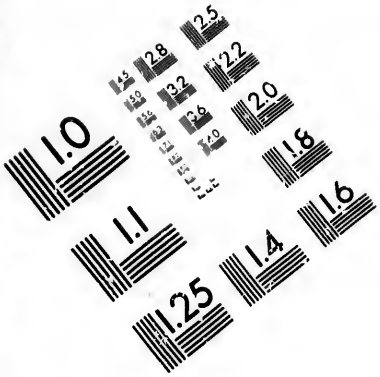

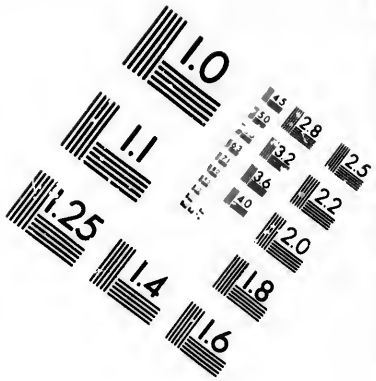

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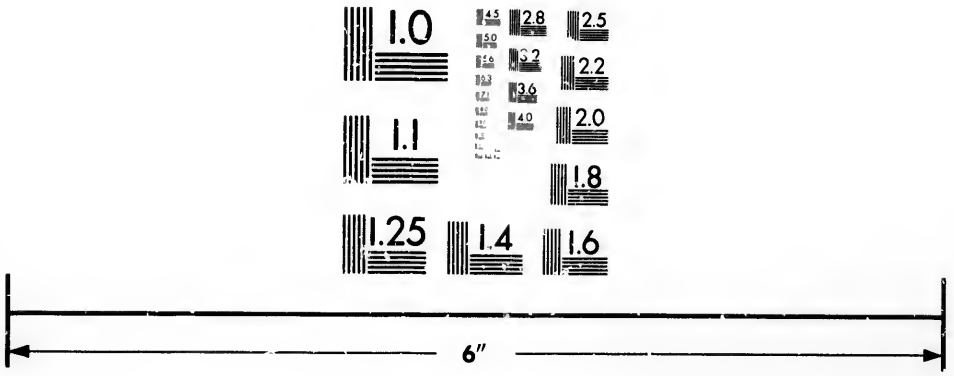

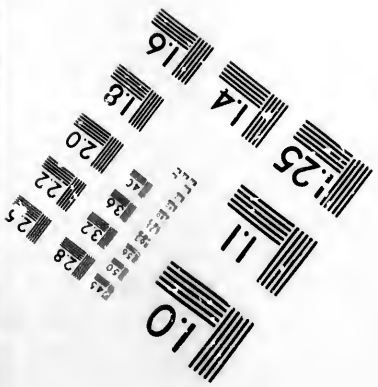

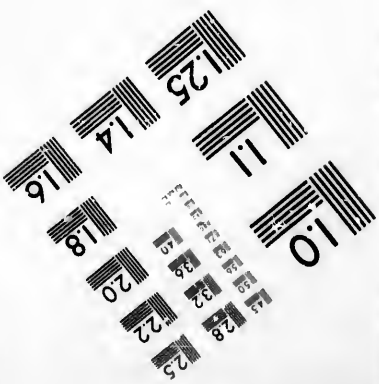

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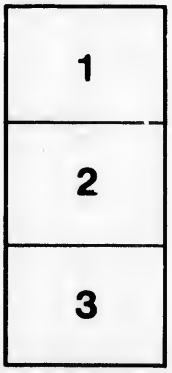

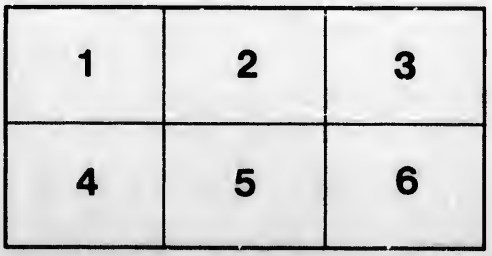

PAMPHLETS ON THE FISHES AND FISHERIES OF NOVA SCOTIA.

No. II.

SHORE AND DEEP SEA FISHERIES.

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SHORE AND DEEP SEA

FISHERIES OF NOVA SCOTIA.

By THOMAS F. KNIGHT,
AUTHOR OF "NOVA SCOTIA AND HER RESOURCES." (Prize Essay.)

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PUBLISHED BY DIRECTION OF THE PROVINCIAL GOVERNMENT.

HALIFAX, N. S.
PRINTED BY A. GRANT,
PRINTER TO THE QUEEN'S MOST EXCELLENT MAJESTY
1867.

PREFACE.

In the endeavor to prepare a useful work on The Fisheries of Nova Scotia, the writer is sensible of the disadvantage under which he labors, from not being favored with the opportunity of a personal inspection of the several fishing localities. He might by this means obtain much valuable information from the people residing in those settlements. To supply this defect he has been provided with Official Circulars which were sent to the Collectors of Customs throughout the Province, containing numerous questions relating to each description of fishery. These Circulars are, in many cases, carefully filled up; and together, combine a fund of valuable data. No amount of information from other sources can, however, well supply the lack of personal contact with the places and persons concerned in this branch of industry.

The published matter concerning Colonial Fisheries is proverbially scanty, so that the facts which are collected together have not been obtained without research. The writer trusts that this sequel to his Prize Essay on the Resources of Nova Scotia will meet with as favorable a reception as was extended to that production of his pen. The inception of the present undertaking was occasioned by an advertisement which appeared two or three years ago in the city newspapers, in which a prize was offered to encourage literary assistance to the developement of our fisheries. In this attempt to supply the requirement, the writer met with ready concurrence from The Honorable The Provincial Secretary; and he would also refer to the countenance he

has received from other members of the Executive, and to assistance rendered in conference with other gentlemen who are interested in the subject. Of the latter he would especially mention his indebtedness to W. T. Townsend, Esq., and to Rev. John Ambrose, A. M.

HALIFAX, N. S., January, 1867.

NOTE.—In the "description" of the Mackerel (*Scomber vernalis* and *scomber grex*) in the Descriptive Catalogue of Fishes, a slight anachronism occurred. The *discovery* of two species of Scomber is assigned to Cuvier, whereas it should be accredited to Drs. Mitchell and DeKay A reference to these two species occurs in the English edition of Cuvier which was consulted by the writer; but it is upon the authority of the American naturalists.

NOTE.—The aggregate value of our fisheries is stated in page 1 to be $2,500,000. This amount is the value of the fish caught and cured in Nova Scotia as given in the census of 1860, in which year the export of fish was quite up to the average; but after due allowance being made for fish imported, not caught by Nova Scotians, the average of $3,000,000 would probably be a more correct estimate at the present time.

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ERRATTA.

Page 2. 29th line—for *Querean*, read Quereau.
" 12. 18th line—for *Chap. IV.* read Chap. VI.
" 14. 6th line—for *modes*, read mode.
" 24. 2nd line—for *Nota Scotia*, read Nova Scotian.
" 24. 23rd line for *Miscan*, read Miscou.

SHORE AND DEEP SEA FISHERIES.

A BRANCH of our Provincial resources which gives employment to a thousand vessels and ten thousand boats, and whose annual returns amount to two and a half millions of dollars, is one well worthy the attention of all who cherish an interest in the industrial progress of our country. Fisheries have ever been deemed of the highest importance by all nations, and especially by those nations whose territories are either entirely insular, or partially bounded by the sea. We see, moreover, so valuable are they considered, that they are often prosecuted at a great distance from the countries to which the fishermen claim allegiance. The Dutch and English fishermen have frequented the Northern seas for centuries; and upon the discovery of America the French and English resorted to the rich fishing grounds of this continent, which abundantly rewarded them for their enterprize. And now, of the thirty or forty thousand of French fishermen, nearly a third repair to the coasts of Iceland and Newfoundland in search for cod. It is generally admitted that fisheries provide the best nursery for the formation of robust men, intrepid sailors, and skillful navigators; and so of the highest consequence towards the attainment of maritime greatness. At a period, which is not very far removed from our own, this branch of industry occupied one-fifth of the population of Holland, and so lively an interest did the Dutch Government take in the furtherance of their fisheries, that they placed superintending men-of-war to aid their fishing vessels while engaged off the coasts of Scotland and the Shetland Islands. They have, even so late as since the introduction of steam navigation, provided Government steamers to attend upon the boats, and receive on board the early catch of fish, so that they may be carried off with all expedition to secure the highest price in the Continental markets. The Dutch have earned the highest character in the markets of the world for the quality of their fish,

attributable to the extraordinary care which they take in their preparation for export. The Dutch people have ever been proud to admit that the wealth and strength of the United Provinces were derived from sea fisheries, the importance of which is emphatically indicated by an expression in common use among them, that "the foundation of Amsterdam was laid on herring bones." And it is not surprising that so high an estimate is set upon this department of industry, when we consider how immeasurable is the wealth that it contains. Oviparous animals, it is well known, are the most prolific; and of these, fish excel all others. A codfish will produce half a million eggs; and it is said that a single pair of herrings, if allowed to reproduce undisturbed, and multiply for twenty years, would not only supply the whole world with abundance of food, but would become inconveniently numerous. The average number of ova in a salmon is stated at twelve thousand; if it were possible that all those eggs produced fish, and they arrived at maturity, there would be twelve thousand salmon, or six thousand pairs, whose produce at the same rate would be seventy-two millions.

Of the industrial resources of Nova Scotia, estimating their relative importance by the number of the population engaged therein, and by the aggregate value of their return for labour, the fisheries are second only to agriculture, employing 14,322 of our male population,* an estimate certainly inaccurate, because a large proportion of the farming population are also engaged in the fisheries. Many of our fishermen, besides prosecuting the fishery on our own shores, repair in their vessels, at periodical seasons, to the Labrador, Newfoundland, and the Gulf of St. Lawrence. From the first of April they continue cod-fishing on the various banks which extend from George's Shoal to Bank Quereau, and in parts of the Bay of Fundy, until about the 10th of June. After making one or two voyages of codfish, they often proceed to the Gulf of St. Lawrence, and return home about the last of August.

In taking up the subject of our Shore and Deep Sea Fisheries, I have comprehended the whole coast of the Province in three sections or divisions; devoting a chapter to each, viz.: 1. The Atlantic Coast; 2. The Gulf of Saint Lawrence; 3. The Bay of Fundy. These sections, owing to the insular conformation of Nova Scotia, embrace in succession the eighteen counties of the

* "Census," 1861.

Province, from Yarmouth eastwardly to the counties of Cape Breton, continuing westwardly to the counties bordering on the Gulf of St. Lawrence, and southwardly down the Bay of Fundy to the point of beginning. This partition of the coast is adopted because there exists, in some degree, a geographical distinction in our fisheries under these three heads; it will be found also to be easy of reference. When, however, our attention is directed to the several counties of Nova Scotia in their relative position of priority in this department of industry, the following order is presented:—1. Halifax; 2. Guysboro; 3. Richmond; 4. Lunenburg; 5. Shelburne; 6. Yarmouth; 7. Digby; 8. Cape Breton; 9. Inverness; 10. Queens; 11. Victoria; 12. Annapolis; 13. Antigonishe; 14. Kings; 15. Pictou; 16. Colchester; 17. Cumberland; 18. Hants.*

* "Nova Scotia and Her Resources," p. 44.

CHAPTER I.

THE ATLANTIC COAST.

THE Fishery on the Atlantic shore of Nova Scotia is pursued exclusively by Nova Scotian fishermen. Foreign vessels, by the law of Nations, (except those of the United States, who enjoy certain privileges by mutual contract between the respective Governments) are prohibited from fishing within three marine miles of the coast. American fishermen, though permitted to approach the shore, occupy the banks, which will be presently described as situated near the coast; they sometimes appear in small numbers in the neighbourhood of Cape Sable, and on the southern and eastern coast of Cape Breton.

Along the coast line of Nova Scotia, from St. Mary's Bay in the Bay of Fundy, eastward to Cape Canseau, and for a considerable distance along the Cape Breton coast, there is a bank or ledge, from five fathoms, or less, to fifty fathoms soundings, and which extends into the ocean at a distance varying from five miles to twenty miles, or more. This ledge is the feeding-ground of the cod; and the herring and mackerel herd in its waters. This bed or plateau, in its length and breadth, embraces within its limits our valuable Shore fishery. Besides this fishing-ground, there are the numerous banks which exist further out into the ocean, the size and form of each being distinguished by the marked difference in the soundings from those of the surrounding water. The soundings vary: in some banks from five fathoms to sixty fathoms, in others from twenty to fifty, and in others from forty to sixty. The most westwardly bank to which our fishermen repair is George's Bank. This bank lies about eighty miles southwest of Cape Sable, and being of large extent, is a favorite resort of the fishermen from the United States. Next we have LaHave Bank, situated about sixty miles from the harbour of Shelburne, which is some sixty miles in length. There is a smaller bank, called Roseway Bank, about midway between LaHave Bank and the shore. Sable Island Bank extends south and west from Sable Island, extending westward nearly one hundred miles. Sambro Bank, about fifty miles from Sambro Light-house, is a small bank of only ten miles long; it is

constantly resorted to by fishermen from Sambro and its vicinity. Next we have Canseau Bank, thirty miles in length, situate about twenty miles from Cape Canso. The last of these treasuries of the deep that deserve notice is the Bank Quereau, seventy miles S. E. of Cape Canso, the N. E. point of which approaches nigh to Bank St. Pierre. This fertile bank is one hundred and forty miles long, and its widest part is one hundred and ten miles. Its northern extremity is called Mizen Bank.

Our "Bankers" range from thirty to one hundred tons, and average eight men each. They go to sea from 1st April to 1st May, and continue cod-fishing on the various banks, until about the 10th of June. These "Bankers" sometimes take halibut in large quantities, mostly on Sable Island Bank and LaHave Bank; but these fish are decreasing in numbers. In June or July they proceed to the coast of Cape Breton, and thence to Gulf of St. Lawrence. The cod they take on the banks are fine, thick, well-fed fish, but being cured in bulk are inferior to the carefully cured fish which are taken near the shore, and dried on flakes soon after they are caught. Three hundred to four hundred pounds of fish is considered a good day's work for one man.

The shore or boat-fishery is carried on to a greater or less extent along our whole coast. The herring and the mackerel, in large numbers, frequent the whole Atlantic coast; and the salmon are intercepted by nets in the bays, and near the islands and points of land, while returning to the rivers. For the cod and haddock fishery, whale-boats, manned by two to four men, and large sail-boats, undecked, are used; fishermen commence about the 20th May, and fish within five to fifteen miles from the land. Prosecuted within their proper seasons, the cod, herring, mackerel, and salmon fisheries constitute a most valuable portion of our Provincial industry. Our fishermen are an athletic, hardy, and industrious class of our population; they respect the laws, and are patient under the vicissitudes of their hazardous and precarious calling.

Pursuing the plan which has been prescribed, the first County that is contained within this geographical division is the

COUNTY OF YARMOUTH.

Along the whole coast of this, and part of the neighbouring county, from Cape Fourchu to Cape Sable, the cod, herring,

mackerel, and salmon fishery are pursued. Halibut were formerly abundant, but of late years have diminished in numbers. We learn from the last census that there were 83 vessels, 266 boats, and 1612 nets and seines used in the fisheries of Yarmouth. The boats used in the shore-fishery are whale-boats and dories; and in the bank-fishery schooners are used, from 5 to 100 tons, averaging from 4 to 15 men. These schooners cost, according to their size, finish, and sailing qualities, from $20 to $50 per ton. The vessels, besides occupying the banks along the Nova Scotia coast, resort to Bay Chaleur, Magdalen Islands, and other parts of the Gulf of St. Lawrence. The official return from the port of Tusket states that sixteen vessels, after returning from the bank-fishery, fitted out for the mackerel fishery. For herring, Mud Island and Tusket Islands are favorite places of resort. Mackerel are taken all along the coast in May; in summer and autumn the mackerel fishermen repair to the well-known localities in the Gulf of St. Lawrence. They export chiefly to the United States and the West Indies. Salmon are exported fresh, packed in ice, to the United States. Lobsters, prepared in tin cases, are also exported to the United States and West Indies. (See p. 3, and App. No. 1.)

COUNTY OF SHELBURNE.

The principal fishing settlements in this County are at Cape Sable Island, Shag Harbour, Wood's Harbour, Port LaTour, and Cape Negro. Besides the bays and harbours of these settlements, the fishermen repair to Ragged Islands, Green Harbour, Gull's Head, and west of Cape Sable, as far as the Quereau Bank. The census gives to Shelburne 96 vessels, 780 boats, and 3717 nets and seines. Whale-boats and large sail-boats are in general use; and the vessels average about 60 tons measurement, with a crew of eight men. These vessels are seen at the fishing season from one to thirty miles from the headlands of the coast, receiving their rich freights, soon to be exchanged for the commodities which are required to minister to the sustenance, or to increase the wealth of their enterprizing owners. Like their Yarmouth neighbours, they too resort, after the bank-fishery, to Cape Breton and the Gulf of St. Lawrence, for cod and mackerel. Herring and mackerel are obtained in all the bays and harbours of this County. The latter

are less abundant than in former years. Salmon are not taken in sufficient quantity for exportation. Halibut have been less plentiful since the commencement of the "Reciprocity Treaty." The places of export are: United States and West Indies, for cod; United States, West Indies, and sometimes Canada, for herring; Boston, and other parts in the United States, for mackerel. Lobsters, which are so abundant on all the Atlantic coast, are also exported. (See p. 3, and App. No. 1.)

COUNTY OF QUEENS.

In the County of Queens the fisheries are not so extensive as in the Counties either of Yarmouth or Shelburne. Queens, in 1861, possessed 55 vessels, 278 boats, and 674 nets and seines. The census gives her of "fish cured," 25,110 quintals dry fish, while Yarmouth cured 38,553 quintals, and Shelburne 61,375 quintals. Queens cured only 315 barrels mackerel, while Shelburne cured 3407 barrels, and Yarmouth 4688 barrels. In herring, Queens approximated nearer to her Yarmouth neighbour, having cured in that year 5400 barrels, while Yarmouth exceeded her by 1055 barrels only; but in the production of this valuable fish, Shelburne was very far in advance of either Yarmouth or Queens, having cured not less than 25,801 barrels. The fishermen of Queens reside in Liverpool, Port Mouton, Port Medway, and in many other smaller settlements along the coast. Besides prosecuting the fishery near the shores, they repair to LaHave and Quereau Banks, and to Bay Chaleur and Labrador. Their vessels are of a smaller class than those of the other western counties, and average the same number of men. In the shore-fishery they use whale-boats, skiffs, and dories. Cod are chiefly taken with hand-lines, but the bultow fishing and trailing are pursued to some extent on the banks. Nets and seines are chiefly used for mackerel; hook and line fishing is, however, coming into general use. They export to the West Indies, the United States, and occasionally ship their fish to Halifax. At Port Mouton there is an establishment for the curing of lobsters in tins, for exportation. (See p. 3, and App. No. 1.)

COUNTY OF LUNENBURG.

Amongst the Counties, Lunenburg occupies the fourth rank in the prosecution of the fisheries; possessing in 1861, 158 vessels, 969 boats, and 3038 nets and seines. The number of vessels in this County must have greatly increased since the census was taken; but it is impossible to ascertain the precise number. The fishermen of Lunenburg are largely engaged in the Labrador and Gulf fisheries. Their vessels are of a superior class, and well equipped. In the LaHave River alone they have about 60 vessels, manned by about 480 men. They bring large fares of herring, cod, and haddock, from Newfoundland, the coast of Labrador, and the Gulf of St. Lawrence, and in the North Bay they periodically pursue the hook mackerel fishery, each man taking from 3 to 5 barrels per day. Seines are used very generally in the shore-fishery, for herring and mackerel. LaHave Bank is a favorite resort for cod and halibut, from all parts of the Atlantic coast. They export from this County to the West Indies and the United States. Salmon as well as lobsters are preserved in tins, and exported. The exports of fish and fish-oil from Lunenburg, in the year ending 30th September, 1865, amounted to $34,998. (See p. 3, and App. No. 1.)

COUNTY OF HALIFAX.

The County of Halifax, with a coast line of nearly eighty miles along the headlands, and with its numberless harbours, occupies the first place in the fishing interest of our Province. It registered in the census documents of 1861, 175 vessels, 1932 boats, and 12,006 nets and seines. Lunenburg and Shelburne exceeded it in that year in the quantity of dry fish; but in mackerel, omitting the County of Guysborough, which approached it within 3000 barrels, Halifax cured more than twice the quantity of any other County in the Province. In herring, it stands first by 8000 barrels. Between the city of Halifax and Cape Sambro, about twelve miles, there are three principal fishing stations on the western shore, viz.: Ferguson's Cove, Herring Cove, and Portuguese Cove. These supply the Halifax market with cod, haddock,

mackerel, salmon, herring, lobsters, and a few other varieties of fish. Then, west of Cape Sambro, there are perhaps a dozen fishing settlements between that point and the inner extremity of Margaret's Bay, on the eastern side. The western side of this capacious Bay washes the shores of Chester township, in the County of Lunenburg. East of Halifax, for about sixty miles, there are numerous fishing stations of greater or less note. Many of the fishermen along the east shore reside on farms, and prosecute both avocations. They are chiefly employed in the shore fishery. They have also vessels, from 30 to 60 tons, which fish from 20 to 30 miles from the shores. The Margaret's Bay fishermen fish on the shoals lying within and off the Bay, and on LaHave Bank. They use for in-shore fishing flats of from 15 to 18 feet keel, and small whale-boats of from 17 feet to 20 feet keel; for outside fishing, schooners from 30 to 40 tons, and schooner-rigged boats of about 25 feet keel. They generally use the hook and line for cod, haddock, and halibut; the "bultow" line is, however, fast coming into use. After the coast fishery is over, or after the periodical season for the Nova Scotia coast fishery is past (cod and haddock being taken nearly throughout the whole year), they resort to the Gulf of St. Lawrence.

The Port of Halifax is the principal depot for exportation, not only for fish caught and cured within the County, but for large quantities brought from other counties. Cod are exported to the West Indies and to South America; herring to the United States, Canada, and the poorer qualities to the West Indies; mackerel and salmon principally to the United States. There is an extensive establishment in Sambro settlement for the preparation of lobsters in tin cases. The proprietors employ coasters to visit the fishing stations along the shore, which collect lobsters in immense quantities to supply their extensive establishment. (See p. 3, and App. No. 1.)

COUNTY OF GUYSBOROUGH.

The County of Guysborough is second only to Halifax in the average annual value of this branch of industry. It does not claim so many vessels as either Lunenburg or Richmond, and only half the number of Halifax; but it has 1080 boats, and 7991 nets and seines, in which implements it is exceeded only by Halifax.

Its fishing settlements are Marie Joseph, Liscomb Harbour, St. Mary's River, Indian Harbour, Isaac's Island, and Country Harbours, and some others around Cape Canso, and in Chedabucto Bay, and along the west side of the Strait of Canso. There is an abundant fishery in Chedabucto Bay, and in the Strait of Canso; they frequent also the western banks, and St. Peter's Bay, and the coast of Cape Breton; and the more distant fishing grounds at Bay St. George, Magdalen Islands, Bay Chaleur, Labrador, and Newfoundland. Their vessels and boats are of the same character and size as are generally used on the coast. An average outfit for a substantial fishing boat is said to be $200; for a vessel $2000. Seines are used extensively in the shore-fishery; and both the "bultow line" and trailing are adopted. The fishermen on the western shore of the County carry the bulk of their fish, when cured, to Halifax, for sale. Herring they export in part to Prince Edward Island and Canada. From Guysborough fish are exported to the British Provinces and the United States. Shell-fish are not so abundant in this County as in the western counties; but many varieties of the cod family, which frequent the Atlantic coast, as the hake and the pollock, are frequently taken in considerable numbers. Halibut are abundant in July and August. (See p. 3, and App. No. 1.)

