed.	Value.	
Cwts. Landed.	Value.	Cwts. Landed.	Value.	Cwts. Landed.	Value.	Cwts. Landed.	Value.	Cwts. Landed.	Value.					
	£		£		£		£		£		£		£	
..	..	5,834	7,918	..	..	11,787	13,590	..	..	11,787	13,590	1
197	234	197	234	..	..	1,733	4,055	5,903	11,924	7,636	15,979	2
..	..	..	..	..	..	5,615	14,405	1,797	4,614	7,412	19,019	3
..	..	14	24	..	14	..	..	2,422	4,733	2,436	4,757	4
29	34	29	34	..	..	..	..	..	34	29	34	5
..	..	1,588	1,631	3,165	3,241	..	..	..	..	3,165	3,241	6
16,093	15,338	138,366	155,652	111,421	137,493	61,653	74,403	23,429	25,852	196,503	237,748	7		
69,374	60,677	314,052	326,000	98,963	116,863	245,948	276,582	93,541	87,864	438,452	481,309	8		
3,017	2,758	7,395	7,375	1,389	1,667	5,212	5,972	4,663	4,223	11,259	11,867	9		
4,067	3,767	17,291	16,775	11,078	12,231	10,170	11,457	10,641	8,920	31,889	32,608	10		
64,633	52,610	67,858	55,823	172	206	3,708	3,786	68,728	59,610	72,608	63,602	11		
642	465	642	465	..	..	..	..	642	465	642	465	12
82	93	167	192	..	..	99	124	82	93	181	217	13
655	927	672	944	..	..	17	17	690	990	707	1,007	14
2,025	2,149	14,791	20,139	1,991	2,369	13,559	17,530	2,172	2,247	17,722	22,146	15		
161,314	139,102	568,896	593,256	228,193	274,094	359,501	421,921	214,734	211,574	802,428	907,589			
31,269	19,014	36,690	23,130	7,425	7,544	15,703	9,550	74,522	31,946	97,650	49,040	16		
31,269	19,014	36,690	23,130	7,425	7,544	15,703	9,550	74,522	31,946	97,650	49,040	17		
14,844	10,727	50,253	47,879	207,524	222,205	116,519	112,412	48,684	44,461	372,727	379,078	18		
1,250	1,054	1,883	1,515	..	..	4,287	3,012	7,865	4,434	12,152	7,446	19
10,332	5,412	11,515	6,029	1,306	427	4,698	2,044	13,516	7,237	19,520	9,708	20		
9,203	6,920	33,907	40,556	29,096	52,152	64,750	94,188	15,050	13,040	108,896	159,380	21		
147	149	34,809	56,640	234,880	388,924	215,089	346,466	7,580	11,445	457,549	746,835	22		
802	620	48,758	60,191	..	..	79,342	117,738	942	924	80,254	118,662	23
45	43	5,655	6,548	..	..	5,698	6,568	65	55	5,763	6,623	24
409	410	30,492	24,106	..	..	30,860	24,633	528	521	31,388	25,154	25
66	67	8,694	4,778	..	..	12,744	10,200	493	782	13,237	10,982	26
14	22	13,528	15,411	..	..	59,046	114,117	1,101	2,496	60,147	116,613	27
37,112	25,424	239,494	263,653	472,806	663,708	593,033	831,378	95,824	85,895	1,161,663	1,580,481			
161,314	139,102	568,896	593,256	228,193	274,094	359,501	421,921	214,734	211,574	802,428	907,589			
31,269	19,014	36,690	23,130	7,425	7,544	15,703	9,550	74,522	31,946	97,650	49,040			
37,112	25,424	239,494	263,653	472,806	663,708	593,033	831,378	95,824	85,895	1,161,663	1,580,481			
229,695	183,540	845,080	880,039	708,424	945,316	968,237	1,262,849	385,030	328,915	2,061,741	2,537,110			
257,738	165,520	792,957	663,867	745,271	568,284	788,714	712,615	438,361	282,925	1,972,346	1,563,824			
..	18,020	52,123	216,172	..	377,062	179,523	550,234	..	45,990	89,395	973,286			
23,043	..	..	..	36,847	..	..	..	53,281	..	..	..

TABLE B.—No. II.—RETURN respecting Vessels arriving and Fish landed in the district of Leith during the Year 1918, and showing the catch and value during the previous Year.

Method of Fishing.	Trawls.			Lines.						Nets.						1918.		1917.			
	Steam.			Motor.		Sail.		Total.		Steam.		Motor.		Sail.		Total.		Cwt.		£	
	Quantity.	Value.		Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
No. of Vessels arriving Aggregate No. of Days absent from Port
Description of Fish.	Cwt.	£		Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£
PELAGIC FISH—																					
Herrings
Sprats
Sparglings
Mackerel	21	37	8	10	8	10	8	10	8	10	8	10	8	10	8	10	8	10	8	10	8
Total of Pelagic Fish .	21	37	8	10	8	10	8	10	8	10	8	10	8	10	8	10	8	10	8	10	8
DEMERALS FISH—																					
ROUND.																					
Cod	28,700	97,197	6,237	2,597	6,237	7,347	21,814
Codling
Ling	797	2,418	4	2	4	2	4
Torsk (Tusk)
Sa'phe (Coal Fish)	906	1,837	14	13	14	13	14
Hick's locks, ex. La.
" Large	90,078	237,747	8,240	3,324	8,240	14,898	46,395
" Medium
" Small
Total of Demersal Fish
Total of Pelagic Fish
Total of Demersal Fish
Total Quantity and Value.
Total Quantity and Value.
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Total Quantity and Value.																		

TABLE B.—No. II.—RETURN respecting Vessels arriving and Fish landed in the District of Montrose during the Year 1918, and showing the catch and value during the previous Year.

Method of Fishing.	Trawls.			Lines.						Nets.			1918.		1917.			
	Steam.*	Motor.	Sail.	Total.	Steam.		Motor.		Sail.		Total.	Quantity.	Value.	Cwt.	£	Cwt.	£	
					Quantity.	Value.	Quantity.	Value.	Quantity.	Value.								Quantity.	Value.
No. of Vessels arriving	931	16,333	5,793	22,126	1	24	2,172	2,197										
Aggregate No. of Days absent from Port	1,390	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Description of Fish.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	
	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£
PELAGIC FISH—																		
Herrings	..	..	..	..	14	24	2,422	4,753	2,436	4,757	2,436	4,757	1,518	2,230	1,518	2,230	1,518	2,230
Sprats	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sparlings	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mackerel	1	1	..	..	3	2	..	..	..	..	..	..	..	..	..	..	..	..
Total of Pelagic Fish	1	1	..	..	17	26	53,943	44,078	53,961	44,105	53,961	44,105	21,046	14,107	21,046	14,107	21,046	14,107
DEMERSAL FISH—																		
ROUND.																		
Cod	1,194	4,868	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Codling	1,440	4,825	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ling	29	63	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Torsk (Tusk)	27	44	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Saithe (Coal Fish)	11	61	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Haddock, ex. La.	879	3,510	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Large "	1,255	3,488	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Medium "	17,653	38,466	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Small "	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total of Demersal Fish	16,881	59,435	1,681	5,757	18,512	64,192	51,512	39,279	51,512	39,279	51,512	39,279	20,855	48,805	20,855	48,805	20,855	48,805

TABLE B.—No. II.—RETURN respecting Vessels arriving and Fish landed in the District of Stonehaven during the Year 1918, and showing the catch and value during the previous Year.