COUNTY OF RICHMOND.

Richmond County occupies the third place as a fishing County, owning 109 vessels, 884 boats, and 5424 nets and seines. Its fishing settlements are numerous, although a small County, forming a triangular section of the southern part of the Island of Cape Breton; together with Isle Madame, in which is situated the port of Arichat. In this Island are several flourishing Jersey fishing establishments, engaged in the foreign trade, the largest of which is one of the branches of the celebrated house of Messrs. Robin and Co. The Richmond fishermen prosecute the coast fishery as far as Cheticamp, on the western side of Cape Breton. They also frequent the Magdalen Islands. They export herring and mackerel to the British Provinces and United States; and cod to West Indies, Brazil, and to Europe. The character of the fish cured for the foreign trade, is referred to in the chapter on Curing, &c. (See p. 3, and App. No. 1.)

COUNTY OF CAPE BRETON.

The fisheries of this County are much less extensive than those of Richmond, employing only one-fourth the number of vessels. Cape Breton had in 1861, 23 vessels, 679 boats, and 3423 nets and seines. The most important fishing stations are west of the Cape, at Gabarus, Louisburg, Lorraine, and Balleine. The shore-fishery is prosecuted in boats within about ten miles of the headlands. There are no vessels employed on this part of the coast. North of the Cape there are fishing stations at Scatterie Island, Mainadieu, and Mira Bay. Shallops of from 15 to 20 tons are also used at these stations. There is likewise a considerable fishery in herring and cod in Bras d'Or Lake. The fish taken west of the Cape are sent to Halifax for a market; from North Sydney mackerel are exported to Canada and the United States. (See p. 3, and App. No. 1.)

COUNTY OF VICTORIA.

Victoria, in the prosecution of the fisheries, ranks next to Queens, and holds the third place after Cape Breton. The following figures show how she compares with her neighbour Cape Breton: Cape Breton, dry fish, 26,429 qtls.; mackerel, 4393 barrels; herring, 4157 barrels; salmon, 408 barrels. Victoria, dry fish, 7513 qtls.; mackerel, 3874 barrels; herring, 2352 barrels; salmon, 213 barrels. The few fishing stations along this extended coast are St. Ann's Bay, Bird Island, Ingonishe, Neale's Harbour, and the North Shore. The "official circular" from St. Ann's gives 10 vessels to that locality (a considerable increase since 1861); it states that the fishery is principally pursued in boats. These vessels, at certain seasons, frequent the Gulf of St. Lawrence. They send their fish to Halifax and the neighbouring Provinces. (See p. 3, and App. No. 1.)

CHAPTER II.

THE GULF OF ST. LAWRENCE.

This chapter is specially devoted to a description of the Shore and Deep Sea Fisheries, prosecuted in the several Counties of Nova Scotia and Cape Breton, situated in the Gulf of Saint Lawrence. If, however, we except the Counties of Inverness and Antigonishe, the sea fisheries prosecuted in the Counties on the Gulf of Saint Lawrence are unimportant when compared with those of the Atlantic coast. These Counties are more celebrated as agricultural Counties. At Merigomish, Pictou, Carriboo, Tatamagouche, Wallace, and Pugwash, there are a few vessels and boats employed, only for home consumption. Along the coast from Merigomish to Pugwash, according to the census, there were in 1861 but 6 vessels and 118 boats. This shore is the only part of Nova Scotia where oysters are found. The Collector at Wallace states that about 700 bushels were obtained in that locality last year; lobsters, clams, and shrimps, are also abundant. More attention paid to the propagation of the oyster, would, in a few years, produce a lucrative fishery. This is to be accomplished by encouraging the formation of artificial beds in favorable situations. (See Chapter IV.)

As in the chapter on the sea fisheries of the Atlantic coast, I proceed to furnish some particulars relative to each County. In this geographical section, I have remarked, there are but two fishery Counties, Inverness and Antigonishe.

COUNTY OF INVERNESS.

Inverness ranked next to Cape Breton and higher than Victoria in the value of fish cured in 1861. The number of vessels was 38; of boats, 424; and of nets and seines, 1267. The fishery is carried on at Judique, Port Hood, Mabou, Margaree, and its vicinity, and includes cod, herring, and mackerel. The vessels are owned principally at Cheticamp, Friar's Head, and at Plaster Cove in the

Strait of Canso. The United States fishermen frequent the coast of this County in quest of mackerel; as many as 300 of their vessels sometimes shelter in the harbour of Port Hood. It is on this coast that the disadvantages arising from our concession to the United States are most seriously felt. The fish taken in Inverness are seldom exported to other Counties; Halifax is the principal market. Inverness, although it is deficient in harbours, from its proximity to the valuable fishing ground of the Gulf of St. Lawrence, ought to occupy a foremost place in the fisheries of this Province. This must be accomplished by the introduction of capital in the establishment of houses where the fishery is pursued with more systematic energy and enterprize.

COUNTY OF ANTIGONISHE.

The County of Antigonishe, though favorably situated for the prosecution of the fisheries, is far behind its Guysborough neighbour in the appliances for fishing, and in the quantity of fish taken. It owned in 1861, 3 vessels, 213 boats, and 990 nets and seines; not much more than a tenth the number owned by Guysborough. It bears a nearer comparison to Pictou, exceeding that County by one vessel, 132 boats, and 568 nets and seines. It cured in 1861 nearly twice the quantity of dry fish, and more than twice the number of barrels of mackerel. While the catch of Pictou is altogether for home consumption, Antigonishe exports to Halifax, Canada, and the United States. Hake are very abundant on the coast near Port Hood, delighting in the muddy bottom; unlike the cod, which shuns the turbid water. Oysters are taken in Tracadie harbor. There are fishing settlements all along the Bay coast to Cape St. George, and on the north side of the Cape.

CHAPTER III.

THE BAY OF FUNDY.

ALTHOUGH, in treating of the sea fisheries, the Bay of Fundy presents less interest to us than either the Atlantic coast or the Gulf of Saint Lawrence, neither the cod nor the herring being found in very great abundance, and the mackerel, except at the entrance of the Bay, almost unknown, it is remarkable for the greater variety of its fishes, and the unique modes in which some of its fisheries are carried on.

The character of the Bay itself is very peculiar. Its shores on both sides are rocky and abrupt, while near its head (divided into two separate basins) the tide, pressed in and confined within diminished limits, rushes with much violence over extensive and wide-spreading mud-flats, and rises perpendicularly sixty feet or more.

It is supposed that the Bay of Fundy has been scooped out by the powerful action of the Gulf Stream, which, carrying off the softer and more friable rocks that anciently filled its basin, has been checked in its ravages by the stern and unyielding cliffs of primary rock which now constitute its iron bound shores, and frown down upon its rushing waters. A modern writer, describing the supposed formation of the Bay, says:

"A vast and uninterrupted body of water, impelled by the trade wind from the coast of Africa to the American Continent, strikes the Nova Scotia shore between 44° and 45° north latitude, with a force almost adequate to its total annihilation. A barrier of fifteen miles only in width, between the Atlantic Ocean and Gulf of St. Lawrence, seems to have escaped such a catastrophe—while a space of one hundred miles in length, and upwards of forty in breadth, has been swallowed up in the vortex, which, rolling its tremendous tides, of sixty and seventy feet in perpendicular height, up the beds of the adjoining rivers, has converted them into inland seas."

"Such being the character of this Bay and its extraordinary tides," writes Mr. Perley, "it may readily be supposed that its

varied fisheries are influenced by local position, arising from the greater sweep or indentation of the coast in particular places, and the position of headlands, islands, and the mouths of rivers; all tending to increase or diminish the rush of the tide, thus influencing the course of the great bodies of fish which frequent the Bay during each season, while affording to each some especial or favourite place of resort where food is found in abundance, or in which its spawn may be deposited in such manner as will best tend to the propagation of the species."

It will be readily perceived that the restless waters of this Bay are unfavourable to the familiar visits of the *ocean* tribes; and they are consequently frequented by fishes of entirely different habits and characteristics. The capture, curing, and export of these fishes will form the principal matter of the next treatise in this compilation.

Reviewing and continuing our imaginary voyage, we have traversed the whole Atlantic coast from beyond Cape Sable; we have weathered Cape North, the north-eastern extremity of the Island of Cape Breton; we have skirted the western coast of this Island; and, entering the Strait of Northumberland, have traversed the Nova Scotia shore as far as Bay Verte. We are now in the Cumberland Basin, at the head of the Bay of Fundy. Mr. Perley has thoroughly explored the Nova Scotia side of this capacious Bay, and with the help of the additional data that we have obtained, we will place ourselves under his guidance.

COUNTY OF CUMBERLAND.

I have already stated that the sea fisheries of this County, on the St. Lawrence side, are but of little account, and the same may be said respecting the Bay of Fundy side. Of the 4 vessels employed in the fisheries of Cumberland in 1861, two were owned in the Bay; of the 89 boats, 47 were owned on the Bay side; and of the 495 nets and seines, 362 were owned on the Bay side. Nearly all the dry fish, and the greater part of the herring, were taken on this side of the County. Mr. Perley informs us that "Off Apple River some good cod are caught in seine, and herrings, very fine and fat, are taken in July with a mesh of 2½ inches; halibut, of exceedingly large size, are taken not far from the Light-house,

during the summer." At the large rocks, called the Sisters, about three miles below Apple River, there is very good fishing for cod during the summer. From the Sisters to Cape Chignecto there is not much fishing, the coast being lofty, without shelter, and greatly exposed to southerly or westerly gales. Between Isle Haut and Cape Chignecto there is a bank extending almost entirely across that channel, upon which there is good fishing the greater part of every summer. The residents of Advocate Harbour formerly fished to some extent upon this bank; but the want of boat shelter at Isle Haut has induced them to discontinue it almost entirely. At Fisherman's Cove, inside of Cape D'Or, there is fishing for cod, pollock, and haddock, commencing about the 10th May, and ceasing in August. There were, at the time Mr. Perley writes, 25 fishing boats at this place, 16 feet keel. Early in the season they catch a large herring, in a mesh of 2½ inches; as the season advances they take a smaller herring, but fatter, distinguished as "green-backs." At the end of July a still smaller herring makes its appearance, only four to five inches in length. From Spencer's Island to Cape Sharp, a distance of 20 miles, there is good fishing, especially near Ratchford's River, Diligence River, Fox River, and Black Rock River. Inside Fox Point, and at the race off Cape Sharp, there is good pollock fishing. At Black Rock River there are several brush-weirs for taking herring; they use no nets. In West Bay there is good cod fishing until the middle of June; and halibut are taken of extraordinary size. At Parrsborough herring strike in large quantities, and there are three runs during the season. The cod follow the herring, and continue as long as they remain. There are no regular fishermen at Parrsborough. As we approach Cobequid Bay the sea-fish decrease in numbers. Pollock do not go up the Basin beyond Five Islands, the waters being too muddy. The herring and cod taken on these shores are generally consumed by the inhabitants. Occasionally they are shipped to St. John, N. B.

COUNTIES OF COLCHESTER AND HANTS.

The answer to the queries in "The Official Circulars," received from the parts of these Counties situated in the Basin of Minas, confirm the general correctness of Mr. Perley's remarks concerning this locality. On the Colchester shore there are neither herring nor

cod fisheries. Off Walton, on the Hants shore, sufficient cod and haddock are caught to supply the local demand. One circular states that "no herring are taken this side of Parrsborough." At Cheverie enough cod are taken for home use. At Hantsport, on the opposite side of the Avon, the cod fishery is prosecuted to some extent, and the herring fishery at Boot Island; and hake are said to be abundant between the mouth of Cornwallis River and Cape Blomidon; they appear about the 1st August, and may be taken during the rest of the season in seven fathoms water. Very large sturgeon are also taken here. Basse were formerly plentiful, but are becoming scarce. Mr. Perley states that spring-nets were in use at the Cornwallis River, and Habitant River, which destroyed great quantities of fish of all kinds. Brush-weirs are now principally used for herring. The census gives Colchester (on the Basin of Minas side), 118 boats and 155 nets and seines; and Hants 81 boats and 182 nets and seines.

COUNTIES OF KINGS, ANNAPOLIS, AND DIGBY,

(SOUTH SHORE OF THE BAY OF FUNDY.)

To the southward of Cape Split, is Scotch Bay, a wide, open roadstead, with extensive mud-flats at its upper extremity. Below this, the character of the coast changes to bold and rugged cliffs of *trap rocks*. From Black Rock down to Brier Island, along the whole south shore, there are three fishing banks or ledges, lying parallel to the shore, outside each other; their respective distances from the coast have acquired for them the designations of the three mile ledge, the five mile ledge, and the nine mile ledge. On these ledges there are 60 fathoms of water, but on the crown of each ledge 30 fathoms only. The 3 mile ledge and the 5 mile ledge extend quite down to Brier Island; but the 9 mile ledge can only be traced down the Bay, about 14 miles below Digby Gut, abreast of Trout Cove, where it ends in deep water. Below Digby Gut, the 3 mile ledge and 5 mile ledge are composed of hard gravel and red clay; above the Gut, the 3 mile ledge has a rough, rocky bottom, on which anchors are frequently lost. Each of these ledges is about a mile in width, the outer one something more; between them the bottom is soft mud.

In April, the small rock cod strike in on the south shore, which they follow up to Cape Split, whence they cross to the New Brunswick side of the Bay. This is the opinion of the American fishermen, who follow them at that season, fishing close in shore; and with them they take many halibut of large size. On the ledges, the best fishing is in June and July; but the fishing continues until the end of September. The cod taken on the ledges, in June and July, are well-fed fish, 30 of which, on the average, will make a quintal. Pollock strike in generally during July; but the past season they made their appearance in May; the fishing for them usually lasts until the end of September—their average size is 40 to the quintal.

On the ledges, line fishing on the bottom can only be followed on the "slacks" of the tide; during the run of the tide, the fishermen employ themselves in taking pollock by trailing near the surface. Large hake are often taken on the ledges, with the cod; thirty of them will make a quintal. It is supposed that these hake feed upon the soft bottom between the ledges, it being such as hake are usually found upon, and that they venture occasionally upon the ledges, or are in the act of crossing them when taken.

In the Annapolis Basin, long celebrated for its fisheries, cod, pollock, hake, haddock, and halibut are taken, nearly all the year round; and here also are caught those delicious small herrings, which, when smoked, are known everywhere as "Digby Chickens." Mackerel frequently enter during the season, and are caught in the herring-weirs. Lobsters are found in various parts of the Basin; clams on the flats; and on Bear Island Bar there are extensive beds of large scallops. Shrimps abound in the Gut. Porpoises, while chasing the small herrings, are often shot by the Indians. The principal fishery, however, is that for the small herrings, to be cured by smoking, which are taken altogether in brush-weirs, not exceeding 8 feet in height; these are renewed every season, the ice usually carrying away the greater portion of them at the close of the winter. The small herrings enter the Basin at the last of May, but the great bodies of fish come in June and July; after passing through the Gut, they follow up the Granville shore to the Potter Settlement, near Annapolis, and thence strike over southwesterly, to the Clements side, directly across a large bar, or middle ground. The first herrings of the season are of all sizes,

from four inches in length up to the largest; in June and July the schulls are of more uniform size. It is supposed that about one-half of all the fish caught in the weirs are entirely lost; almost all the weirs are dry at low water; and sometimes 300 or 400 barrels of small herrings, taken during a single tide, are left in the weir to spoil. These fish becoming putrid prevent the live fish from entering the weir. This statement, Mr. Perley was of opinion, required confirmation, while, at the same time, he thought the decay of the fishery a fit subject of enquiry in Nova Scotia.

There is a large fishing population in the Brier Island fishing district, which includes Long Island and part of the adjacent shore. Lieut. Bridges reports to Vice Admiral Seymour in 1853: "The population of Brier Island consists chiefly of fishermen, who appear to carry on their trade with more zeal than is usually shown. The fishing district consists of Brier Island, Long Island, and part of the adjacent coast; there are about sixty small vessels and above a hundred boats belonging to the district. The fishing consists chiefly of cod and pollock; these, caught in deep water off Brier Island, are considered the finest fish in the Bay of Fundy, and obtain a high price in the American market. Brier Island was a place greatly resorted to by the Americans formerly." Mr. Perley writes concerning this locality:—

"The cod fishing commences about the 20th of April, and continues until October. The first fishing is in shore, at the distance of half a mile to a mile and a half from the land; as the season advances the fish go into deep water, on the ledges. Pollock fishing, the next in importance, begins about the 15th of June and lasts until the end of September; they are caught chiefly on 'the rips' occasioned by the conflict of tides; those caught off Brier Island will average 35 or 40 to the quintal. In the latter part of the season, it requires the livers of 18 quintals of pollock only to make a barrel of oil; they must therefore be in fine condition, and prime fish.

"From this Island the fisheries are prosecuted chiefly in chebacco-boats and shallops, from 16 to 24 tons burthen; in these the fish are split and salted on board. In the spring they fish off the western part of Brier Island, and thence to Cape St. Mary, in 15 to 60 fathoms water, with a tide of four knots. At mid-summer they fish in 60 fathoms water, off Bear Cove, (Petite Passage) and thence to the 'west-north-west bank,' about 9 miles from the land, in 15 to 30 fathoms water, with a 6 knot tide. Of course, bottom fishing can only be prosecuted on 'the slacks.' During the summer the fishing vessels sometimes run down to the Lurcher Ledge, 20

miles S. S. W. from Brier Island, and there fish in 15 to 30 fathoms water; at this ledge they rarely fail to get a full fare of cod in a few days, with favourable weather. On the fishing grounds mentioned, it is very rare to take either hake or haddock, the bottoms being rocky and very rough. Halibut are very abundant, and of large size, especially upon a bank, 6 miles west of Brier Island. In summer they are frequently a plague to fishermen, who shift their ground to avoid them, as they soon fill up a boat or small vessel.

"The superiority of the large, well-fed cod, caught in the exceedingly cold and deep water of this part of the Bay of Fundy, especially for table use, is perfectly understood by the American fishermen, who resort to these grounds every season in great numbers. Whole fleets of American fishing schooners appear off Brier Island in the spring as soon as the fishery commences.

"Herrings make their appearance about the 10th of April every season; these are the large spawning herrings, full of roe. At Brier Island they are chiefly taken for bait; but at Long Island, and on the south shore up to Digby Gut, and for some distance above, many are taken in set-nets and put up for sale. The nets generally used are 20 fathoms long and 4 fathoms deep, with a mesh of $2\frac{1}{4}$ inches; these are set 'off and on' shore, with grapnels and buoys.

"The deep sea herring fishery commences at the end of May; it is prosecuted in open daylight, at half a mile to six miles from the land, with the same nets as in spring. Wherever the fish are seen to break, the nets are thrown over and allowed to remain in the water from five to ten minutes only; they are then taken in, cleared of fish, and again thrown over—this is continued as long as any fish can be taken. These are excellent herrings, and the fishing for them continues until the middle of July. After that time the herrings strike over to the 'ripplings' of Grand Manan, where they continue to play for the rest of the season, these 'ripplings' abounding with shrimps in vast quantities. At the full and change of the moon, on the spring tides, the Brier Island fishing vessels go over to fish on the 'ripplings,' as during those tides the herrings are found there in greatest abundance."

The official circular states that at Westport, in Brier Island, there are 24 vessels, together 528 tons, and 164 men. They export their fish to the United States and New Brunswick.

There is a considerable mackerel fishery in St. Mary's Bay. The *porgee*, a fish abundant in the United States, it is said, occasionally visits St. Mary's Bay in large numbers. Mr. Perley's enquiries terminated at Brier Island; and we therefore quote from

Lieut. Lindsay's report to Vice Admiral Seymour, for information respecting the mackerel fishery:—

"The mackerel fishery opens towards the end of June or beginning of July, continuing until late in October; the small, or 'tinker mackerel,' (so called by the fishermen) at the commencement of the season, striking into the bays, harbors, and towards the shores, in countless numbers. So plentiful are they, indeed, that along the beach they are taken most successfully by the common landing-net. The weirs at the head of St. Mary's Bay, and seines along the shore, are, however, the chief means employed for taking mackerel; as many as a hundred barrels have been taken at one haul; and instances have been known where, from the myriads taken, the larger and finer fish have been removed by the fishermen, leaving the smaller ones in weirs and on the beach, to decompose, or to be carted off as manure to the nearest farm. This system is much to be deplored, and cannot be too soon discouraged, as if carried on to a great extent, it must, in course of time, tend greatly towards ruining the fishery. From the people along the shore of St. Mary's Bay not giving their whole attention to the fishery, but dividing it between that and farming, a considerable drawback is caused to the prosperity of the fisheries."

The census of 1861 gives to Kings County, 6 vessels, 50 boats, and 141 nets and seines; to Annapolis, 3 vessels, 184 boats, and 507 nets and seines; to Digby 56 vessels, 295 boats, and 523 nets and seines. Thus, Digby occupies the seventh place as a fishery County; above Cape Breton, Inverness, Queens, and Victoria Counties, and next after Yarmouth.

CHAPTER IV.

GULF OF SAINT LAWRENCE, LABRADOR, AND NEWFOUNDLAND FISHERIES.

Besides the shore and bank fisheries, so profitably prosecuted by the fishermen of Nova Scotia, which have been described in the foregoing pages, there has ever been a much larger field of enterprize open to them, in common with the whole people of the British Provinces. Nova Scotia fishermen every year visit, in their vessels, the coast of Newfoundland, the Labrador, and all the important places in the Gulf of Saint Lawrence. They have carried their enterprize within the boundaries of Canada, periodically frequenting the Bay of Chaleur, and the coast of Gaspé, and have revealed to the Canadians themselves how valuable a source of wealth they possess at their very doors. Pierre Fortin, Esq., who for many years has been employed by the Canadian Government as Magistrate commanding the Expedition for the Protection of the Fisheries in the Gulf of St. Lawrence, frequently, in his "Reports," eulogises the enterprise of the fishermen of Nova Scotia on the coast of Gaspé, and generally in the Gulf of Saint Lawrence. "Every year," he writes, "the coasts of Canada are visited by from 250 to 350 fishing schooners from Nova Scotia, and by from 200 to 300 fishing schooners from the United States, from the spring to the autumn, in well equipped vessels, busily employed taking our finest fish; and we find them afterwards, with those very fish, competing with us in foreign markets, and almost always successfully."

Mr. Perley writes respecting the Gulf fisheries:

"There is probably no part of the world in which such extensive and valuable fisheries are to be found as in the Gulf of Saint Lawrence. Nature has bountifully provided within its waters, the utmost abundance of those fishes which are of the greatest importance to man, as affording not only nutritious and wholesome food, but also the means of profitable employment.

"With such valuable and unlimited fisheries in close proximity to these Colonies, and as it may be said at the very doors of the inhabitants, it is no

less strange than true, that they are prosecuted to the greatest extent, and with most profit, by citizens of France and of the United States.*

"The French exercise an almost exclusive right of fishing upon the western coast of Newfoundland, the fertility and great mineral wealth of which have only recently become known, and are not yet fully appreciated.

"From seven to eight hundred sail of American fishing vessels enter the Gulf of Saint Lawrence annually; and scattering over the whole of its wide extent, with little heed of the limits to which they are restricted by Treaty, pursue their business unmolested, and but rarely leave their stations without full and valuable fares.

"The Jersey merchants also prosecute these fisheries with great zeal and assiduity, and, as it is belived, with much profit. They have permanent establishments and fishing stations in Gaspe, Labrador, and Newfoundland, and three or more establishments in New Brunswick; but they by no means confine themselves to any particular locality. They employ upwards of one hundred vessels almost exclusively in carrying the rich products of the deep to various foreign markets, besides the smaller craft required upon the coast. Two of the leading Jersey firms, Messrs. Robin & Co. and Nicolle Brothers, are supposed respectively to afford employment, directly or indirectly, to nearly one thousand persons.

"The inhabitants of those shores of Cape Breton and Nova Scotia which are within the Gulf, pursue the fisheries in their immediate neighborhood to a moderate extent; and a few of their vessels visit the Magdalen Islands and the Labrador coast during the season. The people of Prince Edward Island, who are favorably placed for securing a goodly portion of the riches of the sea, make still more limited efforts; but their efforts can scarcely be described as more limited or more feeble than those of the people of New Brunswick, who dwell upon its shores, from Bay Verte to the western extremity of the Bay of Chaleur—those shores commanding as great an extent and variety of fishing ground, and as abundant supplies of valuable fish of every description, as can be found in any other part of the unrivalled Gulf of Saint Lawrence, while they possess equal, and perhaps superior, facilities for prosecuting its fisheries both extensively and profitably."

The most valuable fisheries of the Gulf are those for herring, cod, and mackerel. Although the herring claims the first place in the order of the fishing season, I propose to consider the cod-fishery, being the most valuable of the Gulf fisheries, as entitled to the first consideration.

* Mr. Perley's reference to France and the United States needs much modification, as a perusal of the following pages will prove.

THE COD FISHERY.

The cod fishery in the Gulf commences from the 1st to the 10th June, and continues until the end of November. The Nova Scotia fishermen, who pursue the Gulf fishery, are generally those who frequent the banks in the Atlantic, designated "bankers," who follow the cod to their various haunts in the Gulf of St. Lawrence. The deep sea fishery for cod is not prosecuted to any great extent in the Gulf by the people of New Brunswick. They carry on the shore fishery in boats from one to fifteen miles from the land. The Canadian fishermen, as well, carry on this fishery in boats, near the coast and on the banks in the neighbourhood of the coves and bays where they reside. Many of the Canadian fishermen, however, make a voyage to the Labrador, returning in four or five weeks. The principal localities for cod fishing within the Gulf are the north shore of Prince Edward Island, the coast of Gaspé and Bay Chaleur, the Magdalen Islands, the eastern end of the Island of Anticosti, and along the north shore of the Gulf.

Capt. Campbell, who visited all parts of the Gulf in H. M. S. "Devastation," in his report to Admiral Seymour (1852), writes respecting the Bay Chaleur:—

"Proceeding north from Prince Edward's Island, the Bay Chaleur is the next important fishing ground. At its mouth, on the south side, is the island of Miscan, where there are two considerable fishing establishments connected with the Jersey houses. On Shippagan Island up the Bay, on the same side, are also several establishments. Again, higher on the main land, is Barquette, from which there are 150 boats; the people are all of French extraction, and speak the language; they sell their fish to the Jersey merchants, of whom they loudly complain in summer for grinding them down as to prices, but in winter are often kept from starvation by advance from these houses; they appear to be a most improvident and thoughtless people. . . . . Leaving Chaleur Bay there is a considerable fishery carried on at Port Daniel, by a race peculiar to that place. They are descended from some French settlers, who attached themselves to Indian women; they are very indolent and improvident, and could not succeed if the fisheries were ever so productive; they also sell their fish to the Jersey houses. . . . Higher up, at Paspebiac, are the large fishing establishments of Messrs. Robin & Co., and Messrs. LeBoutillier, of Jersey, where vessels, amounting to about 2,500 or 3,000 tons, assemble in early spring, moor, and dismantle.

The crews are then dispersed among the fishing boats and among establishments till the autumn, when they return to their vessels, load, fit them out and proceed to the Mediterranean and South American fishing ports."

There are other Jersey houses referred to at Percé, Point St. Peter, and Gaspé Bay.

"At the Magdalen Islands," writes Mr. Fortin, "the cod, following the herring, makes its first appearance in the beginning of May, in Pleasant Bay, and then it is found to the south of Entry Island and at North Pond. Later in the season, it is found on banks situated some ten miles from Entry Island, Amherst Island, and near Deadman's Island, and the Bird Islands."

Capt. Campbell remarks, concerning Anticosti: "Around the shores of Anticosti, codfish are very numerous; but from want of harbours, even for boats, the pursuit of them would be hazardous. There is, however, at the S. W. light house, a fine harbour for boats, and a fishery might be established there without difficulty, and with great advantage."

Mr. Fortin states that around this island American schooners had been able to obtain full cargoes in three or four weeks. He laments that the Island of Anticosti is not public property, and that the means of curing the fish on the shores can only be obtained by large payment to the proprietor or lessee. This privilege is, however, of most importance to Canadian fishermen, as our Gulf fishermen cure their fish in bulk, so as to make a short voyage, and try their luck in some other direction, or perhaps engage in the mackerel fishery. The codfishery along the coast of the river and Gulf of St. Lawrence, Mr. Fortin also remarks, is carried on chiefly by fishermen from Nova Scotia and the United States. The American vessels every spring pursue a profitable halibut fishery near Cape North, in the Island of Cape Breton. They provide themselves with an ample supply of ice for the voyage, and are enabled to carry them in a fresh state to the United States markets.

Professor Hind, in his interesting narrative of Explorations in the Labrador Peninsula, remarks, respecting the cod-fishery on the Labrador coast:

"On the north shore of the River and Gulf of Saint Lawrence, and on the coast of Labrador, the cod abounds almost all along the coast, from Point des Monts to the boundary of Canada, in Blanc Sablon Bay. In

many places the cod approaches so near the shore that at times from four thousand to five thousand may be taken at a single haul of the seine; but they are generally fished for with hook and line, baited with a piece of fresh fish, or even with small fishes whole, as caplin and launce. The Labrador coast is indented everywhere with excellent harbors. From the security of these harbors, and the general certainty of an ample supply of fish, the coast is preferred by many fishermen to any other fishing station within the Gulf. The fishermen on the coasts use boats, about sixteen feet keel, which they buy from the American fishermen. In many places, where the fishery is ten fathoms or less, they use four lines each; and sometimes the master of the boat, who is always in the stern, has six to manage. When fish are plentiful the boats take from three to five drafts each (a draft being 252 lbs. weight). On the north shore of the Gulf boats manned by two men only have been known to take from 1,500 to 2,000 codfish in a single day, during the time they most abound near the beach."

The cod fishery on this coast is prosecuted principally by the fishermen of Nova Scotia and the United States. The vessels usually employed are schooners of 70 or 80 tons burthen, and they arrive on the coast about the end of May. Every part of the coast is frequented by fishing vessels, during the season, from Mount Joli, at the southern boundary of Labrador, to the northern extremity of the Straits of Belleisle, and sometimes beyond. On reaching the coast, the vessel enters some snug harbor, where she is moored, and there remains quietly at anchor, until a full fare, or the departure of fish, requires the master to seek another inlet, or return home. The fishery is carried on entirely in boats, and the number found most useful is one for every thirty tons of the vessel; there are two men to each boat. If fish are plentiful, and not too distant from the vessel, the owners are expected in good weather to get two loads each day. The return of the boats with the fish is the signal for the dressing-crew, who remain on board to commence their operations. If it is intended that the vessel shall remain on the coast until the fish are ready for market, they are taken on shore as caught, and there dressed, salted, and dried, before being put on board the vessel. But it is the more common practice, especially with vessels from the United States, to salt the fish on board, and take their cargoes home in a green state, drying them after arrival. The vessels from Nova Scotia and Canada, in general, carry their cargoes home in a green state. The New-

foundland vessels make two voyages: first, a cargo of dried fish; the return voyage, "green" or pickled, which is dried at Newfoundland. The average product of this fishery may be estimated at ten quintals of dry fish to every ton of the vessels employed; but the masters of the American schooners are dissatisfied when they fail to catch 12 or 15 quintals per ton.

The cod fishery on the western coast of Newfoundland is almost wholly in the hands of the French fishermen. Although, by treaty, they enjoy only a concurrent right of fishing with British subjects, they have from time to time forcibly prevented British subjects from fishing at the French stations within the prescribed limits, and have thereby practically converted the concurrent fishery into one exclusively French; thus the Colonies, with the connivance of the parent state, have been deprived of the fairest portion of their fishing grounds. Suffering under this grievance, our fellow-colonists of Newfoundland justly exclaim, "At present, excluded by force from the fishery between Cape Ray and Cape St. John, and driven from the Banks by French bounties, we have but two cod fisheries that are of any importance to us—that carried on on our south coast from Cape Race westward, and known as the Western Fishery, and that carried on at the Labrador, between Blanc Sablon and Cape Harrison."

THE HERRING FISHERY.

The common Herrings appear in the Gulf of Saint Lawrence at the end of April, or early in May, and the fishing continues until about the 10th June, when they retire to deep water, having deposited their spawn. These "spring herrings," as they are termed, being caught while in the very act of spawning, are thin and poor, of little value as an article of food, whether fresh or salted. Another herring appears on the coast about the 20th August, and remains inshore for a month; they are fat and in good condition, furnishing excellent food, and a valuable commodity for export. It is admitted, that when first caught these "fall herrings" are fully equal in every respect to the best Scotch herrings; and if they were cured in the Dutch manner, this fishery, from the increased price and demand, would become one of the most important and valuable fisheries of the Gulf. The principal places for herring fishing are

the Magdalen Islands, the Bay of Plaisance, La Grande Entreé, the Bay of Chaleurs, Bonaventure, Cascapedia Bay, and Carleton Bay. "It is impossible," writes Mr. Fortin, "to form a correct idea, without seeing it, of the prodigious abundance of the ova of the herring deposited at the Magdalen Islands, and generally on all the coasts where the herring spawns. I have seen the shore at Pleasant Bay covered two or three feet deep with them for several miles; and oftentimes, on returning to my vessel of a calm evening, I have seen the sea white with milt for several acres around, though when I passed the same spot, two hours before, the water was of the usual color. This will, perhaps, appear astonishing to some persons; but they will soon recover from their astonishment when they reflect upon the fact that each female herring has from six to eight millions of ova in its ovaries, and that each male is furnished with a proportionate quantity of milt."

On the coast of Labrador the herring fishery is carried on in September and October, sometimes even beginning as early as the latter end of August. The first herrings taken are not generally very fat; but after them come those fine fish that are so well known as "Labrador herring." These are almost always taken with the seine. Herrings do not frequent all parts of the coast in equal numbers. There are places where hardly any are to be seen, while they make their appearance in great numbers at other places, such as Belles Amours Harbor, Bradore Bay, Blanc Sablons Bay, and many other smaller bays, as Forteau Bay and Red Bay; at Modeste Islands, and a great many other important stations on the coast of Labrador belonging to Newfoundland. The most expeditious and profitable way of taking the herring is with the seine, and until very recently the possession of large seines has been enjoyed exclusively by the Americans and Nova-Scotians. Mr. Fortin remarks, "I have seen myself a seine set by Nova-Scotian fishermen, after having being five days in the water, drawn out with 800 barrels of herring."

For some years past it has been observed that the largest kind of herring visits Newfoundland and that part of the Labrador coast under the jurisdiction of the Government of Newfoundland. They are taken in large numbers in St. Barbe's Bay, St. Genevieve's Bay, St. Féréole's Bay, and St. Margaret's Bay, on the northern coast of Newfoundland. The spring herring fishery is extensively pursued

by the inhabitants of the Sister Colonies in the bays on the south and south-western coast of Newfoundland. In St. George's Bay it commences towards the end of April, and lasts about three weeks. It is thought that the Labrador herrings, which are taken in the months of September and October, have first made their appearance in these bays in the spring, and after spawning resort to the northern bays, to the Labrador coast, and from thence to the Arctic seas.

Professor Hind remarks that "the disappearance of the herring, from certain parts of the coast of the Gulf, has led to the supposition that their numbers were diminishing." He thinks it probable that local and temporary atmospheric causes have diverted the shoals from their accustomed migrations; but admits that the subject is still involved in mystery, and that much light requires to be thrown upon the natural history of the herring before its migratory habits can be said to be understood. Mr. Fortin states, that after a time they are known to return to their former haunts, and in greater abundance. The same thing has happened, he informs us, on the coast of Norway. For thirty years the summer shoals of herrings (called there *sommersild*) had entirely disappeared from the coast to the north of Christiansund, which they had frequented during twenty consecutive years; but for the last twenty-four years, or thereabouts, they have returned thither regularly again.

THE MACKEREL FISHERY.

The Mackerel abound in the Gulf of St. Lawrence, and is one of the chief objects of pursuit with the numerous fleet of American fishing vessels, which are to be found yearly in every part of the Gulf. This valuable fish seldom appears in Labrador, and never frequents the coast of Newfoundland. The Americans begin fishing for mackerel in the Gulf on the 1st of July, and finish at the end of September. The Nova-Scotian fishermen prosecute the mackerel fishery in the Gulf with little less enterprise than their American rivals, and of late years their vessels have been so improved in fleetness and symmetry, as to bear just comparison with the American mackerel schooners, which were long reputed to be the finest vessels and the best sailers of their class in the world. These schooners are generally of from 60 to 100 tons burthen.

They have little depth of hold, great breadth of beam, rake very much fore and aft, and carry large cotton sails, which enable them to sail fast, even with a light breeze. Their decks are roomy, and on them the whole work of salting and barrelling, &c., is carried on.

The mackerel is abundant off the western coast of Cape Breton, off the coast of Prince Edward's Island, in the Bay Chaleur, at Magdalen Islands, and in the lower part of the river St. Lawrence, as far up as Matane and the River Godbout. It is sometimes found along the shore and the coast of Labrador, but not in great numbers. Like the herring, it comes inshore to spawn. It arrives at the end of May or beginning of June. Mr. Fortin, writing of the Magdalen Islands, remarks, that after having spawned, it disappears about the 15th June. About the end of July it begins to be seen at first in small numbers, but afterwards it becomes more plentiful, and in the months August, September, and October, it is to be met with all round that group of islands. It makes its appearance at the same period in the Bay Chaleur also, as well as off the coast of Gaspé, and along the shores of the River St. Lawrence. It is then in the best possible condition, and more than twice as fat as it was in the month of June.

The northern coast of Prince Edward's Island is somewhat unfavorable to the prosecution of this fishery, because of the want of harbours for shelter. The only harbours that contain any depth of water are Malpeque, Cascumpeque, and Tignish. The Nova-Scotian fishermen arrive on this shore in July. About the end of September the larger fish strike in about Mabou, Margaree Island, and as far north as Cheticamp, and both Colonial and American fishermen congregate here in large numbers.

The mackerel fishery is unaccountably neglected by the people of Canada and New Brunswick, and is almost altogether in the hands of American and Nova-Scotian fishermen. The quantity of mackerel, taken by the American fishermen on the British coast of the Gulf, Mr. Fortin estimates at 50,000 barrels, worth $600,000. It is impossible to ascertain the quantity taken by the Nova-Scotian fishermen in the Gulf of St. Lawrence. In 1865 Nova Scotia exported, in all, 120,000 packages, amounting to $800,000.

Professor Hind, in adverting to the amount of imports of mackerel into the United States from the British Provinces during the years

1856 to 1861, (unless he refers to the amount taken in by Americans only,) has fallen into an egregious error; as the export from Nova-Scotia alone in these years far exceeds the quantity which he gives as being the whole amount of exports from the British Provinces.

PROFESSOR HIND'S TABLE.

Imports of Mackerel into the United States from the British Provinces, during the years 1856 *to* 1861.

	Barrels
1856	38,525
1857	28,852
1858	38,525
1859	35,407
1860	36,728
1861	15,814

Exports of Mackerel from the Ports of Nova Scotia to the United States, during the years 1856 *to* 1861. [*From the Annual Trade Returns.*]

	Barrels.
1856	95,627
1857	———
1858	53,321
1859	50,133
1860 } 1861 }	No. of barrels cannot be ascertained in these years. Value of Exports in 1860, $448,619.

The exports to the United States had increased in 1865 to 115,391 packages, (including shad and halibut, which compose a very small proportion of the whole, say 5,000 packages.)

THE SALMON FISHERY.

The Salmon Fishery might be more appropriately classed amongst the River Fisheries; but there are various bays, beaches, islands and points of land, where salmon are intercepted by nets, while seeking the rivers in which they were spawned, whither they will always return. The salmon of the Gulf of St. Lawrence are noted for their fine flavor. The quantity of salmon in the rivers which flow into the Gulf were, in the first settlement of the country, perfectly prodigious. Owing, however, to the obstructions which gradually increased in all those rivers, the supply soon fell off, and continued to diminish from year to year. Mill-dams without "fish-ways" were common; nets were often placed completely across the streams, which took every fish that attempted to pass;

and fish of all sizes were destroyed by hundreds, in the very act of spawning, by torch-light and spear, at a time when they were quite unfit for food. These practices had become so prevalent, that laws and regulations, for the protection of the salmon fishery, were at length enacted.

The salmon fisheries of New Brunswick and of Canada are almost exclusively reserved to the inhabitants of those Provinces respectively. Nova Scotia has no extensive salmon fisheries in the Gulf; they are chiefly on the Atlantic coast. The salmon fisheries of Canada are all at the entrance of the River and in the Gulf of St. Lawrence. If any of the salmon fisheries of the Gulf might be deemed to be the common inheritance of all the colonists, they are the valuable fisheries in those rivers on the northern coast. Large quantities of salmon are caught every season, on the North Shore and on the Labrador coast, in stake-nets placed at the mouths of rivers which empty into bays and harbors. These are split, and salted in large tubs, and afterwards re-packed in tierces of two hundred pounds each. A number of vessels, from Newfoundland and Canada, are engaged annually in this fishery; but the American fishing vessels pursue it with great vigor and assiduity. One half of the quantity of pickled salmon exported from Newfoundland in 1847, was the produce of the salmon fishery on the coast of Labrador.

It is to be regretted that such reckless indifference to the value of the salmon fishery continues to prevail; that while in older countries artificial means are adopted to re-stock rivers that have become exhausted through the unceasing demand for this "king of fishes," with us most stringent enactments prove ineffectual to arrest their early extinction. Professor Hind judiciously remarks, in treating of the salmon of British America:

"No description of fish has been so much neglected or abused, in British America, as the salmon. It is only within the last three or four years that the government of Canada has directed attention to the preservation of this noble fish in the vast number of streams which flow into Canadian waters on the river and Gulf of St. Lawrence. There are seventy tidal rivers in Canada which are well known to be frequented by salmon. In many of them great numbers of fish have been taken with the net for many years past, and although some of them are now visited by a far less number of fish than formerly, yet, judging from experience, the run of salmon would

rapidly increase, if the excellent regulations now established by the Canadian Government were faithfully carried out."

WHALE AND SEAL FISHERY.

The Whale fishery is not carried on by vessels from Nova Scotia, although whales of all sizes are taken in the Gulf of St. Lawrence, along the coast of Labrador, and in and through the Straits of Belleisle, chiefly by vessels from Newfoundland. The Jersey houses who have fishing establishments in Gaspé, fit out vessels for this fishery, which cruise about Anticosti and the northern shore of the St. Lawrence. From this place the descendants of some fishermen from Nantucket, who came to Gaspé Basin during the war of the American Revolution, fit out every year some ten schooners, manned by nearly 200 seamen, who are not inferior to American or to English fishermen, either in skill, hardihood, or courage.

Five different species of whales frequent the Gulf; they are the Black whale, the Hump-backed, the Sulphur-bottomed, the Finner, and White whale. The whales usually caught are called "hump-backed," which yield on an average about three tons of oil; some have been taken seventy feet long, which produce eight tons. These whaling schooners from Gaspé bring back from twenty thousand to thirty thousand dollars worth of oil every year.

The herds of Seals that frequent the Gulf of St. Lawrence arrive there in the month of November. They come chiefly through the Straits of Belleisle. They keep very close in to the coasts either of Labrador or of Newfoundland, penetrating into all the bays, and not going out far from land when doubling the points and capes. They often stop to sport, when they find a favorable place for the purpose. It is then they are seen to dive repeatedly, coming up again almost immediately, and to roll themselves about and beat the water with their hands. The fishermen call this "brewing," and hence the name of "brewer" given to those that frequent the Gulf. In winter they spread themselves through the Gulf in search of icebergs, on which they live for several months. In the months of May and June they reappear on the coast; but they pursue an opposite course to that of the preceding autumn. Afterwards they go out of the Gulf into the main ocean, and probably repair to Hudson's Bay and the Arctic seas. The spring and

autumn seal fishings are carried on along the Canadian shores of St. Lawrence, from Blanc Sablons Bay to Cape Whittle, and yield the fishermen annually from 5,000 to 7,000 seals, of the value of from one pound to three pounds each. But it is rather precarious; and it fails sometimes, by reason of the cold, or of the ice, or of calm weather, or adverse winds.

The autumn seal fishery takes place on the coast of Labrador at the end of November and in the month of December, and is very arduous by reason of the severity of the cold at that season, and of the ice-fields, which often break through the sets and tear the nets, if care is not taken to take them up. The seals are no sooner taken out of the water than they become frozen, and in that state they are put into stores, and it is not until the spring, when the warm air has softened them, that they are cut up, and their fat is melted in iron pots. The spring fishing is carried on nearly in the same way as the autumn fishing, with this difference, that the entrance of the fishery is to the westward, because then the seals are going out of the Gulf.

At Newfoundland, sealing, as it is called, is prosecuted on a large scale. The vessels employed in it are brigs and topsail schooners, solidly built, well strengthened within, to enable them to resist pressure from the ice, and plated with iron forward, to prevent their being cut through by it. They have crews of from 20 to 60 men, and carry half a score of small boats, which the men drag after them on the ice, and make use of to cross the open water dividing the fields or bergs from each other. Nearly 350 vessels, measuring more than 30,000 tons, and carrying 10,000 men, leave the ports of Newfoundland every year, in the months of March and April, for the purpose of hunting seals in the ice-fields wherever they can be found; and the profits arising from this fatiguing and dangerous expeditions are very great indeed, and sometimes even enormous. These sealing voyages, however, sometimes end in total failure. From 400,000 to 700,000 seal skins are exported from Newfoundland every year.

The seal fishery carried on so extensively from Newfoundland has been little prosecuted from Nova Scotia. The only port where seal fishing is pursued is Halifax, whence Messrs. Cunard & Morrow, last year and the year preceding, despatched one of their steam-vessels to the Newfoundland coast. The seal fishery, many

years ago, was carried on from Cape Breton, encouraged by a small Provincial bounty. In 1843, twenty-two vessels went to the ice from Cheticamp and Margaree, and returned with nearly 10,000 seals, which are stated to have amply requited those engaged in the adventure, as their outfit was on a very limited scale, being conducted in vessels of not over 40 tons burthen, with crews of eight men. In 1842, an enterprising merchant of Sydney fitted out a sealing vessel, on the Newfoundland scale, which in the short space of three weeks cleared the round sum of £14,000, and this extraordinary success encouraged others to enter into the business. Either subsequent adventures were attended with disaster, or other discouraging circumstances conspired against it, since we find that this fishery ceased almost immediately to be carried on from any part of the Province of Nova Scotia.

SHELL FISH.

Under this head may be enumerated lobsters, oysters, clams, mussels, whelks, razor-fish, crabs, and shrimps, all of which are found in the Gulf in the greatest abundance. Lobsters are found everywhere on the coast, and in the Bay of Chaleur, in such extraordinary numbers, that they are used by thousands to manure the land. At Shippagan and Carraquet, on the New Brunswick shore, carts are sometimes driven down to the beaches at low water, and readily filled with lobsters left in the shallow pools by the recession of the tide. Every potato field near the places mentioned is strewed with lobster shells, each potato hill being furnished with two, and perhaps three lobsters. There are several establishments on the New Brunswick coast, where lobsters are put up in tin cases for exportation. The lobster fishery of Nova Scotia is principally prosecuted on the Atlantic coast, one establishment having put up and exported 150,000 tins in one season.