Method of Fishing.	Trawls.			Lines.						Nets.						1917.		1918.		
	Quantity.	Value.	Steam.	Motor.	Sail.	Total.	Steam.	Motor.	Sail.	Total.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.		
No. of Vessels arriving Aggregate No. of Days absent from Port	3,687	2,718	6,405	..	..	5	5	..	..	..	..	..	..	..	..	..
Description of Fish.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
PELAGIC FISH—	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£	Cwt.	£
Herrings
Sprats
Sparlings
Mackerel	265	406	..	..	..	..	265	406	..	..	..	..	..	..	..	..
Total of Pelagic Fish.	265	406	..	..	..	..	265	406	..	..	..	..	..	..	..	..
DEMERSAL FISH—
ROUND.
Cod
Codling
Ling
Torsk (Tusk)
Saithe (Coal Fish)
Haddock, ex. La.
Large	207	403	..	..	..	..	207	403	..	..	..	..	..	..	..	..
Medium	482	1,356	..	..	..	..	482	1,356	..	..	..	..	..	..	..	..
Small	829	1,677	..	..	..	..	829	1,677	..	..	..	..	..	..	..	..
Total of Demersal Fish—	1,687	5,133	1,687	5,133
..	1,463	3,205	1,463	3,205
..	3,150	8,338	3,150	8,338
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TABLE B.—No. II.—FISH LANDED.—STATEMENT of the Total Quantity and Value of the different kinds of White and Shell-Fish landed on the East Coast of Scotland during the Year 1918.

DESCRIPTION OF FISH.	TRAWLS.				LINES.								NETS.				1917.					
	Steam.*		TOTAL.		Steam.		Motor.		Sail.		TOTAL.		Steam.		Motor.		Sail.		TOTAL.		Grand Total	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Cwt.	£
PELAGIC FISH.																						
Herrings	46	80	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	734,086	520,304
Sprats	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	36,856	23,698
Sparganx	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	195	527
Mackerel	152	266	1,119	1,327	3,417	4,658	4,536	5,985	7,654	8,427	9,562	22,718	24,362	27,406	30,613	22,663	12,043	..	..	..	783,704	556,472
Total of Pelagic Fish	198	346	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	802,423	907,589
DEMERSAL FISH.																						
(a) ROUND.																						
Cod	83,469	295,469	1,325	5,015	66,053	203,806	101,111	301,140	657	2,467	29,908	124,842	19,067	77,075	49,627	204,384	234,207	800,983	2-3,510	568,299	..	..
Codling	4,148	12,151	1,061	3,629	2,281	7,673	601	1,534	3,943	12,836	..	..	..	..	..	..	..	..	..	..	8,115	25,081
Ling	32	51	58	163	168	168	..	..	..	..	..	..	..	..	..	..	..	..	..	..	90	219
Torsk (Tusk)	4,091	10,690	281	679	4,039	7,362	8,775	16,320	13,095	24,961	..	..	..	..	..	..	..	..	..	..	17,953	36,075
Saithe (Coal Fish)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Haddock, ex. Ia.	257,169	808,636	226	461	188,672	512,669	51,013	122,536	219,911	635,666	..	..	..	..	..	..	..	..	..	..	477,310	1,443,089
Large Medium Small	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Whitings	49,560	111,312	25	49	20,070	47,254	5,386	9,831	25,491	57,214	18	11	7	4	116	53	72,167	163,579	57,221	1,062	109,237	..
Conger Eels	69	134	99	240	350	911	105	238	584	1,389	..	..	..	..	..	..	..	..	..	..	..	..
Gurnards	10,892	11,990	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Catfish	5,765	11,820	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Monks (Anglers)	5,767	9,540	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hake	354	1,137	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total of Round Fish	418,916	1,270,570	3,078	10,249	262,748	752,997	100,256	243,939	366,082	1,037,135	675	2,478	31,392	128,619	19,384	77,893	836,449	2,516,750	762,905	1,559,435	..	..

TABLE B.—No. II—FISH LANDED.—STATEMENT of the Total Quantity and Value of the different kinds of White and Shell-Fish landed on the West Coast of Scotland during the Year 1918.

DESCRIPTION OF FISH.	TRAWLS.						LINES.						NETS.						1917.		1918.	
	Steam.*		Motor.		Sail.		TOTAL.		Steam.		Motor.		Sail.		TOTAL.		Grand Total Quantity and Value.		Grand Total Quantity and Value.			
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Cwt.	£	Cwt.	£		
PELAGIC FISH.																						
Herrings	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sprats	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sharplings	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mackerel	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total of Pelagic Fish	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
DEMERSAL FISH.																						
(a) ROUND.																						
Cod	552	2,406	8,373	27,038	6,206	20,183	7,540	15,735	22,119	63,016	16	57	4,565	14,582	4,459	11,496	9,040	26,135	31,711	91,557	25,537	36,481
Codling	11	53	5,137	13,604	2,321	5,957	2,655	4,575	10,113	24,136	..	..	43	119	..	..	43	119	10,167	24,308	8,331	10,553
Ling	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Torsk (Tusk)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Saithe (Coal Fish)	1,379	3,728	2,410	5,959	3,427	8,631	4,974	4,368	10,811	18,958	..	..	6,268	13,791	2,957	4,930	9,225	18,771	21,415	41,457	22,110	19,077
Haddock, ex. La.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Large Medium Small	80	262	1	2	407	1,430	5,580	8,369	5,988	9,501	..	..	..	..	..	..	..	..	6,068	10,063	7,520	9,398
Whiting	74	313	..	..	215	813	808	1,855	1,023	2,693	..	..	11	38	..	..	11	38	1,108	3,049	1,292	2,221
Conger Eels	64	141	19,967	37,843	9,336	13,712	2,233	4,113	31,586	60,728	..	..	3	7	..	..	3	7	31,653	60,876	14,643	15,268
Gurnards	410	242	..	..	38	43	361	435	399	478	..	..	44	105	..	..	44	105	862	825	544	427
Catfish	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Monks (Anglers)	2	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	2	..
Hake	4,562	19,433	408	1,930	211	1,028	19	66	668	3,024	..	..	578	2,429	22	44	600	2,473	5,830	24,930	2,447	7,255
Total of Round Fish	7,144	26,582	36,667	87,063	22,252	56,976	24,330	39,631	83,249	183,673	16	57	11,512	31,071	7,438	16,520	18,966	47,648	109,359	257,903	83,183	100,991

TABLE B.—III.