Oysters are found all along the New Brunswick coast, from Bay Verte to Carraquet, but not within the Bay of Chaleur. Those best known for their fine quality are the oysters of Shediac; but the extensive beds which formerly existed there have been almost wholly destroyed by improper modes of fishing, an utter disregard of the spawning season, and the wanton destruction of the fish by throwing down shells upon the beds. It is a singular fact that ice

will not form over an oyster bed, unless the cold is very intense indeed; and when the bays are frozen over in winter, the oyster beds are easily discovered by the water above them remaining unfrozen. The oysters are then lifted upon the strong ice with rakes; the process of freezing expands the fish, and forces open the shell, the oyster is removed, and the shells are allowed to fall back into the water, where they tend to destroy the fishery. Oysters are very abundant on the shores of Prince Edward's Island, from whence the chief supply for the Provinces is derived. Oyster beds have been planted on the Canadian coast with good results. This mode of increasing so valuable a fishery ought to be adopted on the coast of Nova Scotia, (where the oyster is almost confined to a few spots on the Cumberland shore, and exists nowhere in abundance.) In the concluding chapter I shall refer more at length to this manner of propagating the oyster, which is pursued in France, England, and the United States, with wonderful success.

Clams of different varieties are gathered in great quantities in the Gulf. They are eaten largely in spring, when they are in the best condition; and are used as bait for cod. The razor-fish is more rare; it is well flavored, and not unlike the clam, though somewhat tougher.

Crabs, of all sizes, are to be had in abundance, but they are not often caught; neither are the shrimps, which are to be seen in endless quantities. At times the waters of the Straits of Northumberland appear as if thickened with masses of shrimps moving about, their course being plainly indicated by the fish of all descriptions which follow in their wake, and feed upon them greedily.

GENERAL REMARKS

ON THE FISHERIES TREATED OF IN THIS CHAPTER, FROM THE WORK OF PROFESSOR HENRY YOULE HIND, OF TORONTO.

"It is very difficult to obtain a close approximation to the actual annual aggregate value of the fisheries of the Gulf and the coast of Labrador. It would be necessary to obtain accurate returns from France, the United States, Great Britain, and the British Provinces. But both French and American fishermen leave the Great

Banks, if the season is not successful, and go to the Labrador, or into the Gulf, so that the distinction cannot be made with an approach to accuracy as regards the French and the Americans. The British American fisheries, however, do not now include the Great Banks, so that a close approximation to the value of the Gulf of St. Lawrence and the Labrador to the Provinces may be determined. The following table shows the value of the exports of fish, fish-oil, and seal-skins from British America during the years 1855, 1856, and 1857 : —

	1855.	1856.	1857.
New Brunswick.....	£47,193	£64,311	£71,190
Canada	79,842	82,960	98,271
Nova Scotia *	568,086	564,342	387,422
Prince Edward's Island	.....	.....	17,545
Newfoundland.....	1,028,388	1,254,737	1,529,607
	1,723,509	1,966,350	2,104,035

"The exports of Nova Scotia being given for nine months only of 1857, the addition of one fourth would not bring them up to the exports of the two previous years. But assuming that they were equal to those of 1856, the total value of the British American fisheries in 1857, with respect to exportations alone, amounted to £2,280,955 sterling, or about $11,000,000.

"The value of the exports of fish from Nova Scotia reached, in 1860, the large sum of $2,956,788, or within 44,000 of $3,000,000.† This colony employed, in that year, 3,258 vessels, with a gross tonnage of 248,061 tons, or a ton for each inhabitant.‡

"The total value of the fisheries of the Gulf of St. Lawrence and the coast of Labrador, as prosecuted under the enjoyment of the 'concurrent rights' by the Americans, the French, the British, and the Provincials, cannot fall short of four millions sterling per annum, or about twenty millions of dollars."

* A large proportion of the annual exports from Nova Scotia is not of fish taken in the Gulf or in Labrador.—*Author.*

† The total amount of exports of fish and fish-oil from Nova Scotia, in 1865, was $3,476,461.—*Trade Returns.*

‡ The number of vessels given in this quotation embraces all that were engaged in the trade and commerce of the Province. The vessels engaged in the fisheries, in 1860, were less than one-third of this number.—*Author.*

Professor Hind, after referring to the inadequate protection which is aforded to the British fisheries against the unlawful encroachments of foreign fishermen, remarks: "There can be no doubt that of late years the government of Canada has exerted itself to improve the fisheries belonging to the province, but not in a degree commensurate with their importance. *The great fishing interests have been grievously sacrificed to others of less moment, and far more able to expand and grow indefinitely without legislative assistance.* The fact cannot be concealed, that the French Canadians — who ought, from the remarkable facilities they possess, to hold the Gulf fisheries (in common with their fellow-colonists of Newfoundland, New Brunswick, and Nova Scotia) almost exclusively in their grasp — are elbowed here and there by their more active Yankee competitors, and see the rich treasures of their seas snatched from the threshold of their homes with scarcely an effort to seize a tithe of the prize which might be their own."

This testimony to the value of the fisheries of British North America (especially those in the Gulf of St. Lawrence) is enhanced from the fact that our Canadian fellow-colonists have been accused of regarding these fisheries with indifference, and were ready to sacrifice them to the agricultural interest which is so largely predominant in Canada. This was the opinion of the friends of the fishermen in the Maritime Provinces when the Reciprocity Treaty was concluded with the United States. That treaty, however, proved to be of the greatest benefit to the Colonial fishermen, and its annulment has been followed with very serious loss to them, from the resumption of the restrictive duties. The present unequal arrangement, which, for a small tax, gives to the American fishermen all the privileges that they enjoyed under the treaty, it is believed, is only temporary. It is to be hoped that in the event of continued refusal on the part of the United States government to revive the treaty with some modifications, the suggestion of Professor Hind will become the policy of the Colonies, sustained by the British Government, viz.: "That united action be maintained by the governments of Canada, Nova Scotia, Newfoundland, New Brunswick, and Prince Edward's Island, for the preservation, support, and development of the British American fisheries."

CHAPTER V.

CAPTURE, CURING, EXPORTATION.

In this chapter I purpose to treat of the several fisheries in the order of their commercial importance, to refer to the mode of capture, to describe the manner of curing, and, under each section devoted to each description of fish, to particularize the countries to which it is exported.

COD, HAKE, HADDOCK, &c.

CAPTURE.—The shore cod-fishery throughout the whole coast of Nova Scotia and Cape Breton, is carried on in boats, principally whale-boats, from 15 feet to 20 feet keel, furnished with sails, and containing from 4 to 10 or 12 men each. The fish are taken with hempen lines of from 15 to 18 thread, and averaging 30 fathoms in length. For haddock small blue cotton lines are often used, of 10 fathoms in length, called "float lines." Trailing is seldom adopted, and is employed chiefly in the capture of pollock. The season most favorable for cod-fishing is said to be during the months of June, July, and August, but it varies in different localities. The cod generally follows the course of the herring and mackerel. The *modus operandi*, when the fishermen arrive at the fishing ground, is thus described: "They first cast anchor, take down the masts and sails, and place them with the oars across the boat; then they bait their hooks, and drop the lines into the water, each with a leaden sinker attached to it weighing from one pound to four pounds, according to the supposed depth of the water and the force of the current. The hooks are allowed to sink about a fathom from the bottom. If there are plenty of fish, the fisherman has not a moment's rest when once he has begun, for while he is hauling up one line the other is going down, and before he has unhooked the fish from the former another fish is fast to the latter. The lines are always furnished with two hooks, and sometimes they come up with a fish on each hook." When fish are plentiful, the

boats take from three to four quintals per man. The bait for the shore fishery is generally fresh fish of the smaller kinds, as herring, mackerel, alewives, and sometimes clams and squid. It is only on the larger banks, where the cod feeds chiefly on crustacea and mollusca, that it bites at all freely at a hook baited with salt fish. It is therefore most essential for the fishermen to be always well provided with a sufficient quantity of fresh fish for bait. The fishermen generally set out for the fishing grounds at an early hour in the morning, returning in the afternoon; when the distance is great, they do not return until the evening of the following day.

The deep-sea fishery for cod, which employs a class of snug, good sailing vessels, of about 60 to 80 tons, is prosecuted in a somewhat similar manner, the hook and line being generally used. "Bultow lines" or "sett lines," are coming gradually into use without regard to the injury which they are said to inflict upon the propagation of this valuable class of fishes. Vessels employed in the cod-fishery are manned by from ten to thirty fishermen, according to their tonnage; they are anchored by hemp or manilla cables in from fifteen to fifty fathoms. Bait is obtained by spreading nets in the sea at a distance from the vessel, and the fishing is then begun with hook and line, and carried on often by night as well as by day, in spite of wind and storm, until the hold of the vessel is filled with fish, all split and salted. On the return of the vessel to the port the cod is landed, the process of curing completed, and they are then ready for exportation. The system pursued by vessels employed in the Labrador fishery is peculiar to that fishery, as described in Chapter IV.

In the Labrador fishery seines are frequently used in taking cod. In many places the cod approaches so near the coast that at times from 4000 to 5000 may be taken at a single haul of the seine; but the hook and line is the implement most used by British fishermen in all the fisheries.

As the expediency of the "bultow" mode of fishing for cod has long been a subject of controversy amongst persons engaged in the fisheries, I will describe it in detail. It was first introduced by the French at Newfoundland. The "bultow" is a long line, with hooks fastened along its whole length, at regular distances, by shorter and smaller cords called *snoods*, which are six feet long, and are placed on the long line twelve feet apart to prevent the hooks

becoming entangled. Near the hooks these shorter lines or *snoods* are formed of separate threads, loosely fastened together, to guard against the teeth of the fish. Buoys, buoy ropes, and anchors or grapnels are fixed to each end of the line; and the lines are always laid, or as it is termed "shot" across the tide; for if the tide runs upon the end of the line, the hooks will become entangled, and the fishing will be wholly lost. For the deep-sea fishery the "bultow" is of great length. The French fishing vessels, after anchoring on the Grand Bank, in about 45 fathoms water, veer out one hundred fathoms of cable, and prepare to catch cod, with two lines, each 3000 fathoms in length. The snoods are arranged as previously described, and the hooks being baited, the lines are neatly coiled in half-bushel baskets, clear for running out. The baskets are placed in two strong built lug-sail boats, and at three o'clock in the afternoon both make sail together, at right angles from the vessel, on opposite sides; when the lines are run out straight, they are sunk to within five feet of the bottom. At day-break next morning the boats proceed to trip the sinkers at the extremities of the lines, and while the crew of each boat are hauling in line and unhooking fish, the men on board heave in the other end of the lines with a winch. In this way four hundred of the large Bank cod are commonly taken of a night. The fish are cleaned and salted on board, and stowed in the hold in bulk; the livers are boiled to oil, which is put in large casks secured on deck. The French vessels engaged in this fishery are from 150 to 300 tons burthen; they arrive on the Grand Bank early in June, and on the average complete their cargoes in three months. In fine weather the largest class of vessels frequently run out three or four "bultows" in different directions from the ship, and thus fish 10,000 fathoms of line, or more, at one time, with a proportionate number of hooks.

CURING.—The system of curing more generally adopted in Nova Scotia, is that of curing in pickle before drying; and it is too evident to purchasers of codfish that this mode is often practised in a careless manner. The wretched mode of curing hake, which, Mr. Perley informs us, prevailed to a large extent on the New Brunswick shore, is in some respects applicable (the writer has been informed) to many localities on the shore of Nova Scotia in

the curing of both cod-fish and scale-fish. Mr. Perley thus describes this mode of curing :—

"At day-break the fishing boats returned to the shore, when the fish were thrown out upon the beach with a pitch-fork. Soon after sun-rise the newly caught hake were observed lying on the gravel beach, sweltering under the heat. There were no splitting tables, as in a well conducted establishment, but the fishermen set up pieces of board upon the open beach, in a temporary manner, on which the fish were split; they could not be said to be cleaned, as no water was used in the operation. The heads and entrails were separated from the bodies of the fish, which, being split in a clumsy manner, with uncommonly bad knives, were thrown down upon the gravel; thence they were carried off on hand-barrows, upon which they were tossed in a heap, three or four at a time, with pitch-forks. From the barrows the fish were pitch-forked into the scale to be weighed; from the scale they were again pitch-forked upon the barrows, and being carried off to the pickling casks were once more pitch-forked into the pickle; by this time the fish were perforated in all directions, and looked little better than a mass of blood and dirt. The fish which were drying on the flakes were covered with scales on the inside, or split portion of the fish, which had a most disagreeable appearance."

As respects the worst cured fish in Nova Scotia, the writer's informant would not affirm that it is quite so bad as is thus described, especially as to the use of the pitch-fork; but it is too generally the case, that the cod are imperfectly cleaned, and much of the refuse skin and slime is allowed to adhere to the fish, which renders them unsightly, and greatly deteriorates their value. The Board of British Fisheries, in their "Directions for curing Cod, Ling, Tusk, and Hake," recommend that the moment a fish is taken off the hook it should be bled. This may be done by the person who is employed in taking it off the hook. The fish must then be headed, split up, and gutted,—in doing which the sound should be carefully preserved for cure. The fish should then have the bone removed, care being taken that it shall be cut away to within twenty or twenty-two joints of the tail, not directly across, but by the splitter pointing the knife towards the tail, and cutting the bone through two joints at once, in a sloping direction, so as to leave the appearance of the figure 8. This looks best, and it has this advantage, that the fish are not mangled, as they are apt to be when the bone is cut square through one joint. A slight incision should be also made along all the adhering part of the bone, to

allow any remaining blood to escape, and the splitter should then drop his fish into clean water. The fish should then be thoroughly washed in the sea from all impurities; but where this cannot so immediately be accomplished, they should be dropped instantly into a large tub or vat full of sea water, where they should be carefully washed, and the water should be poured out of it when it gets foul, and fresh water supplied. Care must be taken to remove the black skin that adheres to the laps of the fish.

The writer has found at his hand, contained in Mr. Fortin's reports, an intelligent description of the manner of curing practised in the French establishment at Bay Chaleur, which seems to correspond, in all essential particulars, with the best methods adopted in Newfoundland, where codfish are prepared for exportation to the Mediterranean, and to other distant markets. "The Bay of Chaleur cod," Mr. Perley observes, "are more prized in the markets of the Mediterranean, and will at all times sell there more readily, and at higher prices than any other. They are beautifully white, and being very dry, can better withstand the effects of a hot climate and long voyage than a more moist fish. The peculiarity of their being smaller than cod caught elsewhere, is also of great importance as regards the South American market, for which they are packed in tubs of a peculiar shape, called 'drums,' and into which they are closely pressed by means of a powerful screw." The report of the Commissioners who recently visited the West Indies, Mexico, and Brazil, to enquire into the trade of those countries, confirms the above reference to the fish cured by the Jersey houses in the Gulf of Saint Lawrence. They state that:—

"While the Commissioners were in Rio de Janeiro, two cargoes of British North American fish arrived at that port—one from Halifax, the other from Jersey. They were sold at the very remunerative price of $12.50 per Portuguese quintal of 128 lbs. English. The fish of the brand, C. R. C., put up by the house of Charles Robin & Co., always commands the highest price. The superiority of this fish is owing to the circumstance of its being more carefully selected and packed in better tubs than the fish of any other house in the trade, generally uniform in size, and very small, while the tubs in which it is packed are made with the greatest care."

Mr. Fortin's description of the whole operation of curing, (see Appendix No. 3,) the writer has been reliably informed, is, though

not so designated, a correct description of the "kench" mode of curing, so earnestly recommended to be adopted by the fishermen of Nova Scotia. Much care and attention are required in the preparation of fish for foreign countries; and the loss which a neglect of this requisite entails, both upon the fisherman and the merchant, cannot be estimated. For this reason the most approved manner of curing should be learned by the fishermen, and sedulously required by the exporter in the purchase of fish. The singular success with which the British and French fisheries are prosecuted, and the wealth which they produce, are owing, in the greatest degree, to the superior manner of the preparation of their fish for home consumption and for export.

While treating of the curing of cod and haddock, I wish to refer to the "finnan haddies," cured by Mr. John Austin, of Digby, N. S. This delicacy for the table is well known to all who have visited Scotland. To those who are lovers of fish as an article of food, we therefore recommend these "haddies" as the most palatable of any description of cured fish. For the manner of their cure, see a letter from Mr. Austin to R. G. Haliburton, Esq., Secretary of International Exhibition Committee of 1862 (Appendix No. 4.) This letter, with many other papers touching the fisheries, were handed to me by W. T. Townsend, Esq., to whom was committed the preparation of fish for the International Exhibition.

EXPORTATION.—Nearly one-half of the whole exports of fish in the year, from 30th Sept., 1864, to 30th Sept., 1865, consisted of cod-fish and scale-fish, amounting in all to $1,625,911. Of this amount, in cod-fish, rather more than *fifty per cent.* went to the British West Indies; about *sixteen per cent.* to the Spanish West Indies; *thirteen per cent.* to the United States; *nine per cent.* to the British North American Colonies; *eight per cent.* to the French West Indies; the remainder distributed throughout Brazil, Italy, Jersey, Portugal, St. Domingo, Danish West Indies, including $4,757 only to Great Britain. Of scale-fish *thirty-five per cent.* found its way to the Spanish West Indies; *thirty-two per cent.* to the British West Indies; *eleven per cent.* to the French West Indies; *eight per cent.* to the United States; *two per cent.* to British North American Colonies; nearly *ten per cent.* to Great Britain; and the

rest distributed throughout Danish and Dutch West Indies, Africa, Italy, and Spain. The largest amount exported to Italy was from Arichat, amounting to $3,150.

THE MACKEREL.

CAPTURE.—In the bays and harbors of Nova Scotia, the mackerel is taken with nets and seines. The nets used are from 3 inches to 3½ inches mesh; and the seine is of sufficient size to enclose 800 barrels. The "drift-net" is sometimes used; but this mode of fishing for mackerel, which is generally practised on the coast of England, with great success, is not understood on the coast of Nova Scotia. (See Appendix No. 5 for a description of drift-net fishing.) For net fishing, strong breezes from any quarter, with the exception of heavy off-shore winds, are favorable. Off-shore winds cause a ground swell, which causes the fish to strike off into deep water, and likewise prevent the fishermen from tending the boats. Seining requires fine moderate weather, as the fish are then more sluggish in their motions, and in general concentrate in larger and more compact bodies.

In some places in the Gulf of Saint Lawrence, and on the shores bordering on the Gulf, mackerel are taken with nets and seines; but the principal mackerel fishing in the Gulf is with the hook and line. This mode of fishing, which is universally practised by the American mackerel schooners, is thus described *: —

"The summer mackerel fishing is carried on in two ways: with hooks and lines, and with the seine.

"The greater number of fishermen use the hook and line. These are the crews of those beautiful schooners to be met with everywhere in the southern part of the Gulf of Saint Lawrence, during the months of July, August, and September, and which, from far, look more like a small squadron of yachts than a fleet of fishing vessels, so beautiful are their masts and sails, and so neat and clean are they kept.

"But on a nearer approach this is found to be an error; for on the decks of these vessels are to be seen crews of from ten to twenty men, all occupied either in catching fish, in repairing fishing implements, or in splitting and salting the fish that have been taken; and what is most striking is the order that reigns on board of these schooners, whose decks and holds are almost always full of fish, fish barrels, salt, &c.

* Captain Fortin's Reports

"Before sailing from their port of outfit for the Gulf of St. Lawrence, they provide themselves with several barrels of very fat little fish, called poggies, to serve as bait, and as feed for the purpose of attracting the mackerel to the surface of the water and retaining them near the vessel. At a later period, when the poggies are exhausted, recourse is had to the offal of the mackerel for bait, and it is prepared in this way: whole fishes, or the offal of fishes, either poggies, mackerel, or others, are chopped up very fine, in a machine something like a straw-cutter, and then put into a large bucket full of salt water; the mixture is then stirred for a long time with a small paddle, and this is the whole secret of preparing feed or bait for mackerel. Machines for chopping up the fish are sold for from $5 to $7, according to their size.

"As soon as the schooners have reached the places where shoals of mackerel are usually found, they keep cruising backwards and forwards, and the moment there is the least appearance of fish, or their presence is even suspected, near a vessel, the jibs are taken in, and the vessel is brought to, with the mizzen sail and mainsail veered half round. Feed is then scattered all around from small pails, the fishermen seize their lines, bait their hooks with small pieces of the skin of the neck of the mackerel, or any other fish, (but the mackerel is much preferable) and throw them into the water. The lines are fine and are made of hemp or cotton, generally the latter. They are from six to eight fathoms long, and to one end is fastened a small sinker of polished pewter, oblong in shape, and weighing about two ounces, to one end of which is soldered a middle sized hook.

"Each fisherman plies two lines, one in each hand, and leans on the rail while fishing. He very seldom pays out more than four or five fathoms of line, for the mackerel, attracted by the chopped fish thrown overboard, thousands of pieces of which float in mid-water, leaves the depths of the sea, and comes swimming towards the surface, to feast with avidity on this excellent bait, prepared for him with so much care; and while he is gorging himself with pieces of poggie and mackerel, he seizes the bait on the fisherman's hook, and soon, in spite of his violent efforts to break the iron that is tearing his mouth and to free himself, he is pulled out of the water and thrown upon the deck, where he dies before long.

"Such is the method of taking mackerel with the line, pursued by the American fishermen; and our own, as well as those of Nova Scotia and the other Provinces, have adopted it as being the best. But it is far from being invariably successful; for it very often happens that the fish, finding plenty of food at the bottom of the sea, will not rise to the bait, or care so little for it as hardly to bite at the hooks. But the great difficulty with the fishermen is to find the shoals of mackerel. It is almost always an affair of chance.

"When mackerel swim near the surface, as they do when they are pursued by the porpoise, or some other of the large fish that prey upon them, they are easily recognized, especially by the experienced fishermen, by the ripple they make in the water, and sometimes by the noise they make by beating the water with their tails; and the moment they are seen from the fishing schooners, these bear down upon them and make all sail, so as to reach the place where they are as quickly as possible. Then quantities of bait are thrown into the water, and if the fish are hungry a good take may be expected. From fifteen to thirty barrels of mackerel, for example, may be taken in a forenoon by a crew of fifteen. But mackerel do not always show themselves near the surface; on the contrary, they generally keep at a great depth, in order not to be seen; and then the fishermen are obliged to seek for them. For this purpose they cruise with their vessels, as I have said already, in certain places, from sunrise to sunset; and I should add that in fine weather they stop every half hour, and sometimes oftener, to throw bait into the water, in the hope that some shoals of mackerel may see it, and allow themselves to be attracted by it to the surface. The mackerel fishing schooners, which are almost always good sailers, often sail from 60 to 100 miles in a day, on a cruise of this kind; and they may cruise for a week at a time, and sometimes longer, without taking a single fish. I meet many of these schooners during my cruise in the Gulf; and as I make it my duty to obtain all the information I can from them, I have often been told by Captains who had been fishing a great part of the season, that they had not taken fish enough to pay for the board of their hands, while others have informed me that they had loaded their vessels in the space of a fortnight or three weeks."

The hook and line fishing is now practised by hundreds of Nova Scotian vessels, a mode of fishing which not many years since was entirely unknown to Nova Scotian fishermen. The mode in which the New Englanders follow this lucrative fishery is what is termed "on shares," that is, each man is entitled to one-half the fish he takes, the other half going to the vessel.

CURING.—Merchantable mackerel are divided into three classes or qualities, and are numbered respectively 1's, 2's, and 3's; Nos. 1 and 2 being intended for the markets of the United States and Canada, the lowest quality being principally consumed in the West Indies. Defective curing does not occur so frequently with the mackerel as with the herring, although there are many instances where carelessness, imperfect cleansing, too little salt, and bad

barrels, unfit them for market. The common custom is to dip them in fine salt before salting in the barrels. Where this is neglected, the fish adhere together, and become red and tainted. The proper mode of packing is with the flesh side down; this prevents the fish from tainting, and allows all impurities in the salt to settle away from the flesh of the fish. Mackerel are also cured in hermetically sealed tins, but not to a very large extent.

EXPORTATION.—The Trade Returns of the year ending 30th September, 1865, include shad and halibut with the mackerel, but the quantity of the two latter descriptions of fish is so small a proportion of the aggregate, that the incorrectness of the return as regards mackerel is not of much consequence; nevertheless, the importance of keeping each description of fish separate in the annual statistics, cannot be too earnestly recommended. Chiefly for this reason, that two such fisheries as the shad fishery and halibut fishery are, from various causes, likely to decrease almost imperceptibly; and where this decrease is not seen in the annual returns, the causes are not likely to be sought after, nor is any remedy likely to be applied. The writer regrets that he can obtain no reliable data respecting the halibut fishery, a fishery which is prosecuted with increasing enterprise by the American fishermen.

The mackerel, shad, and halibut exported in the years 1864–5 amounted to $1,077,273. Of this amount, rather more than *eighty per cent.* was sent to the United States; about *fifteen per cent.* to the British West Indies; the remainder to the Foreign West Indies, and the British North American Colonies,—the latter amounts to $11,316.

THE HERRING.

CAPTURE.—"As early as March," writes Dr. Gilpin, in his paper on the Herring, read before the Institute of Natural Science, in 1863, "herring are taken in nets on our coast, but the fish are so straggling, and the seas so boisterous, that except for bait, fishing does not commence till May. In this month a run of large fat herring are taken in nets upon the Banks, which lie 10 or 15 miles seaward, and carry about 75 fathoms water. A net 30 fathoms long and 3 deep is passed from the stern of a boat at anchor.

The free end drifts with the tide, held to the surface by cork floats; sometimes the tides carry the net down 15 fathoms in a slanting direction, thus drifting from night to morning. The net is overhauled, and from 20 to 100 dozen is the ordinary catch. It is very evident from the distance from shore, the need of calm weather for the boats and nets, as well as for the fish, who are very susceptible to rough seas, this fishing must be precarious. The boats are stout, weatherly keel boats, with a half deck, from 5 to 15 tons, carrying a jib, fore and mainsail, and usually called second class fishermen, when entered at a regatta.

"The 'in shore run,' a fish of smaller size, are taken in nets set to a buoy, instead of a boat, the free end drifting to the tide. These nets are often moored from one buoy to another, to preserve a permanent position across a creek or small bay. In these various ways herring are taken by the shore population of the whole Atlantic and Gulf coast of Nova Scotia, from the Bay of Fundy to Cumberland. The immense tides of the Bay of Fundy, leaving long flats and sand-bars at low tide, and the steep trap formation of its southern coast line, have singularly altered the character of the fishing. Here the drift-net fishing obtains,—boats and nets drifting for miles upon the flow and returning upon the ebb, the nets twisted and coiled into apparently impossible masses. The shores of the trap formation being flat tables of trap, reaching plane after plane into the sea, with no crevice to hold a stake or anchor a buoy, the fishermen procure stout spruce fir trees, and lopping off the branches, leave the long lateral roots attached to them. These they place upright in rows upon the bare rock, and pile heavy stones upon the roots as ballast, stretching their nets between them. Entirely submerged at flood, at ebb they are left high and dry, and often loaded down with fish caught by the gills in the meshes of the net. These nets are usually set for a large, lean, spring herring, running for the flats in early spring to spawn. This method of fishing obtains throughout the whole trap district of the Province bordering upon the Bay of Fundy. With the exception of Briar and Long Islands, about whose coves nestle a hardy race of fishermen, whose red-tan sails are seen from Mount Desert to Cape Sable, and in all weathers; the population of these districts are farmers, rather than fishermen, tilling the southern slopes of the North Mountain, and employing their spare time in procuring

their winter supply, or a few boxes of smoked herring for barter. Where unopposed by the stern barrier of trap-rock, the great Bay pours its tide-waters up St. Mary's, or through the Digby Gut, into the Annapolis Basin, or sweeps up the Avon and Horton estuaries, or stays its flood on the Cumberland marshes, Minas Basin, or the Shubenacadie; there a rural population, dwelling on the borders of those streams and basins, hail with delight the periodically returning wealth teeming in its muddy waters. Smooth seas, sandy bars, and mud flats dry at ebb, replace trap-dyke and boisterous waves. The fisheries are curiously modified by these physical changes. Flats and punts take the place of keel-boats and whalers. Young fir-trees are driven into the soft sand, dry at ebb. Standing eight feet high, their green branches interlacing, they are formed into circles or L's. The retreating tide, which in its flow swept some 30 feet above them, leaves a teeming mass of helpless fish stranded in the shallow pools within their circle. This brush weir-fishing, as it is termed, less rude than the rugged stone-loaded stakes of the trap coast, yet is inartistic enough to provoke criticism in its waste of life, fish too small for use being included in the catch; yet we must recollect that it requires capital and population to be humane, and that these fir-trees, renewed yearly, are the cheapest and only material at hand for a population with no surplus time or capital. In these weirs are taken the Digby or smoked herring, known so well in all markets."

The following facts I quote from a paper prepared by W. T. Townsend, Esq., in 1862: —

"One schule of herring in each spring passes down the shore, some distance off, from west to east, and are termed by the fishermen 'bank herring.' They are generally large, fat, and of good flavor. Another schule passes down the coast in the same direction, but somewhat earlier, and close in shore, entering all the harbors and inlets of the ocean. They are generally of small size, very poor, and chiefly used as bait for cod-fishing. This schule is termed by the fishermen 'spring herring,' from being the first to make their appearance. The difference in size and quality of those two schules have induced some persons to assert that they are different species.

"It is difficult correctly to trace the course of the common herring on the shores of this Province, they are so perfectly migratory in their habits. They are, however, in greater abundance and in better condition in June and July than at any other period. At this season they are generally very fat, of

good size, and are principally ripped, cleansed inside, and prepared for the markets of New Brunswick, Canada, the Western United States, and for home consumption. As a mercantile article, they are termed split herring.

"In September and October herring again make their appearance in greater or less quantities. They are generally larger in size than those taken in summer, but very poor, and are cured with the roes and milts in them, not being ripped, and as a merchantable article are termed 'round herring.' . . . . Being a poorer description of fish, they keep better in warm climates."

At the Magdalen Islands and in the Bay of Chaleur, as well as along a portion of the coast of Gaspé, (to which places our fishermen resort,) immense numbers of herring are taken in the spring. At Pleasant Bay more than 50,000 barrels are taken with nets and seines every year, in the space of fifteen days at the most. The same thing happens on the coast of Gaspé, although there the seine is less used. The nets, which are generally thirty fathoms long by five or six wide, are set in the afternoon, and in the morning the fishermen visit them and take out the fish, generally to the extent of from five to ten barrels out of each net, when the fishing is good. The nets remain so long as the fishing lasts, although they are sometimes taken up to be cleaned. Seines for the purpose of taking herring are of large dimensions, say from 100 to 130 fathoms long by from eight to eleven fathoms wide, with braces 200 fathoms long. Large seines are used in the Gulf, generally by Americans and Nova Scotians; and they often take at a single haul of the seine herring enough to fill 500, 1,000, 2,000, or even 3,000 barrels. We need not be surprised at such great results (Mr. Fortin remarks), when we reflect that herrings in a shoal are so crowded together as to form a compact mass from the surface of the water to the bottom. When the seine is so much loaded with fish, it cannot be hauled on shore without risk of breaking it, and losing all the riches it contains. In that case the braces are made fast on shore, and the fishermen seine with smaller seines inside the large one; or, if the fish are very abundant, they are taken out with scoop-nets or landing-nets.

On the coast of Labrador the herring fishery is carried on in September and October, sometimes beginning as early as the latter end of August. The first herrings taken are generally not very fat, but after them come those fine fish that are so well known.

The Labrador herring is almost always taken with the seine. The herring taken on the southern coast of Newfoundland are spring herring, and, being caught out of season, are inferior in quality; and they are cured without much care, which renders them commercially of little value.

The extract from Dr. Gilpin's paper on "The Herring," refers to the net only as being used on the Atlantic coast of Nova Scotia. The "Official Circulars," however, inform me that *the seine* is extensively used on our shores in the capture of herring.

CURING.—It is admitted by all who have any knowledge of our fisheries, that our herring are generally very imperfectly cured; indeed, the herring fishery nowhere in the British North American Colonies is estimated at its real value. The more valuable cod and mackerel may, perhaps, have engaged the attention of our fishermen, to the neglect of the herring, which in England, Scotland, and Holland, proves so rich a source of piscatory wealth. Mr. Townsend, who is an acknowledged authority, especially in what relates to pickled fish, remarks in a communication to one of our newspapers in 1864:

"The difference in *curing* makes the great difference in the marketable value of the north of Europe and British herring, as compared with the great proportion of those cured on this side the Atlantic, and especially in the British Provinces. In the north of Europe herring is treated as food for human beings. In the British Provinces, generally speaking, they are treated in the curing as the very reverse.

"Of all mercantile fish, herring is the most delicate and tender, and is therefore the most liable to damage from the air and heat after they are out of the water. Herring ought to be gibbed, washed, and in pickle, as soon as possible after they are out of the water; not a moment ought to be lost that can be avoided. The flesh being so delicate and tender, not only injures quicker by exposure, but is much less liable to take the salt. On the other hand, if the herring get into pickle in a clean state before they have been any time exposed they take the salt quicker, and therefore preserve much better the natural quality and taste of the fish.

"Generally speaking, in the North American provinces, herring are not treated in the curing as human food; they are allowed to stand for hours before salting, and often in the hot sun, and are cured in the most slovenly, dirty, and careless manner. A great number are spoiled before it is attempted to cure them, and as many more from want of salt, or not being properly salted after the attempt is made to cure them.

"In some cases this cannot be avoided, the general rule and practice in those provinces being, that the persons who catch the fish also cure them; and when such is the case if the catch is large and the help small, it is next to impossible to get all in pickle before some are spoiled, or nearly so. The man who catches the fish ought not, if possible to avoid it, have anything to do with the curing of them. After coming from a trip with a good fare, and perhaps up all night and half the day, wet and hungry, they are not in a fit trim to go to work to cure their catch, and it is almost of a necessity that the work is done in a slovenly, careless, and dirty manner. Add to all this, that fishermen generally in those provinces set very little value on the herring. I have often heard the remark, 'good enough for herring they will fetch nothing,' forgetting that it is in a great measure owing to the manner in which they are cured that they fetch nothing.

Then there is the packages, and I am now only speaking of our own province. The merchant who supplies the fishermen is not, as a general rule, at all concerned about the quality of the package the herring has to go into, it is his only care to get things called barrels for as little money as possible. The fisherman very likely being in the merchant's debt, and therefore in his power, is compelled to take what is given him or go without. Here the merchant is injuring himself, for the fishermen will never be able to pay if supplied with packages that are sure to spoil his fish if kept for any time; besides the indirect cost in the shape of salt to make pickle to keep his barrels full, and also add the lost labor in trying to make them tight and keep them full, bad package is the dearest article a fisherman can be supplied with, and the greatest risk to the merchant. Bad packages are dear at any price no matter how small the sum paid for them."

The Dutch mode of curing herrings is universally extolled; and so much did it elevate the character of the Dutch herrings, on the continent of Europe, that the Commissioners of the fisheries (in Scotland,) were induced to devote great attention to it, and to urge its general adoption. Their officers and inspectors were directed to brand every barrel of herring, cured according to the Dutch mode, with the figure of the Crown. In their official report for 1844, the Commissioners stated that:

"The unprecedented demand from the Continent for Crown brand herrings, is a sufficient proof of the care with which the integrity of the brand is preserved, as well as of the high value which is set upon it, in all the Continental markets. It was the strong conviction impressed upon the minds of the Commissioners, of the vital importance of preserving the integrity of the brand, which compelled them to exercise the painful duty of dismissing from

the service, one of the Board's oldest officers. As he had branded a cargo of herrings, which afterwards went to Hamburg, where they were complained of, as having been found unworthy of the brand, the Board despatched the General Inspector of the East Coast to that place, in order that he might rigidly examine the contents of all the barrels: and on receiving an unfavorable report as to the result of his investigations, the officer was immediately dismissed. The effect of this prompt measure has been, to raise the character of the brand even higher in the estimation of the foreign fish merchants, to whom the circumstances were generally known. It is by the preservation of the purity of the official brand, that the produce of the British herring fishery is to be upheld in character abroad, and the demand for it largely extended in foreign markets.

"As a proof of the gradually increasing confidence which the Crown brand received on the Continent, the Commissioners furnish a statement of the number of barrels exported to the Continent, during the preceding seven years, commencing with 57,388 barrels in 1838, and annually increasing to 181,583 barrels in 1843."

The Commissioners further say:

"An extensive export merchant has given it as his opinion, that if great care shall be continued in the selection, cure, and official inspection of the fish, the Continent of Europe would consume more British herrings than are now caught in our fisheries. Although they have to contend with all the disadvantages of a duty levied on them of ten shillings per barrel, British herrings are now brought into competition with Belgian fish in their own markets, and are annually diminishing the sale of Dutch herrings, by furnishing part of the supplies in markets formerly entirely dependent on them. By this means their price has been so reduced, that the number of 'busses' fitted out for the deep-sea herring fishery, has been already considerably diminished."

The Dutch mode of curing herrings is thus described by Mr. Chambers, in his "Tour in Holland" in 1835:

"Immediately on being caught, the herrings are *bled, gutted, cleaned, salted, and barrelled.* The bleeding is effected by cutting them across the back of the neck, and then hanging them up for a few seconds by the tail. By being thus relieved of the blood, the fish retain a certain sweetness of flavor, and delicacy of flesh *which unbled herrings cannot possibly possess.* The rapidity of the process of curing, must likewise aid in preserving the native delicacy of the animal, for herring lies salted in the barrel, in a very few minutes after it has been swimming in the water. I was assured that the superiority of the Dutch herrings is solely ascribable to this mode of curing."

In the Appendix, No. 6, will be found "Directions for Taking and Curing Herring," as recommended by the British Commissioners. These directions have been published for years past in Fishery Reports, Legislative Journals, &c., and are of unquestionable authority and value. These directions practiced will be the means of furnishing a more palatable food for home consumption, as well as an article of export for more profitable markets than our herring have hitherto been able to secure.

In confirmation of the foregoing extract concerning the defects in the curing of herring, I will only refer to the "Official Circulars" under the query, "Are there any defects in curing or packing so as to affect their commercial value?" Such answers as the following occur from almost every county in the Province: "remain uncured too long after being caught," "defective packing," "not sufficient salt," "bad barrels," "not properly cleaned," "bad fish," "not assorted," "dishonesty," &c.; and I find that in no case is the Dutch mode of gutting the fish observed. The universal practice is to seize the entrails by the hand and pull them *downwards*, thus lacerating the flesh, and rendering the fish unsightly and unmarketable.

Under herring curing, I have only to refer in conclusion, to the Digby herring. I have at my hand a detailed description of the manner of curing these fish, in Mr. Perley's Report of the Fisheries in the Bay of Fundy:

"The fish are scaled by being washed in bushel baskets with a square bottom, open like a coarse sieve, the men standing in the water up to their knees. The best fish have very few scales, and only half a bushel of them are taken in the basket at once; they are then salted in large tubs, the salt being stirred through them by hand; the quantity used, is half a bushel of salt, to two and a half barrels of fish, which are a tub full. They lay in salt 24 hours, and are then washed in fresh water to prevent their becoming 'salt burnt,' after which, they are strung on rods, with their heads all one way, and then hung up in the smoke-house. In Clements, the smoke-houses are usually 30 feet square, with 14 feet posts, and a high roof; no fish hang nearer the fire than seven feet, but the most careful curers do not hang them nearer than eight feet. Rock maple *only* is used for smoking; when it cannot be procured, ash is used, being considered the best description of wood after rock maple. Beech and birch are deemed very inferior; and it is thought that prime 'Digby Chickens,' to possess the most perfect cure, and finest flavor, must be smoked with rock maple alone.

"The process of smoking usually occupies eight weeks; and it requires the whole time of one person to watch the fire, and attend to the smoking, in which much judgment and great care are required. The smoke is usually made up at night-fall, unless the weather is warm and wet, during which time no fires are made. In fine weather the smoke-houses are thrown open during the day to cool; and the greatest care is taken, at all times, to keep down heat, and to render the smoke-houses as cool as possible, by numerous windows and openings. After being smoked, the fish are packed in boxes of the established size; these are 18 inches long, 10 inches wide, and 8 inches deep, measured on the inside; and there should be 12 rods, or 24 dozen of fish, in a box of prime herrings. If the fish are large and of the best quality, it requires some pressure to get this number into a box."

The Digby herring are in some instances cured in pickle, unsmoked, and packed in half barrels.

EXPORTATION.—The herring and alewives exported in the year ending Sept., 1865, amounted to $452,327. Of this amount about *one-half* was exported to the United States; *one-third* to the West Indies, chiefly in British West Indies, and about *one-sixth* to the B. N. A. Provinces. The amount of $2,022 was exported to Great Britain. The writer would suggest that the official returns of herring and alewives be made distinct, so as to ensure greater accuracy. The same remark applies to the "smoked and preserved fish," so that the increase or decrease in the exportation of Digby herring may be ascertained, by separating them from the preserved fish.

THE SALMON.

CAPTURE.—The salmon caught in Nova Scotia are for the most part taken in nets, on the shores, and therefore, are in reality comprised in our Shore and Deep Sea Fisheries. The net used is of hempen twine, and of a mesh from five to six inches. The usual season for taking salmon is from April to July or August. The principal portion of salmon exported as "pickled salmon" is caught on the coasts of Newfoundland and Labrador. In a contemplated treatise on the River Fisheries of Nova Scotia, the writer hopes to have an opportunity of enlarging upon the subject of our salmon fishery; to refer to its decay, and to indicate the means for its restoration.

CURING.—Salmon for exportatien are either pickled in barrels, dried and smoked, or preserved in tins. The latter is likely to become an important trade.

EXPORTATION.—The salmon and trout exportation in 1864–65, amounted to $62,177. Of this amount, nearly *four-fifths* was exported to the United States. A large proportion of the salmon is exported fresh, packed in ice.

SHELL FISH.

The only trade in shell fish of any importance in Nova Scotia is the lobster trade. They are preserved in tins or cans, and within a few years the quantity thus prepared has grown to considerable dimensions. A flourishing establishment in Sambro cures per annum on an average 140,000 cans; and as many as 70,000 cans were shipped to England by another establishment at Port Mouton in 1864. The Sambro firm (Messrs. Hamblin, Baker & Co.,) also cure about 20,000 tins of salmon, and about 30,000 tins of mackerel. The shell fish exported in 1864–65 amounted to $51,872, four-fifths of which was exported to Great Britain.

Lobsters are taken in Nova Scotia, generally by means of a net stretched on a hoop, in the centre of which the bait is placed. This net is attached to a line which is pulled up when the fish have attacked the bait. One fisherman will often have twenty or more of these nets attached to a cable suspended at the surface. In England, lobsters are most commonly taken in pots and creels. The pot is a hemispherical coop of basket work closed below, and with a funnel-shaped or mouse trap entrance at the top, by means of which the lobster can readily pass in, but having gone completely through the funnel it cannot very easily return. The creel is a rectangular cage, with a rounded roof, and is made up of a light wooden frame, covered at the top and sides with stout netting. The entrances to the creel are of the same mouse trap character as in the lobster-pot, and they are placed one on each side near the opposite end of the cage. These funnels are usually constructed of small pieces of cane, so as to make a firm smooth passage. Both pots and creels are weighted with stones, and some kind of coarse fish is put inside of them as a bait. There is a machine also used in Nova Scotia, constructed on a similar principle to the lobster-pot.

It is a cage made with lathes with an entrance at each end; it is called a lobster trap. It is not much used being considered an expensive appliance.

FISH OIL.

The fish oil exported in the year 1864–65 amounted to $194,505. Of this quantity the proportion of $108,862 was exported to the United States.

See Appendix No. 7, for an approved method of making cod-oil, the result of many experiments. It is taken from the report of the Select Committee on the working of the Fishery act of Canada. It is said to be free from unpleasant smell, and to be very fluid; and as a medicine, is less disagreeable in taste than the cod-liver oil bought from the apothecaries. By this method, from the same amount of livers, more than double the quantity of oil can be obtained than by any other. From a cask containing 30 gallons, can be extracted 15 to 17 gallons of oil of the best quality.

CHAPTER VI.

GENERAL REMARKS—CONCLUSION.

A few suggestions seem to be indicated by the "Official Circulars," and to arise out of the general subject. Some of the questions contained in those circulars refer to injurious practices which often attend the catching of fish, as the taking them out of season, the throwing over offal, &c.; others to the descriptions of nets, lines, and tackle employed; others, to defects in curing and packing; and some general queries respecting the operation of the Reciprocity Treaty.

1. *The taking fish out of season and other injurious practices.*—The answers to this query would imply that the fishermen know no distinction between one period of the year and another for the taking of fish. They take them whenever they can obtain them, at the spawning season as at any other time. These queries are specially applicable to the herring fishery. Since 1860, a restriction called close-time has been adopted on the west coast of Scotland, which makes it illegal to catch herring between the 1st of January and 31st of May. Such restriction, however, does not exist on the east coast, where the fishery is under the protection of a Government Board. The writer can offer no suggestions that would restrict the time for herring fishing in Nova Scotia, while so large a number are dependant upon the fisheries for subsistence, to whom a restriction of any sort would be a calamity.

An injurious practice exists in the capture of Digby herring by means of weirs. A correspondent writes, that in Digby Basin, "he has known parties to take out of their weirs *every year* more small herrings for *manure* than would load several vessels." "No wonder," he adds, "that they complained of the fishing falling off." This practice is greatly to be deplored. The same wasteful appropriation of capelin in Newfoundland has occasioned serious injury to the cod-fishery, from the scarcity of capelin for bait. In Great Britain, when the trawl encloses large numbers of fry and small fish, they are invariably restored to the sea to mature for future capture. This cannot be done by the Digby herring fishermen; but if the

weir is so constructed that the smaller fish cannot escape, or if weir fishing from local causes is necessarily attended with such criminal destruction of fish, the system ought to be abolished.

Under this query I may refer to the method of fishing called "bultow" fishing, which has many enemies in Nova Scotia and in the other colonies. First, I may state that the opinions of our own fishermen, as ascertained from the "Official Circulars," is almost universally adverse. It is affirmed, that by its use the large spawn fish which swim near the bottom are taken, which hinders propagation; and that it interferes with hand-line fishing. W. T. Townsend, Esq., in 1861, and again in 1862, addressed a letter to Hon. John Locke, Chairman of the Fishery Committee, setting forth, at length, the pernicious practice of "set-line" or "bultow" fishing. The latter of these communications will be found in the Appendix (No. 10.) In 1859 the inhabitants of Westport and Long Island, in the County of Digby, petitioned the Legislature to interfere to prohibit set-line or trawl fishing. The Fisheries Committee recommended that the Government refer the matter to the two Commissioners of the respective nations of Great Britain and the United States. The Fisheries Committee in 1862, in their Report, (Journal 1862, Appendix 50,) refer to the trawl (?) or set-line fishing, regretting that remonstrances through Great Britain to the French Government were unavailing, and recommending that representations be made to the United States as soon as peace was restored to the nation, that this mode of fishing demanded their co-operation to abolish it.