SUMMARY of the Means of Capture and Fish Landed for the Years from 1889 to 1918 inclusive.

Year.	Number of Vessels.*	Value of Boats and Gear.	Total Catch. (Excluding Shell-fish).		Number of Fishermen and Shore-workers.
			Quantity.	Value.	
		£	Cwts.	£	
1889 . . .	14,714	1,603,307	5,589,239	1,454,175	...
1890 . . .	14,352	1,590,636	5,864,488	1,623,346	...
1891 . . .	13,933	1,637,305	5,434,206	1,762,494	...
1892 . . .	13,862	1,756,800	5,436,138	1,595,555	...
1893 . . .	13,491	1,785,365	6,208,018	1,624,896	...
1894 . . .	13,297	1,796,530	6,188,774	1,565,821	...
1895 . . .	13,098	1,820,429	6,107,044	1,763,991	...
1896 . . .	12,040	1,873,870	6,146,738	1,571,803	88,242
1897 . . .	11,633	1,922,685	5,001,672	1,627,754	81,549
1898 . . .	11,576	2,029,384	6,557,768	1,879,866	86,964
1899 . . .	11,245	2,383,776	5,145,076	2,189,933	84,538
1900 . . .	11,275	2,711,877	5,369,265	2,325,994	82,809
1901 . . .	11,201	3,001,301	6,385,170	2,238,310	83,905
1902 . . .	11,097	3,212,455	6,866,028	2,502,668	85,367
1903 . . .	11,008	3,448,168	6,518,808	2,401,287	84,553
1904 . . .	10,891	3,431,284	7,947,829	2,231,102	86,621
1905 . . .	10,581	3,304,695	7,856,310	2,649,148	88,201
1906 . . .	10,554	4,117,549	7,593,369	2,977,593	92,305
1907 . . .	10,365	4,857,816	9,018,153	3,149,127	94,783
1908 . . .	10,078	5,223,149	8,645,252	2,512,162	92,857
1909 . . .	9,889	5,291,533	7,423,185	2,889,107	92,060
1910 . . .	9,724	5,439,857	8,709,655	3,100,387	90,813
1911 . . .	9,543	5,628,087	8,511,974	3,060,574	89,152
1912 . . .	9,290	5,777,102	8,587,106	3,588,584	89,715
1913 . . .	8,991	6,035,952	7,828,350	3,925,360	90,710
1914 . . .	8,869	6,297,745	7,440,321	3,143,507	87,119
1915 . . .	4,653	1,668,765	2,319,390	2,051,171	35,461
1916 . . .	4,650	1,827,346	3,412,030	3,147,675	37,009
1917 . . .	4,609	1,902,167	3,079,768	3,645,015	35,746
1918 . . .	4,614	3,038,592	3,313,228	5,991,693	37,624

* Although the number of vessels shows a steady decrease there was a marked increase in the catching power, owing to the gradual adoption of steam and motor propulsion.

TABLE C.

FISH USED IN A FRESH STATE.—Table showing the Estimated Quantity of each Species of Fish consumed fresh in Scotland, or dispatched from Scotland in a fresh state, in the Year 1918.

Description of Fish.	1918.	1917.
	Quantity.	Quantity.
	Cwts.	Cwts.
Herrings	1,064,587	666,889
Sprats	61,791	36,856
Sparlings	232	127
Mackerel	57,387	58,943
Cod and Codlings	269,121	313,160
Ling	17,778	22,400
Torsk (Tusk)	1,130	1,157
Saithe	38,403	41,418
Haddocks	427,953	271,269
Whitings	66,861	51,527
Conger Eels	32,384	15,555
Gurnards	11,788	7,173
Catfish	8,616	11,210
Monks	5,986	6,702
Hake	6,202	3,471
Squids	9	40
Turbot	1,631	1,423
Halibut	8,244	4,905
Lemon Soles	9,741	8,420
Flounders	2,802	3,186
Plaice	41,630	43,169
Brill	55	34
Dabs	9,950	8,618
Whitches and Megrims	3,529	4,645
Skates and Rays	51,566	38,753
Unclassified kinds	11,893	10,089
Total	2,211,269	1,631,139

TABLE D.—No. I.

FISH CURED.—RETURN showing the Quantity of each Species of Fish Cured, and the Mode of Cure, in the Year 1918.

No.	DISTRICTS.	HERRINGS.					Total Number of Barrels.
		Barrels Guttled.	Barrels Un-guttled.	Barrels Kip-pered.	Barrels of Bloat-ers or Reds.	Barrels Tinned.	
EAST COAST.							
1	Eymouth	177	..	38,288	4,219	4,618	47,302
2	Leith . . . . .	..	..	4,930	1,730	..	6,660
3	Anstruther	20	..	190	826	..	1,036
4	Montrose . . . . .	..	..	..	..	212	212
5	Stonehaven . . . . .	..	..	8	..	..	8
6	Aberdeen . . . . .	..	..	52,090	11,819	5,649	69,558
7	Peterhead	1,829	3,030	46,366	436	1,425	53,086
8	Fraserburgh	7,183	12,896	30,468	1,380	5,646	57,573
9	Banff	125	..	4,076	..	..	4,201
10	Buckie . . . . .	..	724	8,343	675	..	9,742
11	Findhorn	15	..	24	100	..	139
12	Cromarty . . . . .	..	..	..	..	..	..
13	Helmsdale . . . . .	..	..	..	..	..	..
14	Lybster	78	..	..	..	..	78
15	Wick	384	..	6,162	48	..	6,594
East Coast Totals carried down }		9,811	16,650	190,945	21,233	17,550	256,189
Orkney and Shetland.							
16	Orkney . . . . .	..	..	..	..	..	..
17	Shetland	11,126	6,936	10,545	..	..	28,607
Orkney and Shetland Totals carried down }		11,126	6,936	10,545	..	..	28,607
WEST COAST.							
18	Stornoway	3,740	19,390	32,972	510	..	56,612
19	Barra	1,874	432	..	..	..	2,306
20	Loch Broom	1,538	1,721	..	..	..	3,259
21	Loch Carron and Skye	1,740	520	2,620	40	..	4,920
22	Fort-William	75	..	7,911	..	..	7,986
23	Campbeltown	30	..	235	..	..	265
24	Inveraray	332	..	10	..	..	342
25	Rothsay . . . . .	..	..	..	..	..	..
26	Greenock	765	..	11,730	254	..	12,749
27	Ballantrae . . . . .	..	..	..	..	..	..
West Coast Totals carried down }		10,094	22,063	55,478	804	..	88,439
Totals brought down.							
East Coast		9,811	16,650	190,945	21,233	17,550	256,189
Orkney and Shetland		11,126	6,936	10,545	..	..	28,607
West Coast		10,094	22,063	55,478	804	..	88,439
Grand Totals for 1918		31,031	45,649	256,968	22,037	17,550	373,235
Grand Totals for 191		193,081	25,360	187,028	13,181	17,051	435,701
Increase in 1918 . . . . .		..	20,289	69,940	8,856	499	..
Decrease in 1918		162,050	..	..	..	..	62,466

Note 1.—No vessel was fitted out for curing at sea during the year.