In January, 1862, Mr. Shea called the attention of the House of Assembly of Newfoundland to this subject, referring to a Bill reported to the United States Senate authorizing the President to meet such Commissioners as Great Britain and France may appoint, to form a joint commission to frame measures to protect the fisheries on the coast of Newfoundland and North America against deterioration and destruction by means of set-lines on the spawn banks, and other destructive practices. Mr. Shea attributed the falling off in the Newfoundland fisheries during three or four years past to the system adopted by the French fishermen, of using "bultows" on the banks. Notwithstanding the remonstrances of individuals and committees, this system has grown into such general use by British fishermen, that any legislative interference would be found

unavailing. It may be added, that there is a difference of opinion regarding "bultow" fishing. Mr. John Holliday who is largely engaged in salmon and cod fishing in the Gulf of St. Lawrence, in reply to a question from the committee of the working of the Fishery Act of Canada, stated that he saw no objection to the use of the bultow. And J. M. Lemoine, Esq., of Quebec, thought it advisable for the Legislature to encourage "bultow" fishing at Gaspé, as a far more productive system than the ordinary mode of line fishing.

Mr. Perley also recommended its adoption by the fishermen of New Brunswick, and adduced evidence to prove that it is the best mode of fishing ever introduced, as being less expensive in the outfit and keeping boats in repair. A correspondent remarks on this head: "People should be encouraged to catch fish in any way they please, *so as they catch them and cure them well.*"*

2. *The throwing over offal at the fishing grounds.*—In boat fishing the fish offal is brought on shore. Where it cannot be brought on shore, the general opinion of our fishermen is that the practice is destructive to the fishery. It is the opinion of many of the Gulf fishermen, that the offal when thrown into the water furnishes food for bait fish, and for this reason is, on the contrary, beneficial to the cod-fishery; it is, however, generally admitted to be a pernicious practice when pursued at the mouths of rivers. It is recommended that very close enclosures be constructed beneath the flakes, so that no substance can escape from them, which should serve as receptacles for all the fish offal. The tide flowing into the enclosures twice a day has the effect of dissolving in a short period of time all the soft parts contained in them, without causing any disagreeable smell to annoy the workmen, and without mingling with the water which would wash out any deleterious substances contained in them. In many places the offal is burned on the beach, but the stench arising from these deposits is sufficient to create disease in the neighborhood. It is besides a waste of substance that might be turned into a source of profit.

The use of fish as a manure has long been known. The idea of converting fish offal and fishes that are valuable for food into a port-

* As a counter opinion to this *dictum* of a correspondent *as applied to all* fisheries alike, reference may be made to the herring fishery of Newfoundland, where it is alleged that *the seine* is a most pernicious mode of capture. Thousands of barrels, it is asserted, are annually destroyed by the use of these seines, and left rotting in the coves. Near one of the western harbors of Newfoundland, a seine was cast around a large body of herring, and 1,800 barrels were computed to have been enclosed. But this haul was too large to save, and before even half of them could be applied to any use, the remainder were rotten.

able manure was first carried into effect in France, about seven or eight years since, and establishments were erected in France and in Newfoundland for this object. The offal is placed in large coppers and heated by steam until thoroughly cooked, after which it is submitted to pressure, which extracts the water and oil. The pressed mass is then rasped, dried in a current of hot air, and ground to powder. One hundred parts of the recent offal yield on an average twenty-two parts of the powder, besides from two to two and a half parts of oil. One establishment near the eastern entrance of the Strait of Belleisle, in a harbour which is greatly resorted to by vessels engaged in the cod-fishery, produces 8,000 to 10,000 tons of manure annually. It is estimated that the total yearly produce of the cod-fisheries of the North American coast is equal to 1,500,000 tons of fresh fish; of this, one-half is refuse, and is thrown into the sea or left to decay on the shore, which if converted into manure, would yield more than 150,000 tons, equal in value to the guano of the Peruvian islands, which now furnish annually from 300,000 to 400,000 tons. This manure contains, according to an average of several analysis, 80.0 per cent. of organic matters, 14.1 per cent. of phosphate of lime and magnesia, besides some common salt, a little carbonate of lime, small portions of sulphate and carbonate of ammonia, and only 1.0 per cent. of water. This proportion of ingredients render it an invaluable fertilizing agent, worth $47 per ton of 2,000 pounds. Here is a new field for Nova Scotian enterprise, which might vie with our auriferous rocks, in productiveness if not in extent. To any who desire a more detailed description of this commodity, I would recommend a perusal of Professor Hind's interresting work on the Labrador, where it is treated upon with much minuteness. (Vol. I, pp. 308–317.)

3. *Any improvement in the nets, lines and other tackle used in the fisheries.*—The answers to this query are ambiguous. It may be inferred, either, that the tackle employed is the best suited that has come to the knowledge of the fishermen, or that they are quite up to the age in every appliance that is necessary for the successful prosecution of the fisheries. The writer is not aware to what extent nets are made by the fishermen themselves, but it would appear quite practicable to have our nets and seines to be made in the country, which would give employment to the fishing population in the winter months, when their ordinary occupation is in a great

measure interrupted. There is only one suggestion offered with respect to the modes of fishing, which will come under the next section, viz.: the experiment of trawling, which is the common mode of fishing on the coast of Great Britain. It may be stated, however, that as a profitable engine for capturing fish, two or three tons of haddock are frequently taken by a single vessel on the British trawling grounds, from a three hours trawl.

4. *The scarcity of bait, which is likely seriously to impede the progress of certain fisheries.*—The scarcity of bait for the cod-fishery has been felt in Newfoundland for several years past, but complaints of this nature have not often occurred in Nova Scotia. At the present season the fishermen on the shores of the county of Halifax (the largest fishing county in the province), are loudly complaining of the scarcity of bait. It has been before remarked, that fresh fish are indispensable as bait for the shore fisheries, and when herring and mackerel become scarce, the want of it is seriously felt in pursuing the cod-fishery. So important is this matter to the colonists of Newfoundland, that the traffic in bait with the French is expressly forbidden by law. The value of bait sold in 1856 to the French fishermen, was estimated by competent authority at not less than £58,000. "The price which the French give for bait," writes Professor Hind, "operates as a very seductive temptation towards illicit traffic. In 1856, an average of 26*s.* to 27*s.* stg. a barrel was paid by them for herrings sold for bait, while the actual legitimate value of herrings for exportation was at the same time only 6*s.* 1*d.* stg.

The writer would suggest, merely as a subject of enquiry, whether in the event of the scarcity of bait becoming a serious drawback to the success of the cod and haddock fishery generally in British North America, whether a resort to the trawl used by the British fishermen, (wherein no bait is required,) might not be advantageous. Judging from the evidence contained in a recent Report of the British Fishery Commission, which is before me, there is no mode of fishing that is attended with better results. It might be the means likewise of discovering some new species of fish that have not yet been taken on our coast; as the turbot, brill or sole, which are so common on the coast of Great Britain. It is true that the greater depth of water over our fishing grounds, might render the use of the trawl impracticable in many places. On the east coast of England how-

ever, the larger class of trawlers never trawl within 20 miles of the shore, or in less water than 20 fathoms.

5. *Defects in curing and packing.*—Under this head, questions were submitted in the "Circular," respecting every description of fish. The replies as regards herring, are to the effect that the greatest carelessness prevails in curing them, and that frequent cases of fraud occur in putting them up for exportation. Mackerel, it is stated, in many cases, are imperfectly cleaned, and in consequence soon become tainted. Cod are often cured with a deficiency of salt, and on the other hand frequently "burned" through over salting. These defects should not exist. They not only cause loss to the fishermen; they inflict serious injury upon commerce. It is only a few years since the inspection of cured fish was secured by law. It is thought by some of our merchants that a return to official inspection is much needed; hence the question arises, how far legislation may be beneficially applied to remedy this evil? The British Commissioners in their report allude to the fact that a Fishery Board exists in Scotland, and also in Ireland, while in England no such control is exercised over the fisheries; and they conceive that the functions of these boards, so far as the sea fisheries are concerned, might cease without any injurious effect upon the fisheries. They conceive further, "that the time has now arrived when the fishery trade may be entirely thrown open, and the artificial system created by the brand of the Fishery Board may be abolished, substituting for it the sounder system already adopted with regard to all other articles of trade." There is certainly something reasonable in the theory of committing the business of the curing of fish to the same principles of honesty and self-interest that guide other manufactures, though experience seems to have demanded an exception in the article of fish, and some important correspondence which is contained in the Commissioners' Report would seem to imply that the exception ought still to exist. A number of memorials from the leading continental merchants appear in the Appendix to the Report, which rigidly insist upon the continuance of the official brand on Scotch herring. An extract from one of these documents will characterise the whole: "The undersigned therefore strongly recommend the Royal Commissioners for the Sea Fisheries of Great Britain to leave nothing undone which will speedily and forever secure the official branding of herrings, and they further

give it as their opinion that by so doing the interest of curers also will be better served than if the branding were abolished. Hamburg, Nov. 9th, 1864." Mr. Alex. Miller, of Leith, addressing George Traill, Esq., M.P., on this topic, remarks: "Among the arguments in favor of continuing the Fishery Board and the official brand, there is one which I think cannot fail to have weight with those who propose to abolish them, viz.: that in various parts of the continent the character of Scotch herring has become so thoroughly established by means of official brands, that documents representing cargoes as specified quantities, are dealt in and passed from hand to hand in the same manner as if they represented 'consols,' or any other well understood commodity of which the description could be implicitly relied on." "I consider that the abolition of the Fishery Board would be a great calamity to Scotland, and I trust you will be able to find the means of averting such a blow."

Why the official inspection of fish was discontinued in Nova Scotia, whether from economic reasons, or because it was found to be ineffectual, the writer is unable to say; but this he has learned, that when in operation it was attended with many abuses. He has been told of one fishing settlement, where it was common for parties about to cure mackerel to bring a number of barrel-heads to the deputy inspector, who at their request would brand them of the quality desired, without examining the fish. It is most probable that the Legislature was indisposed to appropriate an adequate sum to maintain such a system in thorough efficiency. On the other hand, it does appear to be a sufficient check upon dishonesty, where the merchant requires the brand of the party who has cured the fish, by means of which, where he has heard of fraudulent acts, through his foreign agent, he can demand indemnity; and here, the law ought to punish the offender with severity.

I have given in the Appendix the best authorized "instructions" for the curing of cod-fish, and also of herring; and I will only add an extract from one of the pamphlets in my possession respecting salmon and mackerel: "In the curing of salmon due care should be taken to clean the fish thoroughly, especially in taking every particle of blood from the back bone. The barrels should be also free from impurities, and tight, and the fish well covered with brine. More fish are destroyed by carelessness in curing than can possibly be imagined. Salmon and mackerel require particular care, as they

are easily spoiled—they should be handled as little as possible. I hope, from the facility of communication, that few salmon will be salted in future. Fresh, smoked, kippered, spiced, or preserved in tins, is the more preferable way of treating this fine fish. Mackerel require more care than any other fish in cleaning and curing, as they soon get tainted, and are then valueless."

6. *Exportation—Markets.*—A reference to Appendix 2 will show to what markets our fish are exported. Our fisheries since 1853, have increased, with some variations, from $1,940,129 to $3,476,461 in 1865. It will be equally interesting to mark the ratio of exportation to the principal markets. In 1853, British West Indies absorbed 37 per cent. of the whole exports; United States 30 per cent.; British N. A. Colonies 17 per cent.; Great Britain 1 per cent.: and other countries 15 per cent. In 1855 when the whole exports reached $3,005,000, the United States received instead of 30 per cent. as in 1853, the larger proportion of 43 per cent.; British West Indies 32 per cent.; British N. A. Colonies fell to 7 per cent.; Great Britain about ½ per cent.; and other countries rose to 17½ per cent. In 1856, (the total exports being about the same as in 1855,) the exports to the United States fell off 7 per cent., while those to the British N. A. Colonies increased 3 per cent., and those to other countries 4 per cent. In 1860, after a diminution in the exports during two of the intervening years, they again reached a little over $3,000,000, when we find the following proportion: United States, 37 per cent.; British West Indies, 34½ per cent.; British N. A. Colonies, 6 per cent.; Great Britain about ½ per cent; and other countries, 22 per cent. In the years 1861, 1862, 1863, the whole exports fell back to a little over two millions and a quarter; but in 1864, they regain the maximum of the 12 years, a little over three millions. In 1865, they reach $3,477,181, which is thus distributed: United States 42¼ per cent.; British West Indies, 33¼ per cent.; British N. A. Colonies, 5½ per cent.; Great Britain nearly 3 per cent.; and other countries, nearly 16 per cent. It appears from these figures that the proportion of exports to the British N. A. Colonies has gradually decreased since 1853 from $324,935 to $184,958, although the exports have increased nearly 80 per cent. during the interval. The exports to the United States have increased from 30 per cent. to 42 per cent.; while those to British West Indies have decreased from 37 per cent. to 33 per

cent. The exports to Great Britain from 1853 to 1864 varied from $15,000 to $40,000; but in 1865, they rose to $99,000.

The decrease in the exports to the other British N. A. Colonies is a matter for earnest consideration. The stimulus to intercolonial trade, which the change in our commercial relations with the United States has occasioned will, it is reasonably expected, be the means of increasing our exports of fish to Canada and the Western country. And when the intercolonial railroad is completed, our fishing interest must necessarily receive a great impulse in that direction. It is desirable that we should strive to cultivate enlarged commercial intercourse with Canada in our native products; which will aid in cementing our fraternal relations, and to render our political union more complete. The markets of the south of Europe are but little sought for our dry fish: the Jersey houses of Arichat being almost alone in that trade. The only codfish shipped to Italy, Portugal and to the Brazils in 1865 was from Arichat; and Arichat very nearly reached Halifax in its exports to Spain. The high duties on fish in European countries operates against us, but the imperfect manner of curing cod in general unfits it for carriage to a great distance. The improved facilities which the recent communications of the British North American Commissioners with the Spanish West Indies and Brazil have elicited,* as well as the late political changes in Europe, present a larger field for the development of this important branch of our industry.

It will be well under this section, to refer to the increase or decrease of the several kinds of fish during a term of years. This alone will determine whether either of our fisheries is declining; as in a single year, or in two or three years, one fishery may decline, while the yield of another may be augmented. This, however, does not often occur. When one fishery fails, it generally happens that all fail; though not in the same ratio. There is least variation in codfish and scale fish; but in mackerel and herring these changes are more irregular. In 1860, the herring exported amounted to $709,730; whereas, in 1862, 1863, 1864, they did not reach $350,000; in 1865 they increased (including alewives) to $452,337. This proves that our herring fishery is on the whole going backwards. As to mackerel, in 1860 the exports was $547,386; in 1861, 1862, 1863, they

* For some extracts from the Commissioners' Report respecting the West Indian and South American markets, see Appendix No. 8.

fell to about $400,000; but the year 1862 shows the erratic character of the yearly catch of mackerel, for while the total exports in these three years are nearly alike, the export of mackerel in 1862 amounted to $500,000. In 1864 and 1865, our mackerel fishery increased beyond any proportion to the whole increase in our exports, being in 1864 $1,107,039, and in 1865 $1,077,273. It must be added, however, that in these two years shad and halibut are included; but they do not swell the amount beyond $20,000 to $25,000. The export of salmon shows but little variation during the six years.

7. *Reciprocity Treaty.*—Two of the questions contained in the "Official Circulars" are, "Does the Reciprocity Treaty operate beneficially upon our fisheries?" "Is it attended with any disadvantages to our fishermen?" Of answers to the first question from every port in the Province and from several private individuals, about 20 are in the negative, the rest in the affirmative. Of answers to the second question, the negatives and affirmatives are nearly equal; some intimating that the American fishermen take our bait from us, others that they destroy the schules by throwing over offal. The general inference, however, is, that it has been a gain to us, especially in affording us a remunerative market. One correspondent writes from the county of Guysborough, "The fishermen in this locality have, since the commencement of the Reciprocity Treaty, say for the past ten years, made more money than during any ten years previous, from the fact that they have had a free market in the United States, which is the only market where a large proportion of our fish will sell to advantage; and, although the fish have not been so abundant, the extra price has more than compensated for the difficiency in catch. If a heavy duty were put upon our mackerel and herring in the United States, the fishery would not be remunerative." He adds, "The American cod and mackerel fishermen have not interfered with us or injured our fisheries in this vicinity during the past ten years, and our fishermen caught more mackerel in 1864 than in any previous year."

What our Guysborough correspondent deprecates has come upon us, owing to the abrogation of the Reciprocity Treaty. Notice of this Act of the United Congress was given to the British Government on the 17th of March, 1865, which was immediately communicated to the respective Colonies in the usual form. The action of Congress met with much dissatisfaction throughout the mercan-

tile community in the northern cities of the Union, where the impulse which the treaty had given to trade with the British N. A. Colonies was most apparent. Communications were exchanged between the Trade Association of those cities and those of the Colonies, which resulted in a Convention being held at Detroit on the 11th of July. This Convention, for four days, was attended by delegates from each of the provinces, as well as from the Atlantic cities of the Union. Without entering into the subject of the proceedings at this Convention, suffice it to say, that they were ineffectual to change the opinions of the enemies of Reciprocity, who persisted in asserting that the advantages of the treaty were largely on the side of the provinces. Another effort was subsequently made to reverse the action of the United States Government, by a delegation from the three provinces of Canada, New Brunswick and Nova Scotia. But after protracted discussion with a Committee of Congress at Washington, the demands of the American Government were such as to render the effort abortive.

It is probable that the next step towards a renewal of Reciprocity will originate with the United States, since their mercantile newspapers are beginning to sound the alarm of a decline in their trade with us. The *New York Prices Currrent* of a recent date says "The failure to agree upon a liberal substitute for the rescinded Canadian Reciprocity Treaty during the last session of Congress, has cut off a very large and lucrative trade which we formerly enjoyed with the neighboring provinces." Referring to the disappointment of those who conceived the idea that the provinces would be starved into submission to the terms demanded by the Government, and to the report of the Commissioners sent to enquire into the trade of the West Indies, Mexico and Brazil, the article states that, "the effect has been to change the general current of their trade more in the direction of other countries." In the meantime, the fish of Nova Scotia exported to the markets of the United States is met by a duty of $1 per bbl. on herring; $2 per bbl. on mackerel; $3 per bbl. on salmon; $1.50 on all other pickled fish; and ½ cent per lb. on all fish not in bbls.

"As regards the value of the Reciprocity Treaty to United States fishermen in the Bay and Gulf of St. Lawrence," writes the Secretary of the Montreal Board of Trade, in a comprehensive report on the commercial relations of the British North American Provinces,

"a document was fyled containing the following estimates respecting their fishing operations during each of two years before and under the Treaty:—

Before Treaty.		Under Treaty.	
Tonnage	18,150	Tonnage	54,000
Value of Vessels	$750,000	Value of Vessels	$3,000,000
Men employed	2,750	Men employed	9,000
Barrels caught	68,750	Barrels caught	315,000
Gross proceeds	$825,000	Gross proceeds	$4,567,500
Net proceeds	$687,500	Net proceeds	$3,786,900

"The difference between gross and net proceeds is cost of salt, barrels, packing, and incidental expenses. It was also estimated that the abrogation of the three-mile limit, by the Reciprocity Treaty, had enabled the United States fishermen to double their catch."

Although the facts that I have deduced from the statistics of exportation, and from questions adverted to under this section, fail to show that the privileges enjoyed by the Americans have militated against the progress of our own fisheries, these privileges, as proved by the foregoing figures, are nevertheless of such a value that they ought in justice to be made to form the basis of a Treaty of Commerce between the United States and the British North American Provinces, eminently advantageous to the latter. The writer believes that the compromise which continues to the United States the privileges which they enjoyed under the Treaty was necessitated, because of the hesitation on the part of Great Britain to restore the system of armed protection, and through a well grounded conviction that the manifested temper of the American Government would have made it slow to discountenance any acts of violence that might have ensued in interdicting the American fishermen from the enjoyment of their usual fishing grounds. Indeed, the Home Government felt it to be its duty to press on the Maritime Provinces, who strongly objected to it, the policy of allowing the United States fishermen, for the present year, to participate in the fisheries in Colonial waters as hitherto. Notwithstanding the difficulty of our position, it is apparent that the American people are being treated by the government of Great Britain with singular generosity; for it is to the British Government we naturally look for the reservation and protection of our rights.

8. *Shell Fisheries—Propagation of Oysters.*—The example of Canada in the planting of oyster-beds on the shores of the Gulf of St. Lawrence, is worthy of the imitation of Novascotians. As far as the experiment has been tried, it has proved successful. Captain Fortin has been most indefatigable in seeking to establish this valuable fishery on the Canadian shores. He thus describes the operation of planting oysters at Gaspé Basin: "Barrels of oysters were filled in the hold, taking care not to spoil them; by means of tackle they were hoisted on deck, from which they were put in a lighter fastened alongside the schooner. This being filled (it held about fifty barrels), it was towed on the banks, set apart by me and previously marked with buoys; then the oysters were emptied into the water, care being taken to constantly change the position of the barge, in order that the oysters might everywhere cover the bottom equally; and before the night was over two hundred barrels of oysters had been put into the water, in the manner already described." He also refers to a new method of depositing the oysters, which consists in placing them on hurdles, which are sunk to the bottom of the water by means of heavy stones. The places where the new oyster-beds had been laid were marked out with anchors, and posts placed on the land opposite the spot where they were situated. Being taken away from their natural place, and transferred to a strange bottom, where the soil is a little different from that on which they previously existed, oysters, for the first year, will reproduce only limited quantities. The fact is proved, however, that they can be thus moved successfully, since 15 to 20 per cent. of those placed in Gaspé Basin, in 1859, were found living two years afterwards. "And being alive," remarks Captain Fortin, "they are sure to reproduce. Nothing is easier than for oysters to reproduce, when in suitable places, as they are hermaphrodites."

Some idea of the extraordinary value of the oyster fishery may be obtained from the following facts, taken from Professor Hind's volume, already quoted in preceding pages. The annual value of the oyster trade of Virginia, before the outbreak of the civil war, was $20,000,000, and the oyster trade of Baltimore exceeds the whole wheat trade of Maryland. The total value of the oyster and shell-fish fisheries of the United States is estimated to be $25,000,000 per annum, or more than all the other fisheries put together. The

extraordinary rapidity with which the oyster trade may becom. developed may be inferred from the report of M. Coste to the Emperor of the French, on "the Organization of the Fisheries," wherein it is stated that the production of oysters recommended by M. Coste, has taken such a prodigious developement that, in the Isle de Ré alone, more than 3,000 men, who had come from the interior, have already established 1,500 parks, which produce annually about 387,000,000 oysters, of the value of 6,000,000 to 8,000,000 francs.

In the Appendix (No. 9), I give a description of what is probably the most productive oyster bed in the world, taken from the report of the British Commission. The pages of this report devoted to the subject of the oyster fisheries of the United Kingdom, are of surpassing interest. They prove how rich a revenue is derived by private individuals and corporations from the propagation of this valuable and delicious shell-fish. The Commissioners strongly recommend that every legislative assistance be given to individuals or corporations who may desire to form private beds for oyster culture.