2.—The figures given above represent the quantities pickled "bungpacked," i.e. as finally packed. Corresponding equivalents in "seastick" state, i.e. before herrings have "pined" will be found in Appendix D.—No II.

3.—In addition to the above, 19,691 barrels of Norwegian cured (pickled) herrings were converted into reds.

4.—Included above are 11,593 crans kippers, 4,603 crans reds, and 242 crans tinned, manufactured from herrings imported from England, also 21,444 crans kippers, 220 crans reds, and 870 crans tinned, manufactured from herrings imported in a fresh state from Norway.

TABLE D.—No. I.—*continued.*

FISH CURED.—RETURN showing the Quantity of each Species of Fish Cured, and the Mode of Cure, in the year 1918.

SPECIES OTHER THAN HERRINGS.						
Description of Fish.	Dried.	Smoked.	Pickled.	Tinned	Total 1918.	Total 1917.
	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.
Mackerel . .	..	1,088	811	105	2,004	2,691
Cod and Codling	1,004	985	..	..	1,989	2,352
Ling . .	518	..	..	..	518	698
Tusk . .	30	..	..	..	30	20
Saithe . .	2,326	..	..	..	2,326	1,011
Haddocks . .	34	51,590	..	3,960	55,584	62,109
Whitings . .	..	3,673	..	1,973	5,646	4,262
Conger Eels . .	..	..	..	..	..	60
Skate . .	250	..	..	..	250	..
Total . .	4,162	57,336	811	6,038	68,347	73,203

Note 1.—In addition to the above there were dried in Scotland 43,234 cwts. of cod, 267 cwts. of ling, 80 cwts. of tusk, and 16,833 cwts. of saithe imported wet-salted, a further total of 60,414 cwts

2.—The figures given above represent the weight after cure.

TABLE D.—No. II.

HERRINGS CURED.—STATEMENT showing the Numbers of *Barrels of Herrings Cured, Gutted and Ungutted, on the East and West Coasts of Scotland, for the Hundred and eight years ended 31st December 1918.

Year ended	East Coast (with Orkney and Shetland).			West Coast.			GRAND TOTAL.
	Gutted.	Ungutted, Kipperd, &c.	Total.	Gutted.	Ungutted, Kipperd, &c.	Total.	
6th April 1811	2,008½	6,630	8,638½	62,186	19,110	81,296	89,934½
" 1812	4,325½	10,332	14,657½	65,922	24,518	90,440	105,097½
" 1813	9,179	20,950½	30,129½	76,561½	31,025½	107,587½	137,716½
" 1814	9,503	46,800½	56,303½	37,969	5,773	43,742	100,045½
" 1815	24,314	36,827	61,141	76,021½	7,756	83,777½	144,918½
" 1816	55,411½	18,416½	73,828	73,292½	2,578½	75,870½	149,698½
" 1817	90,710½	26,252½	116,963	60,581½	3,233½	63,815	180,778
" 1818	118,594½	8,287½	126,882	76,765	4,491½	81,256½	208,138½
" 1819	221,959½	22,158	244,117½	75,197½	6,441	81,638½	325,756
" 1820	267,556½	27,391½	294,948	72,629½	4,512	77,141½	372,089½
" 1821	318,473½	23,909½	342,383½	88,626½	2,613	91,239½	433,622½
" 1822	229,070	12,808½	241,878½	56,342½	1,328	57,670½	299,549½
" 1823	183,687	15,256½	198,943½	34,211	245½	34,456½	233,399½
" 1824	272,340½	32,402	304,742½	52,792	802½	53,594½	358,336½
" 1825	227,667	28,849½	256,516½	64,623	593	65,216	321,732½
" 1826	289,101	31,703½	320,804½	42,602	121	42,723	363,527½
" 1827	211,042½	22,241½	233,284½	43,231	117	43,348	276,632½
" 1828	287,906½	37,882½	325,789	45,632	2,039½	47,671½	373,460½
" 1829	249,365½	41,047½	290,412½	47,525	945	48,470	338,882½
" 1830	216,427½	35,226	251,653½	59,494	639	60,133	311,786½
" 1831	315,479	51,609½	367,088½	46,631	855	47,486	414,574½
" 1832	259,197½	36,183½	295,381	49,216½	3,167	52,383½	347,764½
5th April 1833	267,928½	45,564½	313,493½	77,144	573	77,717	391,210½

* The figures in this table, so far as relating to pickled herrings, gutted or ungutted, represent the numbers of barrels of "sea-sticks."
Vide Note 2 to Appendix D.—No. I. (p. 75).

TABLE D.—No. II.—continued.

Year ended	East Coast (with Orkney and Shetland).			West Coast.			GRAND TOTAL.
	Gutted.	Ungutted, Kippered, &c.	Total.	Gutted.	Ungutted, Kippered, &c.	Total.	
1834	315,159	56,374 ³ / ₄	371,533 ³ / ₄	64,427 ¹ / ₂	137	64,564 ¹ / ₂	436,098 ¹ / ₂
1835	166,589 ¹ / ₂	33,339 ¹ / ₂	199,879	45,091 ¹ / ₂	633	45,724 ¹ / ₂	245,603 ¹ / ₂
1836	343,693 ¹ / ₂	68,891 ¹ / ₂	412,585 ¹ / ₂	46,554 ¹ / ₂	479	47,033 ¹ / ₂	459,618 ¹ / ₂
1837	229,371	71,449 ¹ / ₂	300,820 ¹ / ₂	54,859	1,892 ¹ / ₂	56,751 ¹ / ₂	357,571 ¹ / ₂
1838	307,625	82,634 ¹ / ₂	390,259 ¹ / ₂	68,990 ¹ / ₂	2,374 ¹ / ₂	71,365	461,624 ¹ / ₂
1839	308,581	119,489 ¹ / ₂	428,070 ¹ / ₂	66,046 ¹ / ₂	1,672 ¹ / ₂	67,719	495,789 ¹ / ₂
1840	345,074 ¹ / ₂	103,160	448,234 ¹ / ₂	54,208 ¹ / ₂	343	54,551 ¹ / ₂	502,786
1841	334,539	78,225 ¹ / ₂	412,764 ¹ / ₂	87,562 ¹ / ₂	3,402 ¹ / ₂	90,965	503,729 ¹ / ₂
1842	404,502 ¹ / ₂	116,675 ¹ / ₂	521,178	78,755 ¹ / ₂	2,183 ¹ / ₂	80,939	602,117
1843	376,374	118,755 ¹ / ₂	495,129 ¹ / ₂	61,568 ¹ / ₂	1,627	63,195 ¹ / ₂	558,325 ¹ / ₂
1844	384,729	105,927 ¹ / ₂	490,656 ¹ / ₂	81,643	4,776	86,419	577,075 ¹ / ₂
1845	305,461 ¹ / ₂	72,649 ¹ / ₂	378,110 ¹ / ₂	80,836	901	81,737	459,847 ¹ / ₂
1846	343,927	82,607 ¹ / ₂	426,534 ¹ / ₂	64,056	3,753 ¹ / ₂	67,809 ¹ / ₂	494,344
1847	343,009 ¹ / ₂	137,296 ¹ / ₂	480,306 ¹ / ₂	67,613	11,263	78,876	559,182 ¹ / ₂
1848	323,471 ¹ / ₂	135,479	458,950 ¹ / ₂	46,636 ¹ / ₂	9,570	56,206 ¹ / ₂	515,157
1849	337,450	155,654 ¹ / ₂	493,104 ¹ / ₂	52,473	6,981	59,454	552,558 ¹ / ₂
1850	427,138	152,530	579,668	77,171 ¹ / ₂	25,029 ¹ / ₂	102,201 ¹ / ₂	681,869 ¹ / ₂
1851	320,493	129,532 ¹ / ₂	450,025 ¹ / ₂	57,694	21,134	78,828	528,853 ¹ / ₂
1852	348,573	109,933	458,506	68,660 ¹ / ₂	36,220 ¹ / ₂	104,881	563,387
1853	331,055 ¹ / ₂	89,355	420,410 ¹ / ₂	44,623 ¹ / ₂	13,903	58,526 ¹ / ₂	478,937
1854	482,017	165,459 ¹ / ₂	647,476 ¹ / ₂	78,350	28,431 ¹ / ₂	106,781 ¹ / ₂	754,257 ¹ / ₂
1855	410,332	132,977 ¹ / ₂	543,309 ¹ / ₂	48,247 ¹ / ₂	31,207 ¹ / ₂	79,455	622,764 ¹ / ₂
1856	505,481 ¹ / ₂	136,687 ¹ / ₂	642,169 ¹ / ₂	77,175 ¹ / ₂	32,631	109,806 ¹ / ₂	751,975 ¹ / ₂
1857	396,650	92,400 ¹ / ₂	489,050 ¹ / ₂	69,755 ¹ / ₂	32,492 ¹ / ₂	102,248	591,298 ¹ / ₂
1858	410,775	59,712 ¹ / ₂	470,487 ¹ / ₂	74,447 ¹ / ₂	25,763 ¹ / ₂	100,211	550,698 ¹ / ₂
1859	308,518 ¹ / ₂	111,440 ¹ / ₂	419,958 ¹ / ₂	59,868 ¹ / ₂	23,350	83,218 ¹ / ₂	605,184
1860	424,201 ¹ / ₂	55,584	479,785 ¹ / ₂	72,541	20,487	93,028	457,130 ¹ / ₂
		103,086 ¹ / ₂	527,287 ¹ / ₂	71,894	37,891 ¹ / ₂	109,785 ¹ / ₂	637,073 ¹ / ₂

• TABLE D.—No. II.—continued.

Year ended	East Coast (with Orkney and Shetland).			West Coast.			GRAND TOTAL.
	Gutted.	Ungutted, Kipperd, &c.	Total.	Gutted.	Ungutted, Kipperd, &c.	Total.	
31st December 1861	447,931 $\frac{1}{2}$	97,207	545,138 $\frac{1}{2}$	71,241 $\frac{1}{2}$	34,336 $\frac{1}{2}$	105,578	650,716 $\frac{1}{2}$
" 1862	536,602 $\frac{1}{2}$	88,911	625,513 $\frac{1}{2}$	119,257 $\frac{1}{2}$	52,685	171,942 $\frac{1}{2}$	797,456
" 1863	445,596 $\frac{1}{2}$	75,511 $\frac{3}{4}$	521,108 $\frac{1}{4}$	61,396 $\frac{1}{2}$	26,810	88,206 $\frac{1}{2}$	609,314 $\frac{3}{4}$
" 1864	378,752	88,107 $\frac{3}{4}$	466,859 $\frac{1}{4}$	99,737 $\frac{1}{2}$	42,889	142,626 $\frac{1}{2}$	609,486 $\frac{1}{4}$
" 1865	374,424	73,814 $\frac{3}{4}$	448,238 $\frac{1}{4}$	95,920 $\frac{1}{2}$	57,207	153,127 $\frac{1}{2}$	601,366
" 1866	398,358	72,420 $\frac{1}{4}$	470,778 $\frac{1}{4}$	99,396 $\frac{1}{2}$	74,431	173,827 $\frac{1}{2}$	644,605 $\frac{3}{4}$
" 1867	492,172 $\frac{1}{4}$	81,978 $\frac{1}{2}$	574,150 $\frac{3}{4}$	139,547 $\frac{1}{4}$	90,392	229,939 $\frac{1}{4}$	804,090
" 1868	363,922 $\frac{1}{2}$	62,906	426,828 $\frac{1}{2}$	81,546	129,886 $\frac{1}{4}$	211,432 $\frac{1}{4}$	638,260 $\frac{3}{4}$
" 1869	395,500 $\frac{1}{2}$	61,809 $\frac{3}{4}$	457,310 $\frac{1}{4}$	93,330 $\frac{1}{2}$	124,502 $\frac{1}{4}$	217,832 $\frac{3}{4}$	675,143
" 1870	508,805 $\frac{1}{2}$	98,318	607,123 $\frac{1}{2}$	148,254	77,783	226,037	833,160 $\frac{1}{2}$
" 1871	585,172	94,178	679,350	83,317 $\frac{1}{2}$	62,808 $\frac{1}{4}$	146,125 $\frac{3}{4}$	825,475 $\frac{3}{4}$
" 1872	623,443 $\frac{1}{2}$	62,341	685,784 $\frac{1}{2}$	48,260	39,815	88,075	773,859 $\frac{1}{2}$
" 1873	710,376 $\frac{1}{2}$	96,983 $\frac{1}{2}$	807,360	86,525 $\frac{1}{2}$	45,348	131,873 $\frac{1}{2}$	939,233 $\frac{1}{2}$
" 1874	789,345 $\frac{1}{2}$	77,489 $\frac{3}{4}$	866,835 $\frac{1}{4}$	97,657	36,068 $\frac{3}{4}$	133,725 $\frac{3}{4}$	1,000,561
" 1875	774,293 $\frac{1}{2}$	67,729	842,022 $\frac{1}{2}$	60,529	40,428 $\frac{1}{2}$	100,957 $\frac{1}{2}$	942,980
" 1876	454,164	59,230	513,394	32,074 $\frac{1}{2}$	52,729	84,803 $\frac{1}{2}$	598,197 $\frac{1}{2}$
" 1877	618,116 $\frac{3}{4}$	65,529 $\frac{1}{4}$	683,646	98,754 $\frac{1}{2}$	65,318 $\frac{1}{4}$	164,072 $\frac{3}{4}$	847,718
" 1878	702,433 $\frac{1}{2}$	70,927 $\frac{1}{2}$	773,361	69,122 $\frac{1}{2}$	63,284 $\frac{1}{2}$	132,407	905,768
" 1879	563,754	62,833 $\frac{1}{2}$	626,587 $\frac{1}{2}$	92,237	122,971 $\frac{1}{2}$	215,208 $\frac{1}{2}$	841,796
" 1880	1,096,953 $\frac{1}{2}$	104,151 $\frac{1}{2}$	1,201,105	127,245	145,250 $\frac{1}{4}$	272,495 $\frac{1}{4}$	1,473,600 $\frac{1}{4}$
" 1881	830,751 $\frac{1}{2}$	73,602 $\frac{1}{4}$	904,353 $\frac{3}{4}$	84,346 $\frac{1}{2}$	122,455	206,801 $\frac{1}{2}$	1,111,155 $\frac{1}{4}$
" 1882	879,243 $\frac{1}{2}$	98,983	978,226 $\frac{1}{2}$	101,512	203,235	304,747	1,282,973 $\frac{1}{2}$
" 1883	960,428 $\frac{1}{2}$	87,477 $\frac{1}{4}$	1,047,905 $\frac{3}{4}$	128,658 $\frac{1}{2}$	148,848 $\frac{1}{4}$	277,506 $\frac{3}{4}$	1,325,412 $\frac{1}{2}$
" 1884	1,323,989 $\frac{1}{2}$	132,061 $\frac{1}{4}$	1,456,050 $\frac{3}{4}$	72,223 $\frac{1}{2}$	112,803	241,026 $\frac{1}{2}$	1,697,077 $\frac{1}{4}$
" 1885	1,244,259	74,723 $\frac{1}{2}$	1,318,982 $\frac{1}{2}$	108,190	145,779 $\frac{3}{4}$	253,969 $\frac{3}{4}$	1,572,952 $\frac{1}{4}$
" 1886	1,017,152	125,287 $\frac{3}{4}$	1,142,439 $\frac{1}{4}$	76,211	93,572 $\frac{1}{2}$	169,783 $\frac{1}{2}$	1,312,223 $\frac{1}{4}$
" 1887	962,116	127,588	1,089,704	101,937 $\frac{3}{4}$	111,782 $\frac{1}{2}$	213,720 $\frac{1}{4}$	1,303,424 $\frac{1}{4}$
" 1888	790,458	82,155 $\frac{1}{4}$	872,613 $\frac{1}{4}$	116,542	129,717	246,259	1,118,872 $\frac{1}{4}$
" 1889	1,071,686	112,171	1,183,857	105,417	108,233	213,650	1,397,507