9. *Fishery Board—Fishery Societies.*—On first approaching the subject of our fisheries, and becoming convinced of the important place which they fill in our provincial industry, comprising nearly one-half of the whole exports of the country, the writer was impressed with the claim they had upon legislative encouragement, to the extent at least that support is extended to other branches of industry. He thought that an organization, somewhat similar to the Central Board of Agriculture, might be judiciously established, comprised of a few of the most practical and influential men who are interested in the fisheries. The numberless circumstances which immediately or remotely affect this department of industry, would be thereby confronted; and all the legitimate aid which collected information and intelligent action can afford, would be thereby provided. It is true that the agricultural interest engages a larger number of our population, and its aggregate numerical product is considerably greater; but the relations which our fisheries sustain to the employment of our shipping, and the extension of our commerce, places them on an equality with agriculture, as deserving of support and encouragement. It is an unhappy cir-

cumstance for any country when its maritime interest is allowed to occupy a secondary place.

The British Commissioners, though they discountenance any kind of legislative interference with sea-fisheries, acknowledge the benefit of organizations in the shape of private societies. They remark: "When we consider the amount of care that has been bestowed on the improvement of agriculture, the national societies which are established for promoting it, and the scientific knowledge and engineering skill which have been enlisted in its aid, it seems strange that the sea-fisheries have hitherto attracted so little of the public attention. There are few means of enterprise that present better chances of profit than our sea-fisheries, and no object of greater utility could be named than the developement of enterprise, skill, and mechanical ingenuity, which might be elicited by the periodical exhibitions and publications of an influential society, specially devoted to the British Fisheries."

In 1851, Fishery Societies were established in one of the counties of New Brunswick. At the session of the Legislature in this year the following appropriation was made:—

"To His Excellency the Lieutenant-Governor or Administrator of the Government for the time being, the sum of five hundred pounds, for the encouragement of the fisheries; the said money to be advanced in the same way, and in like proportions, as the money at present granted for the encouragement of Agricultural Societies."

In consequence of this appropriation, letters were addressed, by the Provincial Secretary, to the Clerks of the Peace in those Counties interested in the fisheries, stating that His Excellency the Lieutenant-Governor recommended the establishment of "Fishery Societies" upon a system similar to that on which Agricultural Societies have been formed—any such Fishery Society, upon subscription and payment by its members, of not less than twenty pounds, to be entitled to receive from the Provincial Treasury, a sum equal to three times the amount so raised, to be applied in the distribution of prizes, or in any other way, which, in the judgment of the Society, might best tend to promote the desired object.

In Charlotte County three societies were immediately formed. These societies each adopted a constitution for its guidance, and each had a "fishery show," at which premiums were awarded for the best cured fish. The fishermen, by means of these societies,

were induced to meet together and discuss, in a friendly spirit and business-like manner, various matters of deep interest in their calling, with the view of devising measures for the more successful prosecution of the fisheries generally, as also improved modes of curing all descriptions of fish. Similar societies to these might be formed in every county in Nova Scotia, under the direction of the Central Board. The Central Board might be composed mainly of influential merchants, exporters of fish; and, through the Secretary of such an organization, correspondence might be carried on with the several societies in the Province.

Rev. Mr. Ambrose, whose sojourn on the western shore of the largest fishing county in the Province affords him the most favorable opportunities for observing the condition of our fisheries, and perceiving their needs, has manifested a most laudable interest in the subject. From an article from his pen, contained in the "Transactions of the Nova Scotian Institute of Natural Science," of the present year, I quote the following: —

"Fishermen are expected to go on, hazarding their lives and eking out a mere subsistence in hopeless poverty and self-denial, almost unthought of by their superiors, whilst they keep up the most lucrative branch of industry in the Province; and though Agricultural Societies are gotten up, and fostered by Government, in order to encourage and teach the farmer, and supply him with the best stock and implements, we have yet to hear of the very first effort to teach or encourage the poor fisherman. But if we are to see our fish trade expand under the contemplated treaties, this indifference must be shaken off, and a vigorous effort made to develope a great source of wealth, which as yet is only in its infancy."

10. *The Report of the British Commission.*—The able Report of the British Fishery Commission, just published, has been adverted to, which constitutes a comprehensive exhibit of the condition and prospects of the British Fisheries. The topics committed to the commissioners for their investigations and opinions were as follows: —

1. Whether the supply of fish from the sea fisheries is increasing, stationary, or diminishing.

2. Whether any of the methods of catching fish in use in such fisheries involves a wasteful destruction of fish or spawn, and if so, whether it is probable that any legislative restriction upon such method of fishing would result in an increase of the supply of fish.

3. Whether any existing legislative restrictions operate injuriously upon any such fisheries.

It is obvious that these are the practical questions which arise in the consideration of the sea fisheries of any country. There is still another topic in connection with the fisheries of Nova Scotia, which has occupied more discussion and legislation than any of these, viz: the rights of foreigners to the enjoyment of our fishing grounds, especially the citizens of the United States. This topic I have touched upon in page 70, but purpose to enlarge upon it in a separate treatise.

Before enquiring how far these queries may apply to the facts that I have collected together in this pamphlet, touching the fisheries of Nova Scotia, it may be interesting briefly to state the result of the labours of the British Commissioners. Among the "Conclusions" which they arrived at, after an examination of all the "trawling grounds" on the coast of Great Britain, together with interviews held with a large number of fishermen and others in in every part ot the kingdom, I quote the following:

"1. The total supply of fish obtained upon the coast of the United Kingdom has not diminished of late years, but has increased; and it admits of further augmentation to an extent, the limits of which are not indicated by any evidence we have been able to obtain. Query 1.

"2. Beam trawling in the open sea is not a wastefully destructive mode of fishing, but is one of the most copious and regular sources of the supply of eminently wholesome and nutritious fish. Any restriction upon this mode of fishing would be equivalent to a diminution of the supply of food to the people; while there is no reason to expect present or future benefit from that restriction. Query 2.

"3. Notwithstanding the most careful inquiry specially directed to this point, we have been unable to meet with any case in which we were satisfied that sweep-net fishing, fishing with small meshed nets, or weirs, in bays and estuaries, has been permanently injurious to the supply of the fish; while on the other hand, it is proved that, in certain bays and estuaries, such fishing has gone on for very many years without permanent injury to their fisheries. Query 2.

"6. We find the laws relating to sea fisheries complicated, confused, and unsatisfactory; many restrictions, even of late date, are not enforced; many would be injurious to the interests of the fishermen and of the community if they were enforced, and with respect to these and others, the highest legal

authorities are unable to decide where, and in what precise sense, they are operative." Query 3.

These are the opinions of men of the highest repute. Two of the Commissioners, Mr. Caird and Mr. LeFevre, are members of Parliament, and the third, Professor Huxley, is well known in the world of science; hence, if the British fisheries can be proved to be in all respects analogous to ours, these opinions ought to be accepted without hesitation. The Report alludes to the complaints which are brought against one class of fishermen by others, who rightly or wrongly conceive themselves to be unjustly injured in their most important interests, as of the most conflicting character; but the Commissioners, after the most impartial investigation of these complaints, are of opinion that, "It may be laid down on a broad principle, that (apart from the restriction prescribed by international law, or by special treatise) the produce of the sea is the property of the people in common, and that methods of fishing are fitting subjects for legislation, only so far as such legislation can be shown to be necessary to secure the greatest possible advantage to the whole nation from the sea fisheries; either by suppressing wasteful or uselessly destructive modes of fishing; or by removing legislative obstacles in the way of improved modes of fishing; or by preserving peace and order among fishermen." But while in this decision, no countenance is afforded to legislative protection or support, as by bounties, &c., the Commissioners in their "Recommendations," deem it expedient that every legislative assistance be given to individuals or corporations, who desire to form private beds for oyster or mussel culture. We see that they recognize in this exception the expediency of protection for the maintenance of fisheries that are liable to be exhausted by over demand, or from any other cause; or assistance towards the propagation of fish.

The Legislature of Nova Scotia has at different times instituted inquiry into the condition of its fisheries. In the Journal of 1837 (Appendix No. 75) will be found an able report of a committee appointed to consider the condition and prospects of the fisheries, founded on interrogatories submitted to the most intelligent commercial men engaged in the fisheries throughout the Province; and in subsequent Journals of almost every year, down to 1854, the subject of the fisheries has a prominent place in the form of Reports of Committees, or correspondence with the British Government, or

Reports of the commanders of cruisers employed in the protection of the fisheries. Since 1854, in which year was concluded the Reciprocity Treaty with the United States, the subject of the fisheries has occupied but little scrutiny from either the Legislature or the community generally. The improved markets which the treaty created for our export of fish to the United States, rendered them in the whole prosperous; and if defects existed in the preparation of fish for export, they were not perceived, or if perceived were not considered of any great importance. Since the repeal of the treaty, we have to a great extent been shut out from United States' markets, owing to the return to a scale of high duties; the subject of the protection of the fisheries, therefore, has re-assumed its importance, and has led to negotiations with the United States Government to revive the treaty, which, as already intimated, have so far been fruitless.

To apply the questions which engaged the attention of the British Commission to the Fisheries of Nova Scotia:

1. *Is the supply of fish increasing, stationary, or diminishing?* This can only be ascertained by comparing the exports from year to year, as no statistics exist by which the annual amount of fish caught can be ascertained. In the Table (Appendix No. 2) I furnish an abstract of the total amount of fish exported to different countries in each year, from 1853 (the year prior to the Reciprocity Treaty) to 1865. This Table shows that our Fisheries have in the aggregate greatly increased. In two years from 1853 they make a bound from $1,940,129 to $3,005,000. Then, in the succeeding six years, from 1855 to 1860, they amount to $3,000,000, with little variation, except in 1858, when they fell back to $2,864,000. In 1861 they fell back to $2,390,000, and do not increase in the two following years; but in 1864 they again reach $3,000,000, and in 1865 attain $3,477,000. These figures which prove that our fisheries are increasing during an average of years, are in agreement with the Report of the British Commissioners, as regards the British fisheries. There is, however, an aspect of the question, which the facts contained in the Report referred to suggest, that is not noticed by the Commissioners. While there has been a progressive increase in the number of men and boats engaged in the fisheries, it is not shown that the increase of the production has been in *an equal ratio*. Indeed, as regards the herring fishery, which is the principal sea fishery of

the United Kingdom, it is proved that during the 25 years, terminating in 1864, the increase has been little or none. For example, in the five years ending 1844, the catch was 3,039,000 barrels; from 1845 to 1849, 3,110,000; and in the latest quinquennial period, 3,372,000. This can only show that the principal fishery has not decreased. It is from this point of view, that the question of permitting foreigners to enjoy equal rights to our fisheries with ourselves is to be considered. If the number of persons engaged is greater, and the production stationary, the proportion of gain to each person engaged must be less, unless it can be shown that prices have greatly increased. Every additional fisherman therefore, from another nation, as he is successful, must reduce the quantity assigned to each of our own fishermen. This objection to foreign right of fishing is especially applicable to our mackerel fishery, which in most cases is within the three marine miles from the coast.

2. *Are any of our methods of catching fish injurious, by the destruction of fish or spawn; and would Legislative restriction remedy the evil?*—This question is answered in my remarks upon a similar question contained in the "Official Circulars."

The same degree of opposition which is made to "bultow" fishing in North America, is made to sea trawl-fishing by British fishermen. Hand-line fishermen are opposed to it to a man; but the decision of the Commissioners is that the objection is untenable.

It may be well to state here that the term *trawling* has been erroniously applied to "bultow" fishing, even in our Fishery Reports. Trawling is a mode of *net fishing* (see Appendix No. 11,) in which the net is dragged along the bottom, attached to the vessel by a line or hawser, and neither hook nor bait are used. "Bultow" fishing, as has been already explained, is a mode of hook and line fishing.* The result of the enquiries made by the British Commissioners as to trawl fishing is that, "There is no reason to believe that trawling in the open sea destroys the spawn of fish, (as alleged by hand-line fishermen);" and "that any legislative restriction upon trawling in the open sea would result in a very great decrease in the supply of fish."

3. *Do any existing legislative restrictions operate injuriously upon the fisheries?*—This question applied to our fishery laws is easily met.

* Trailing, which is referred to in page 39, is also a hook and line mode of fishing, in which the line is drawn in the wake of the vessel under easy sail. It is used for pollock which swim near the surface.

APPENDIX.

Our laws are too few and too general to be either "confused" or "complicated;" as they are little more than a precaution against smuggling and the encroachment of foreign fishing vessels, which latter have no force as regards the United States since the date of the Reciprocity Treaty. There is likewise a provision for the protection of nets, from the keel of certain fishing vessels; and some regulations for the making agreements for fishing voyages on shares, and for agreements with the masters and crews of fishing vessels.

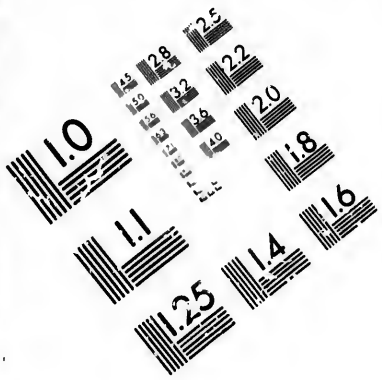
There are also permissive laws in our Statute Book empowering the Sessions in each county to appoint inspectors of pickled fish, for regulating the quality of the packages, and to classify the fish under the respective brands. These laws, however, are not in force in any county of the province. The only brand upon pickled fish is the private brand of the curer or dealer.

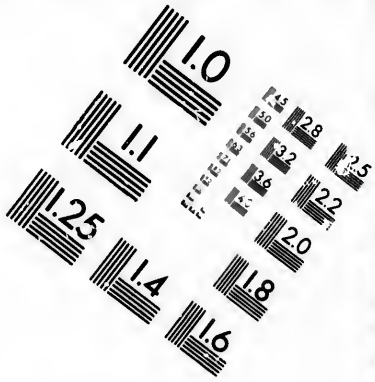
The laws relating to our sea-fisheries will be found in the Appendix No. 12.

The judgment of the British Commissioners under this head, may be thus summed up: That legislative enactments are in most cases inoperative and useless; and that it is most conducive to the success of sea-fisheries that, as a rule, the modes of fishing and of preparing fish for foreign markets, be left to the same natural laws of self interest and experience, which regulate other branches of industry. They are however entitled to claim the fostering hand of science, and may attain larger developement by encouraging a spirit of emulation in those who are engaged in them.

CONCLUSION.

In a few concluding observations, I need only to refer to the facts which I have grouped together, to prove the incalculable value of Fisheries, as a source of immediate wealth, and indirectly of great national importance. It is much to the praise of the fishermen of Nova Scotia, that they continue to prosecute this branch of industry so successfully, unassisted by any bounty whatever. The Government of the United States had paid, up to 1860, not less than $12,944,998 for bounties to vessels engaged in the Fisheries since the commencement of the Republic; and the average amount now paid annually by the Government is vary nearly $340,000. So great is the impetus which the system of bounties has given to the American fisheries, that while in 1795 only 37,000 tons of





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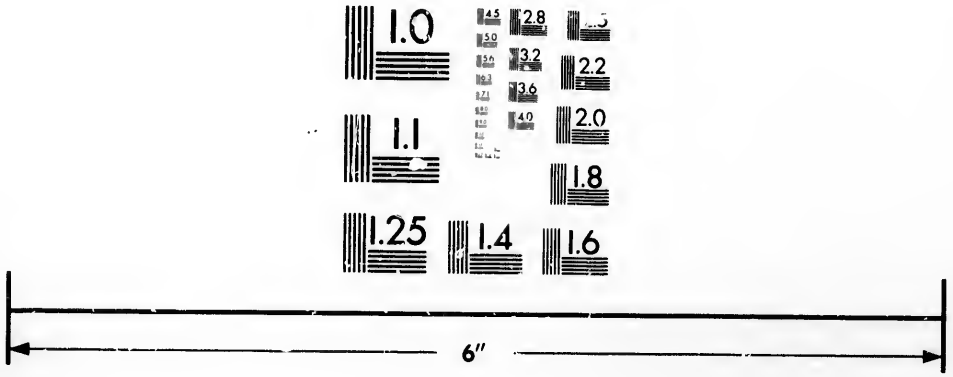

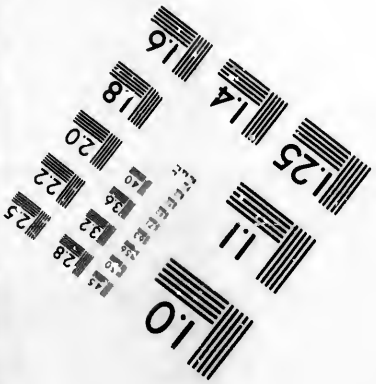

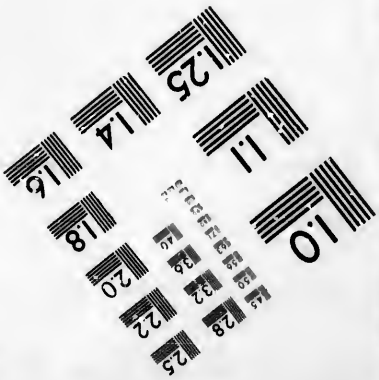

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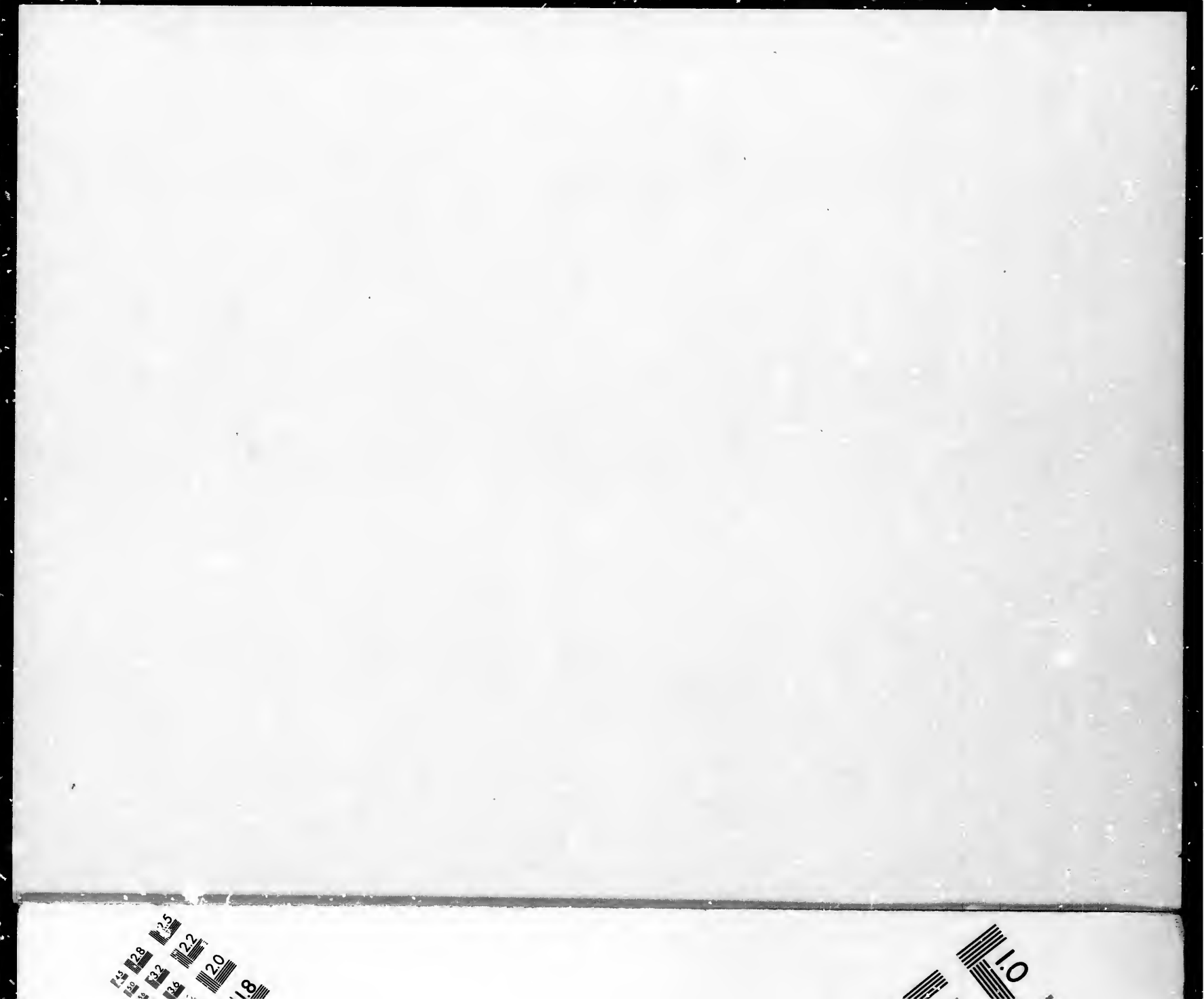

shipping were employed in the cod-fishery, at present there are upwards of 110,000 tons engaged in this lucrative business. The policy of the French, in sustaining their fisheries in North America with so much energy, is to raise seamen for their navy. One-third, or at least one-fourth, of the men employed in it are "green men," or men who were never before at sea; and by this plan they train from 4,000 to 6,000 seamen annually. The bounties paid by France during the nine years from 1841 to 1850 inclusive, for the cod-fishery alone, amounted to the annual average of 3,900,000 francs. The number of men employed annually in their fishery was 11,500; the bounties, therefore, would be at the rate of 338 francs per annum for each man.

There is scarcely a topic in connection with our sea-fisheries that I have not touched upon in the foregoing pages. There is one matter that I have referred to in the chapter on "Exportation, &c.," which cannot be too strenuously recommended in the event of any action being taken towards establishing a Fishery Board. It is the matter of statistics. If it is desirable to be informed of the true *status* of any one of our fisheries, its increase or its decline, the statistics concerning each must be separate and distinct. The British Commissioners remark on this topic:—"We think it a matter of great importance that fishery statistics should be systematically collected. It is only by such means that the constant recurrence of the panics to which the sea-fishery has hitherto been subjected can be prevented, and that any trustworthy conclusion can be arrived at regarding the effects of the modes of fishing which are in use." The only data that we possess for ascertaining the progress and extent of our fisheries, are the Tables of Exportation in the Trade Returns. And with reference to these it may be well to state, that the *imports* of fish therein specified, are chiefly imports from Newfoundland, Labrador, and the Gulf of Saint Lawrence, whither many of our fishermen have gone in the prosecution of their calling; and in most cases the fish thus enumerated as imported is included in the exports.

There is one important feature presented in viewing our fisheries as a whole, viz.: the relation that they sustain to the shipping interest. Of the $8,830,693 worth of merchandize exported from Nova Scotia in 1864–5, but little more than half a million was exported in foreign ships; and the fisheries are the nursery for

providing sailors to navigate the numerous vessels of every class that are employed in our commerce. We see, too, how the fisheries afford employment for our vessels. There is no staple of the country that to such a degree gives life and energy to our commerce. Of the whole exports from 1854 to 1865, more than *two-fifths* was in fish; in 1860 nearly one-half the total exports consisted of fish. I have alluded to the fisheries as a nursery for seamen, and to the jealousy which the French cherish towards them, from this consideration alone. Ere long, the British and Colonial fisheries will have to be regarded with more concern than is now extended to them; the deficiency of seamen for the British mercantile marine being seriously felt by British ship-owners.

The subject of the Fisheries of Nova Scotia has been regarded in these pages mainly from a local point of view. Scarcely any reference has been made to the new intercolonial relation which is advancing upon us. There are many advantages to accrue to the fishery interest from a political union of the British North American Colonies. United action in the protection of our common fishing grounds; removal of disabilities between Provinces; negotiations with other States; opening new markets for our fish; a generous rivalry among the several Provinces, promoted by periodical exhibitions; improvement in naval architecture: these, and many other considerations furnish an argument in favor of Colonial Union, in the behalf of our fisheries. From its consummation we would date the introduction of a new impulse to our Colonial enterprise and prosperity. The united supervision and surveillance of our fishery interests would be hailed as a presage of future greatness.