TABLE D.—No. II.—continued.

Year ended	East Coast (with Orkney and Shetland).			West Coast.			GRAND TOTAL.
	Gutted.	Ungutted, Kipped, &c.	Total.	Gutted.	Ungutted, Kipped, &c.	Total.	
31st December 1890	1,042,089	81,218½	1,123,307½	142,340½	38,955	181,295½	1,304,603
" 1891	797,219	61,427	858,646	208,024	59,402	267,426	1,126,072
" 1892	1,012,452	82,267	1,094,719	125,299	37,924	163,223	1,257,942
" 1893	1,177,865	110,236	1,287,601	90,977	30,960¼	121,937¼	1,409,538¼
" 1894	1,312,926	98,783	1,411,709	91,489	14,879	106,368	1,518,077
" 1895	1,314,225	79,695	1,393,920	114,902	19,312	134,214	1,528,134
" 1896	1,232,549	101,098	1,333,647	132,234	26,035	158,269	1,491,916
" 1897	732,454	72,457	804,911	143,319	41,212	184,531	989,442
" 1898	1,500,533	92,883½	1,593,416½	174,743	37,188	211,931	1,805,347
" 1899	912,841	71,512	984,353	154,768	36,534	191,302	1,175,655
" 1900	968,077	98,673	1,066,750	156,522	32,333	188,855	1,255,605
" 1901	1,334,010	118,173	1,452,183	109,056	44,646	153,702	1,605,885
" 1902	1,507,138	125,933	1,633,071	123,437	46,651	170,088	1,803,159
" 1903	1,331,664	138,949	1,470,613	105,654	42,543	148,197	1,618,810
" 1904	1,737,345	170,510	1,907,855	102,548	52,571	155,119	2,062,974
" 1905	1,766,734	164,098	1,930,832	112,156	68,613	180,769	2,111,601
" 1906	1,679,947	166,011	1,845,958	116,343	35,561	151,904	1,997,862
" 1907	2,181,017	189,892	2,370,909	147,945	59,414	207,359	2,578,268
" 1908	1,787,835	183,495	1,971,330	163,931	64,808	228,739	2,200,069
" 1909	1,507,914	180,740	1,688,654	148,410	53,201	201,611	1,890,265
" 1910	1,934,320	211,236	2,145,556	145,628	37,690	183,318	2,328,874
" 1911	1,667,432	207,335	1,874,767	139,272	32,708	171,980	2,046,747
" 1912	1,660,972	178,116	1,839,088	148,414	34,945	183,359	2,022,447
" 1913	1,407,323	172,591	1,579,914	253,804	52,878	306,682	1,886,596
" 1914	1,176,361	185,854	1,362,215	185,925	66,387	252,312	1,614,527
" 1915	28,597	61,502	90,099	44,852	40,518	85,370	175,469
" 1916	322,398	149,043	471,441	89,709	72,847	162,556	633,997
" 1917	109,976	178,770	288,746	120,743	67,566	188,309	477,055
" 1918	25,942	268,641	294,583	11,750	80,748	92,498	387,081

TABLE E.—No. II.

FISH EXPORTED.—RETURN showing the Total Quantity of Fish Exported to England, Ireland, the Continent, and Places out of Europe during the Year 1918.

I.—HERRINGS.						
DESCRIPTION OF FISH.	WHERE SENT.					
	Eng-land.	Ire-land.	The Continent.	Places out of Europe.	Total 1918.	Total 1917.
SCOTTISH CURED HERRINGS.	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.
Branded . . . . .	..	..	..	..	..	..
Unbranded	40023	15,520	6,551	23,498	85,592	113,284
Total Number of Barrels of Cured Herrings exported	40023	15,520	6,551	23,498	85,592	113,284
Herrings Sprinkled or Iced . . . . .	..	..	..	..	..	..
Grand Totals for 1918	40023	15,520	6,551	23,498	85,592	..
Grand Totals for 1917	171944	17,692	61,539	16,109	..	113,284
Increase in 1918	22079	..	..	7,389	..	..
Decrease in 1918 . . . . .	..	2,172	54,983	..	27,692	..

II.—KINDS OTHER THAN HERRINGS.

Cod, Ling, &c., dried, cwts.	370	8,233	11,420	500	20,523	44,267
Mackerel, pickled, brls.	..	..	..	283	283	1,754

NOTE.—In addition to the above, there were 7,201 barrels reds manufactured from Norwegian cured herrings exported from Wick to London: and *via* Glasgow, 154 barrels Irish and 1,655 of Icelandic herrings to America, 3,049 barrels of Icelandic to Isle of Man, 3,391 barrels Norwegian to Ireland, and 4,225 cwts. of preserved fish (principally dried cod and tinned herring), 127 cwts. to Australia, 531 to Ireland, and 3,567 to England.

TABLE F.—

PERSONS EMPLOYED.—RETURN showing the Total Number of branches of the Sea Fisheries

No.	DISTRICTS.	Fishermen and Boys (resident and non-resident).	Fishmongers.	Hawkers of Herring and other Fish.	Fishcurers.	Coopers.	Gutters and Packers.	Clerks.	Carters and Labourers.	Persons gathering Bait and Bating Lines.
EAST COAST.										
1	Eyemouth . . .	294	2	7	13	25	299	5	26	30
2	Leith . . .	1,034	582	103	11	22	120	46	40	40
3	Anstruther . . .	818	16	22	23	13	6	6	19	268
4	Montrose . . .	579	181	115	40	11	..	20	35	515
5	Stonehaven . . .	135	4	33	6	2	22	3	8	58
6	Aberdeen . . .	1,086	254	253	170	38	1,047	312	1,834	48
7	Peterhead . . .	591	12	40	61	100	748	20	257	102
8	Fraserburgh . . .	951	2	8	78	251	1,332	20	300	26
9	Banff . . .	696	1	36	19	8	150	2	39	62
10	Buckie . . .	1,390	2	15	10	23	220	12	4	..
11	Findhorn . . .	550	16	100	35	4	40	7	35	25
12	Cromarty . . .	232	..	25	5	..	..	..	5	10
13	Helmsdale . . .	195	..	10	10	1	..	2	6	66
14	Lybster . . .	66	..	2	1	..	..	..	2	..
15	Wick . . .	414	12	30	39	58	224	10	96	28
	East Coast Totals carried down . . .	8,941	1,084	799	521	556	4,208	465	2,796	1,278
Orkney and Shetland.										
16	Orkney . . .	950	4	2	2	1	..	..	2	..
17	Shetland . . .	1,186	4	3	26	65	463	12	86	63
	Orkney and Shetland Totals carried down	2,136	8	5	28	66	463	12	88	63
WEST COAST.										
18	Stornoway . . .	1,095	15	40	16	37	553	12	94	..
19	Barra . . .	521	..	..	6	2	120	..	3	..
20	Loch Broom . . .	346	3	7	8	2	68	2	15	15
21	Loch Carron and Skye . . .	625	..	..	24	10	42	2	20	110
22	Fort-William . . .	347	8	11	6	2	12	2	4	20
23	Campbeltown . . .	430	4	10	20	1	18	..	10	12
24	Inveraray . . .	352	4	10	7	..	10	..	4	..
25	Rothesay . . .	113	26	13	5	..	..	..	7	..
26	Greenock . . .	147	658	876	22	14	74	110	156	25
27	Ballantrae . . .	363	38	60	6	..	..	8	28	..
	West Coast Totals carried down . . .	4,339	756	1,027	120	68	897	136	341	182
Totals brought down.										
	East Coast . . .	8,941	1,084	799	521	556	4,208	465	2,796	1,278
	Orkney and Shetland . . .	2,136	8	5	28	66	463	12	88	63
	West Coast . . .	4,339	756	1,027	120	68	897	136	341	182
	Grand Totals for 1918	15,416	1,848	1,831	669	690	5,568	613	3,225	1,523
	Grand Totals for 1917	14,800	1,812	1,839	630	585	5,245	581	2,954	1,411
	Increase in 1918 . . .	616	36	..	39	105	323	32	271	112
	Decrease in 1918 . . .	..	..	8	..	..	..	..	..	..

No. I.

Persons employed in each District in connection with the various during the Year 1918.

Boxmakers.	Boat Builders.	Basketmakers.	Persons making and mending Nets.	Persons manufacturing Barrel Staves.	Persons employed on board Vessels Curing, Exporting, and Carrying Herrings and other Fish.		Persons employed on board Vessels Importing Salt, Stave Wood, and Hoops.		Other Occupations.	Total Persons employed.	DISTRICTS.
					British.	Foreign.	British.	Foreign.			
EAST COAST.											
..	10	..	17	..	..	..	..	..	..	728	Eyemouth.
30	50	12	350	10	82	286	..	24	75	2,917	Leith.
..	11	..	177	4	..	..	..	..	11	1,394	Anstruther.
5	26	4	22	..	..	..	..	..	40	1,593	Montrose.
..	3	..	10	..	..	..	..	..	..	284	Stonehaven.
116	1,706	10	194	30	36	75	19	29	..	7,257	Aberdeen.
12	32	..	72	12	..	..	..	..	..	2,059	Peterhead.
8	30	1	12	4	10	..	..	21	..	3,159	Fraserburgh.
..	80	..	..	..	..	..	..	..	3	1,006	Banff.
..	17	..	40	..	..	..	..	..	..	1,733	Buckie.
..	18	..	25	..	..	..	..	..	..	855	Findhorn.
..	2	..	..	..	..	..	..	..	..	279	Cromarty.
..	..	..	..	..	..	..	..	..	..	290	Helmsdale.
..	1	..	..	..	..	..	..	..	..	72	Lybster.
..	10	1	20	1	14	..	..	..	..	957	Wick.
171	1,996	28	939	61	142	361	40	53	144	24,583	East Coast Totals carried down.
Orkney and Shetland.											
..	28	..	..	..	..	..	..	..	..	989	Orkney.
..	13	..	33	2	227	..	46	..	..	2,229	Shetland.
..	41	..	33	2	227	..	46	..	..	3,218	Orkney and Shetland Totals carried down.
WEST COAST.*											
..	19	..	47	..	664	..	136	..	7	2,735	Stornoway.
..	..	..	..	..	24	..	8	..	..	684	Barra.
..	8	..	3	..	28	..	..	..	..	505	Loch Broom.
..	20	..	..	..	192	..	..	..	..	1,045	Loch Carron and Skye
..	3	..	..	..	90	..	..	..	..	505	Fort-William.
..	4	..	10	..	47	..	..	..	..	566	Campbeltown.
..	8	..	4	..	28	..	..	..	..	427	Inveraray.
..	12	..	..	..	62	..	..	..	..	238	Rothesay.
7	5	..	250	..	224	..	11	..	26	2,605	Greenock.
..	10	..	..	..	..	..	..	..	..	513	Ballantrae.
7	89	..	314	..	1,359	..	155	..	33	9,823	West Coast Totals carried down.
Totals brought down.											
171	1,996	28	939	61	142	361	40	53	144	24,583	East Coast.
..	41	..	33	2	227	..	46	..	..	3,218	Orkney and Shetland.
7	89	..	314	..	1,359	..	155	..	33	9,823	West Coast.
178	2,126	28	1,286	63	1,728	361	241	53	177	37,624	Grand Totals for 1918.
178	2,061	24	1,341	64	1,513	166	280	98	164	35,746	Grand Totals for 1917.
..	65	4	..	..	215	195	..	..	13	1,878	Increase in 1918.
..	..	..	55	1	..	..	39	45	..	..	Decrease in 1918.

TABLE I.—No. II.

RETURN of the PIERS and HARBOURS Erected or Improved by the FISHERY BOARD FOR SCOTLAND from 1st January 1883 to 31st December 191, showing for each undertaking the CONTRIBUTION made by the Board.

County.	Pier or Harbour.	Contributions by the Board.			County.	Pier or Harbour.	Contributions by the Board.		
		£	s.	d.			£	s.	d.
					Brought forward	76,743	18	2	
Aberdeen	*Roseheartly	3,881	10	11	Fife	St. Monance	5,839	18	1
	Pennan	1,320	13	4		Pittenweem	4,450	0	0
	Collieston	5,482	0	7		St. Andrews	5,670	2	1
	Sandhaven	738	10	9		Cellardyke	1,300	0	0
	Fraserburgh	5,000	0	0	Forfar	Auchmithie	4,125	0	0
Argyll	Carsaig, Mull	5	17	0	Haddington	Port Seton	180	0	0
	Waterfoot, Cantyre	24	0	0	Inverness	Broadford, Skye	7,875	0	0
Ayr	Dunure	512	6	8	Kincardine	Stonehaven	2,900	0	0
	Ballantrae	105	0	0	Northum-berland	Greenshaven	319	16	1
	Maidens	1,181	19	6	Nairn	Craster	1,000	0	0
Banff	*Crovie	971	16	3	Orkney and Shetland	Nairn	5,587	10	0
	*Findochty	9,331	8	9		Holm, Orkney	1,102	0	10
	Buckpool	1,474	18	11		Whitehall, Stronsay	3,000	0	0
	Buckie (Cluny)	15,000	0	0	Ross and Cromarty	Balintore	5,805	13	0
	Portknockie	6,993	16	0		Rockfield	10	0	0
	†Whitehills	9,087	1	2		Ness, Lewis	8,072	6	7
	Sandend	432	18	4		Cromarty	300	0	0
	Cullen	3,100	0	0	Sutherland	Avoch	1,900	0	0
	†Banff	3,100	0	0		Portnacon	900	0	0
	Macduff	5,000	0	0					
Berwick	Coldingham	3,000	0	0					
Elgin	Lossiemouth	1,000	0	0					
	Carried forward	76,743	18	2					
							137,081	4	10

* These harbours were begun by the old Board, but the whole of the payments made towards the works are now given.

† The grants to these harbours have not yet been wholly expended.

TABLE I.—No. III.

BRAND FEES.—ACCOUNT OF THE BRAND FEE REVENUE, THE COST OF COLLECTION, THE SURPLUS, AND THE EXPENDITURE, during the period from 1881 to 1918-19.

Year of Collection.	Total Proceeds of Brand Fees.	Estimated Cost of Collection.*	Surplus or Deficit	Year in which Surplus Voted.	Amount Voted.	How Amount Voted disposed of.				Transferred to General Harbour Fund.†
						For Telegraph Guarantees.	For Scientific Investigation.	For Eyemouth Harbour Loan Guarantee.		
1.	2.	3.	4.	5.	6.	7.	8.	9.		10.
	£	£	£		£	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
10 Years } ++ 1881-90 }	83,245	56,647	26,598	1882-92	26,860	9,710 14 1	768 1 4	1,824 0 0§	14,557 4 7	
10 Years } || 1891-1900 }	65,760	49,650	16,110	1892-1902	18,398	3,238 12 3	..	2,895 6 11	12,264 0 10	
1901	6,423	5,096	1,327	1902-03	1,327	..	..	460 4 6	866 15 6	
1902	7,259	5,219	2,040	1903-04	2,040	..	..	453 14 6	1,586 5 6	
1903	6,067	5,181	886	1904-05	886	..	..	447 4 6	438 15 6	
1904	8,070	5,443	2,627	1905-06	2,627	..	..	440 14 6	2,186 5 6	
1905	6,582	5,363	1,219	1906-07	1,219	..	..	437 9 6	781 10 6	
1906	5,100	5,487	387	..	..	..	..	..	..
1907	8,928	5,277	3,651	1908-09	3,651	..	..	421 4 7	3,229 15 5	
1908	7,218	5,419	1,799	1909-10	1,799	..	..	414 14 6	1,384 5 6	
1909	3,857	5,376	1,519	..	..	..	..	..	..
1910	5,246	5,467	221	..	..	..	..	..	..
1911	4,455	5,549	1,094	..	..	..	..	..	..
1912	2,915	5,550	2,635	..	..	..	..	..	..
1913	4,110	5,549	1,439	..	..	..	..	..	..
1914	1,288	5,639	4,351	..	..	..	..	..	..
1915	Nil	5,420	5,420	..	..	..	..	..	..
1916	Nil	5,406	5,406	..	..	..	..	..	..
1917	Nil	5,217	5,217	..	..	..	..	..	..
1918	Nil	5,302	5,302	..	..	..	..	..	..
Total	226,523	203,257	23,266		58,807	12,949 6 4	768 1 4	7,794 13 6	37,294 18 10	

* For details see Civil Service Estimates (Class II., Vote for Fishery Board for Scotland).
 † To be spent as required.
 ‡ For details of these years, see 19th or previous Annual Reports.
 § This amount was set aside in the year 1891 as a Reserve Fund only to be drawn upon in the event of the Brand Fee Surplus in any particular year being insufficient, after defraying Telegraph Guarantees, to meet the liabilities under the Loan Guarantee. In 1892-93, £233 0s. 2d. was paid from this Fund; in 1893-94, £436 4s. 6d.; in 1900-01, £473 4s. 6d.; in 1901-02, £460 14s. 6d.; and in 1906-07, the balance, amounting to £162 16s. 4d.
 || For details of these years, see 26th Annual Report.

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