The concluding paragraph or two will be specially *apropos* in a pamphlet on the Nova Scotian Fisheries alone, if I show the place that Nova Scotia occupies in the Colonial group, with respect to this branch of industry. From the most correct information that can be obtained, the several Colonies rank in the following order, that is, with regard to exportation of fish. Mr. Fortin in his recent Report on the Canadian Fisheries, estimates the total value of the fisheries on all the coasts of Canada in 1865 at $1,212,180; but as none other of the Provinces possesses so useful a functionary, the value of the whole catch cannot be ascertained. Newfoundland ranks first, having exported in products of the sea in 1864 to the amount of $5,285,075. Next is Nova Scotia, whose exports in

1865 were $3,476,461, and in 1866, $3,378,766. Next comes Canada, whose exports in 1865 were $765,816. New Brunswick exported in 1864 to the amount of $305,770. Prince Edward's Island, situated in the very centre of the fishing grounds, in 1864 can boast of only $101,855.

By collating the foregoing figures with the Tables on page 37, it will be seen that as compared with 1856, Newfoundland has decreased in her exports of the products of the sea, 14 per cent.; Nova Scotia has, on the contrary, increased 23 per cent.; Canada has increased 84 per cent.; New Brunswick has decreased in some $15,000; Prince Edward's Island, as compared with 1857, has increased about 16 per cent. The total amount of the products of the sea exported by the British North American Colonies in each year is approximately $10,000,000.

[TO SUPPLY AN OMISSION ON PAGE 45.]

NOTE.—Mackerel appear on our coast in early Spring, (according to Martin Harrigan, Halifax Fish Market, about 15th May.) They are then very thin and lean, and are going eastward, the fishermen observing them passing the harbor. The great body are supposed to spawn somewhere to the eastward, but they are never seen like herring during the operation. It is probable they spawn all along our coast, but in deep soundings. During July another run make their appearance, and these the fishermen say are some who have not joined the great spawning schules. About the middle of September they again appear, coming westward; their spawning now over, they rapidly become fat and recruited, and remain till the middle of November, when they disappear. Thus from the middle of May to the middle of November they are upon the surface. For the remainder of the year they are hid from us.—*Gilpin.*

[SEE PAGE 59.]

NOTE.—The writer has been informed by a gentleman residing in the locality, that at Digby, since two years past, the refuse herring have been turned to good account by the process of grinding into a mass, and an oil being extracted from it, which realizes about 4*s.* per gallon.

No. 1.

THIS TABLE shows to what extent the Fisheries in each County develope the Commerce of the County beyond the Province. The *status* of each County, in the whole amount of fish taken, is given in page 3; and the reason why the *status* of any County is lower in this Table is, that the fish is exported to Halifax instead of being exported abroad; *e. g.*, the County of Hants, according to this table, occupies a place in advance of five other Counties in commercial enterprise in the article of fish, although, according to the census of 1860, it occupies the lowest place in the amount of fish cured.

COUNTIES.	Codfish.	Scalefish.	Mackerel, Shad, and Halibut.	Herring and Alewives.	Salmon and Trout.	Shellfish.	Smoked and Preserved.	Fish—Oil.	TOTALS.
Halifax	$ 922075	$ 186668	$ 661792	$ 338244	$ 51235	$ 49647	$ 3260	$ 146715	$ 2359636
Guysborough	4096	578	305697	35731	444		96	11701	358343
Yarmouth	187648		22613	16583	909		227	17433	245413
Shelburne	176683	13169	5086	11020	414		358	6268	212998
Richmond	52061	3150	21610	15891		140		5756	98808
Digby	24718	1466	9573	2398		37	4622	2831	45645
Queen's	19919	1041	7523	2860	35	2046		2822	36246
Lunenburg	18589	7881	5834	2155	175			562	35196
Colchester			28953		328				29281
Antigonish	385		4150	15346				175	20056
Annapolis	1314	246		7752	4122		3791	42	17267
King's		395	2606	2702					5703
Hants	174				4515		32		4721
Cape Breton			2204						2204
Inverness	2200								2200
Pictou	1264			655					1919
Victoria	189								189
Cumberland						2			2
	1411317	214594	1077273	452337	62177	51872	12386	194505	3476461

No. 2.

Table of Annual Exports of Fish and Fish Oil from the Province of Nova Scotia, to all Countries, from 1853 *to* 1866,—*value in dollars.*

Years.	Great Britain.	B. N. A. Colonies.	British West Indies.	United States.	Other Countries.	Total.
1853	15260	324935	717686	589831	292415	1940127
1854	39360	303580	999335	822580	435335	2603190
1855	11730	197725	936625	1308455	550465	3005000
1856	19295	289325	940650	1111105	689635	3050010
1857*	Trade Returns	not published	in 1857.			
1858	39225	123105	843080	1054800	803950	2864160
1859	4295	160975	930525	1249730	843340	3188365
1860	13847	196498	1065175	1152401	666578	3094499
1861	.....	.....	.....	... ...	.....	2390122
1862	.....	.....	.....	.....	.....	2335608
1863	24146	212643	1010121	508744	635013	2390667
1864	29000	188374	1033131	1137595	657342	3045442
1865	99580	184958	1160610	1471661	560372	3476461
1866	29747	170018	1100733	1429848	647288	3378766

NOTE.—The proportion of each description of fish in the total annual export, can be seen in the preceding Table,—subject to changes in successive years.

* The fiscal year changed to 30th September in each year to 30th September in following year.

No. 3.

DESCRIPTION OF THE MANNER OF CURING COD AT GASPÉ, CALLED "KENCH CURING."

A fishing establishment on the coast of Gaspé, or the coast of Labrador, consists of a collection of large and small wooden buildings, looking from a distance like a village, some of which serve to lodge the fishermen and other employees of the establishment, and others to receive the fish, either in its fresh or salted state, and to contain goods, the rigging of fishing vessels and boats, provisions, salt, &c., &c.

There is first the house of the chief of the establishment, or of the agent in charge, generally placed in the centre of the group of buildings, and in an elevated position from which he can see all that goes on in the establishment, and at the same time overlook the boats that are out fishing; then around the stores for goods and for provisions are the sheds in which the fishing tackle is kept, the workshops of the carpenter and sailmaker, the blacksmith's forge, and lastly, the stage, placed as near as possible to the beach, on which are performed the first operations in the process of curing the fish.

The house of the chief, and those of the employees, as well as the stores and sheds, are very much like buildings of the same kind in our country places. It is not so, however, with the stage, which deserves to be specially described.

The stage is the most important building in a codfishing establishment. It is a large wooden building—covered with bark or turf, on the coast of Labrador, and with boards and shingles on the coast of Gaspé—at one end of which is a wharf, called the stage-head, extending far enough into the sea for boats loaded with fish to come alongside of it at low water. The flooring of the wharf, formed of poles of fir, or more frequently still of spruce, is divided into compartments, into which the fishermen, on their arrival with boat loads of fish, toss them one by one with an implement called a pew.

At the end of the stage nearest to the wharf are the tables on which the cod is dressed. In the middle is a passage, with a level floor of strong planks, on which the shore hands can wheel with ease their barrow loads of salt or fish; and on each side are places for piles of fish, for salt, for troughs to wash the fish in, &c.

The first operations in the process of curing cod, are performed on the splitting table. In the Canadian establishments three men are generally employed in the operation of dressing cod, called respectively the cut-throat, the header, and the splitter. The French employ only headers and splitters, the duties of the cut-throat being performed by cabin boys.

As soon as the cod has been landed on the stage and counted, the men go to work.

* The fiscal year changed to 30th September in each year to 30th September in following year.

subject to changes in successive years.

The cut-throat, armed with a two-edged knife, seizes the fish by the eyes, cuts its throat, and having opened it down to the navel with a single stroke of his knife, passes it to the header. The header detaches the liver, which he throws into a barrel placed near him, and with the same hand tears out the entrails; after which, with his left hand, he cuts off the fish's head. The splitter now seizes the fish by the left side of the neck, and opens it from the neck to the tail, cutting it from left to right; after which, he places it against a batten nailed on the table, and with a single stroke of his knife, if he can, he removes the backbone, from the navel upwards.

The head, entrails and other offal of the fish are thrown into the sea, through a hole under the table, and carried away by the ebb tide, if not sooner devoured by the Anglers and Plaice, which are always in great numbers near the stages.

From the hands of the splitter the cod passes into those of the salter, who places it on a pile, spreading it carefully, with the flesh up and the napes out, and with a wooden shovel scatters a layer of salt over each row. The salter's art lies in sprinkling on each fish just salt enough to make it keep well, but not enough to burn it.

The cod is left piled in this way for three days, or sometimes four, according to the quality of the salt, after which the operation of washing commences. On the coast of Labrador it often happens that cod is left in piles for several weeks, or even for whole months; but it is never so white as when it has been subjected to the action of salt only as long as is necessary.

When cod is to be washed it is conveyed in wheel-barrows or hand-barrows to a large trough made of deals, ten or twelve feet long by four feet wide and three feet deep, filled with water which is continually being changed; in this trough it is turned over and over by men armed with poles, and rubbed on both sides with the swabs on the ends of the poles, until all the salt is washed off, when it is put in piles again in order that the moisture may drain off from it. After some days the piles are taken down and the fish are spread, one by one on hurdles, three feet wide, covered with fir or spruce boughs, and supported upon posts about three feet from the ground, in order that by exposure to the action of the sun and air they may be deprived of all the water they contain, and be reduced to that dry state in which they may be preserved for several years even in hot countries.

If the process of dressing cod has to be performed with care, so must that of drying it not be neglected for a single moment; for cod is merchantable, or of inferior quality, or even sometimes entirely spoiled, according as the process is well or ill managed.

The hurdles on which cod are stretched to dry are called flakes. They are placed parallel to each other, with spaces of four feet between to enable the men in charge of the fish to move round them.

At night the fish are gathered into piles of fifteen or twenty each, with the flesh side down, the largest on top by way of cover to the rest. In the morning they are spread out, with the flesh up. If the sun gets too hot about the middle of the day, they are turned with the flesh down to prevent their being burned, but as soon as the great heat is over the flesh is again exposed to the drying influence of the sun. For the faster cod is dried the whiter and more transparent it is, and the dearer it sells in foreign markets.

The master-voyager, or whoever in the establishment is specially charged with the superintendence of the final operations of curing the fish, is incessantly on the look out when he has a large quantity of fish on the flakes. He is always watching the sky and looking to every part of the horizon to see if clouds that threaten rain are gathering. But above all he consults his barometer, and if he finds it indicates rainy or moist weather, he gives orders immediately to gather up the fish as quickly as possible. Then, if the rain seems very near and there is much fish out, all go to work, from the chief to the smallest cabin boy. When they have done, each goes back to his own business, satisfied and free from anxiety, for the Cod, once placed with its skin up, cannot suffer from rain, unless the wet weather lasts very long and there are no intervals of a few hours of sunshine to admit of its being spread out again.

When the cod is sufficiently dry, large round piles of it are made, containing as much as a ton and a half of fish each, and covered with birch bark and heavy stones; by the pressure of these it is deprived of the little moisture that remained in it, and after remaining in this state for some weeks it is put into dry stores, where it is left until the time comes for sending it to the best markets. But before it is shipped, it is spread out on ground covered with fine gravel during the warm hours of one day, to give it its "last sunning," or "parting sun," and extract from it any damp it may have contracted in the store.

In fine weather and during the dry season, when westerly winds predominate, cod is easily cured and made of the first quality. It is not so when the easterly and south easterly winds prevail, and bring upon our coasts mists and rain that last for whole weeks; our fishermen are then in the greatest state of anxiety, and in spite of every possible care and precaution, they frequently see the fish spoiled before their eyes which it has cost them so much of the toil and exposure to danger inseparable from their calling, to snatch from the sea, without its being in their power, by any means whatever, to obviate the destructive effects of the dampness; for, once the fish has been washed and is exposed upon the flakes, it cannot be taken into the stores until it is perfectly dry.

In ordinary seasons from five to six per cent. of the dried Codfish is of second quality; in rainy seasons from fifteen to twenty per cent. is thus deteriorated.

It is on the coast of Gaspé, where the effects of the mists generated by the Gulf Stream are least felt, that the finest Cod in all America is cured. It is well known on the markets of Spain and Italy, where it is preferred to all other fish.

(No. 4.)

LETTER FROM MR. JOHN AUSTIN, OF DIGBY, CONTAINING DIRECTIONS FOR CURING "FINNEN HADDIES."

The way I cure my "Finnen Haddies" is as follows:—When taken they are well washed; then the heads and insides taken out; then washed again; then split and washed with a scrubbing brush; then salted to taste, (more salt in warm weather). I let them lay in salt from six to fifteen hours; then they are taken out and washed again, and hung up in a smoke-house for from two to six days. The more particular you are in *cleaning* the fish you will have them better.

I claim an improvement in splitting "Finnen Haddies" as one of my own; and had never seen it until I discovered it. In the old country, where the bone is parted, there is about two or three inches of the bone left on the thick side of the fish, full of blood; but you will see in my splitting, there is no blood left at all, which is a very great improvement. You will see the difference in comparing my fish and old country ones.

I am, Sir, yours,
Very respectfully,
JOHN AUSTIN.

December 18th, 1861.

(No. 5.)

DESCRIPTION OF DRIFT-NET FISHING.

[From the Report of the British Fisheries Commissioners.]

These nets are employed for catching herrings, mackerel, pilchards, and sprats, but they are not in very general use for the last-mentioned fish.

The size of the drift-net varies on different parts of the coast. The herring-net used in the long-standing Yarmouth fishery may, however, be taken as an illustration of this particular kind of net, and the manner in which it is there worked agrees essentially with its operation in all the drift fisheries.

The drift-net, taking it altogether, consists of a number of nets, usually from 120 to 180, each of which is 17 yards long, and between 7 and 8 yards deep. They are attached along their upper margin by short pieces of line a few inches apart to the back-rope, a double rope enclosing at short intervals single pieces of cork to keep that part of the net uppermost. These nets are fastened together at their extremities, and thus united form what is called a "train, fleet, or drift of nets," extending to a length of nearly a mile and a quarter. The depth to which the nets are sunk is regulated by ropes 7 or 8 yards long, called "seizings," two of which from each net, are made fast to a stout warp, running the whole length of the train, the

warp itself being supported near the surface by small kegs or buoys, technically called "bowls." The warp is also useful in taking the strain off the nets, and in preventing their loss in case the train should be fouled and cut by a vessel passing over them when they are near the surface. The minimum size of the herring-mesh is fixed by law at "one inch from knot to knot along the line," or, to put it in a form perhaps less likely to be misunderstood, at one inch square. In practice, however, it is found that in order to catch good-sized fish rather larger dimensions are desirable, and meshes running from 31 to 34 instead of 36 to the yard are, with few exceptions, in use all around the coast.

Drift-fishing is carried on at night. The nets are shot a little before sunset, the fishing boat being kept before the wind, and with only enough sail set to take her clear of the nets as fast as they are thrown over. When all the nets are out about 15 fathoms more of warp are paid out, and by this the vessel is swung round and then rides head to wind, a small mizen being set to keep her in that position.

The whole train of nets is now extended in nearly a straight line, the back-rope, to which the corks are fastened, being uppermost, and the body of the net hanging perpendicularly in the water, forming a wall of netting more than 2,000 yards long, and about 8 yards deep. The strain from the vessel serves to keep the net extended, and the whole—vessel and nets together—drifts along with the tide. The influence of the tide, however, is not equally felt throughout the whole extent of the nets. The train is consequently soon thrown into irregular curves, often leading to considerable confusion when many boats are fishing in close company.

During the day the herrings keep very much at the bottom, or in a considerable depth of water, but, as night closes in, and if the weather be favorable, they become more active, swim nearer the surface, and in their attempts to pass through the barriers of netting on every side of them many become meshed, the gills of any moderate sized fish preventing its return when once the head has passed completely through the mesh.

If, after two or three hours, an examination of the first of the nets should show that many fish have been caught, the train is hauled on board and the fish shaken out. The nets are hauled in by means of a capstan and the warp to which the nets are fastened.

Mackerel nets have only about 24 or 25 meshes to the yard, and are not so deep as the herring nets, but they are twice as long—a fleet of mackerel nets, such as is used by the Yarmouth boats, extending to a distance of nearly two miles and a half.

Drift-fishing is carried on with craft of various sizes; from the Yarmouth decked lugger of 60 tons to the frail canvas canoe or *curragh* of the west of Ireland, the number of men and the quantity of net varying with the size of the boats.

(No. 6.)

DIRECTIONS FOR TAKING AND CURING HERRINGS.

[Printed and circulated by the Hon. the Commissioners of the Board of Fisheries.]

It might be observed that some of the details may be inapplicable to the Fisheries on the Coasts of North America, having been framed with reference to official arrangements in Scotland; but apart from this, the directions will be found exceedingly valuable.

Fresh Herrings, when in prime condition, form a cheap, delicate, and nutritious article of food, and when promptly and efficiently cured, they become valuable as provision. But their value in these respects must necessarily depend entirely on the condition of the fish when caught, and on the degree of promptitude and care which may be exercised in curing them.

Herrings, in regard to their condition, may be divided into three classes, viz.: Maties — Full Fish — and Spent or Shotten Fish. Maties are those fish in which the roes and milts are perfectly but not largely developed — and it is well to understand, that this is the state of the fish in which it is truly in the best condition for food — and when it will be found most delicious to eat, as well as most nutritive. Although it does not exhibit, whilst in this condition, so bulky an appearance as it does when it is in that of a full fish, it is in reality much fatter, for the bulk of the full fish is deceptively produced by the great enlargement of roe or milt, and this does not take place without a corresponding diminution of the body of the fish. The full fish, however, are those which are most sought after in a mercantile point of view, because of their larger appearance. The spent or shotten fish having just performed their function of spawning, and having been thereby reduced to a miserable, lean, and poor state, are unpalatable, and more or less unwholesome as food when in a fresh state, and in a still greater degree when cured. The more immediately they are taken after spawning the worse they will be, and the longer the time that expires after their performance of that function, the less unpalatable or unwholesome they will become. But it is always advisable to avoid taking or using them in any way, until they shall have had time to be fully recruited, after their thorough exhaustion from spawning.

The different classes of persons directly employed in the trade which produces the article of commerce, called salted or pickled herrings, are fishermen, fish-curers, gutters, packers, and coopers, and if the portion of work which more immediately belongs to each of these classes be in any instance improperly performed, the whole value of the article may be so impaired as to be rendered altogether unmarketable. Each class, therefore, should perform its duties carefully and expertly, so that by the care and attention exercised by all of them towards one object, their united exertions may bring the manufactured fish to the highest degree of perfection of which it is capable. If the fishermen are so careless in handling the fish as

to injure them in any way, the mischief cannot be repaired by curers — and if curers fail in their part, the exertions of gutters and packers will avail nothing in making amends for their neglect; and although all these may have done their parts well, if coopers be inattentive to their particular duty, the fish, however well cured, may be destroyed. Hence it is necessary to have the most vigilant superintendence over all these departments, which, if properly exercised, will not much increase the expense of production, whilst it will insure well-cured herrings, and a ready market, and likewise raise the character of our British Fisheries still higher in foreign countries.

FISHERMEN.

It is advisable, in the first place, to consider those things that require to be attended to in the capture of the fish. The Dutch mode of taking them, by employing vessels from 60 to 90 tons, has many advantages over that of our British fishermen, who use boats only, and especially that of enabling the crews to cure their herrings immediately on board, and almost before they are well dead. This may be considered as one great cause of the superior flavor of Dutch-cured fish, as the fish must suffer to a certain extent every moment they remain without having salt applied to them. In one point, however, our boats have an advantage over the Dutch vessels, that much finer netting can be used in them, the weight of the Dutch vessels requiring stronger nets, made of heavier twine, which is not likely to be so successful in taking fish as nets made of twine of a finer description. Any general introduction of the use of such vessels as are used by the Dutch, however, cannot perhaps be looked for; but it may be pointed out as a thing most desirable, that the boats employed by our fishermen should be as large as possible, to be convenient for rowing in calms. Were well-built, well-rigged, and well-found boats of from 15 to 18 tons more common amongst our fishermen than they are, and were these always manned by at least six men and a boy, we should hear of fewer lives being lost — and much more might be achieved by hardihood in contending with heavy seas and gales of wind, and thus much more fish might be captured. But this is not all — for, although the fish when caught could not perhaps be cured directly on board of such boats, as they are with so much advantage in the Dutch vessels, they could, at least, be much better preserved until landed, than they possibly can be in smaller boats. The boat ought to be put into perfect order, and properly tarred, and the tar well hardened before the fishing season commences, for if the tar happens to have been too recently applied, those fish which accidently touch the skin of the boat, will be contaminated with a taste of tar, and as early-caught fish are often slightly salted and hurried to market, to obtain high prices as an immediate delicacy, if the flavor or even the smell of tar is perceptible in the pickle or fish of a single barrel, the character of the whole parcel may be injured. It is most essential that all boats should be furnished with pumps, the occasional working of which, if necessary, will keep the boat dry, for nothing is found to be more prejudicial to the fish than their being permitted to wash backwards and forwards in a bath of sea-water, filling the bottom of the boat, by which they have their scales rubbed off by friction against each other, and they are macerated in such a manner as to loose the greater and richer part of their natural juices, and to become flabby, unsightly and tasteless; and if, in addition to the pump, the boat were floored with deal boards, perforated

with holes large enough to allow any water that might be shipped to find its way downwards, it would not only add greatly to the comfort of the crew, but it would tend to keep the fish in much better state till they should be landed. Bottom, or limber boards, foot spars, and walking planks, may be considered as essential for the preservation of the fish. Whenever the fish are landed, the limber boards should be removed, and the whole interior of the boat should be properly washed and scrubbed. This should be done daily during the fishing season, and thus the glut is much more easily removed, and the boat is rendered clean, and free from all taint or smell, before proceeding to sea on each successive voyage. Each boat should be provided with a comfortable place forward, for the crew retiring occasionally to sleep or shelter in, covered with a half deck, and every man should have a comfortable oil-skin canvas coat and trowsers, and boots; and if each were to be provided with the patent Edinburgh Safety Cape, invented by Mr. Simpson, or such safety jackets as are now furnished to the Coast Guard, many lives would be saved, which would otherwise have been lost. As every large boat may have a fire on board, coffee in any quantity could be heated for the crew, and this would be found on trial to be a much more comfortable and nourishing drink for them, and much more enduring in its effects than any spirituous liquor, and free from all after bad consequences.

Where large fleets of fishing boats are assembled, it is a common practice for the whole fleet to follow the course pursued by the first boat that puts to sea, and to run for the same fishing ground. This may be a wise mode of procedure where the certainty of finding a body of fish in that particular quarter may have been already ascertained, but when this happens not to have been the case, it would be much more advisable for the boats to go in separate courses, so as to increase the chance of some of them falling in with a body of fish; and when that has been discovered, the other boats of the fleet might afterwards join them, and thus all might fish successfully; whereas by the present practice, if the fish is not encountered by the first boat, the whole fleet are likely to be equally disappointed. Under any circumstances, the boats should not crowd too much together, but leave sufficient intervals of room between each other, so that the trains of net may be shot without any risk of one train interfering with, or getting entangled with another. A good and efficient net ought to be 50 yards long on the back rope, by 14 yards deep; and a good and proper train should contain 26 of these nets, hanging in succession from the back rope, thus containing altogether 18,200 square yards, stretching over a line of sea of 1300 yards in length. The swing or net rope should be about 120 yards long, so that the whole length of nets and line may stretch along 1420 yards of sea, or about four-fifths of a mile. These nets should be properly tanned; and if done with the drug called *catechu*, or *terra japonica*, it will be found much better than oak bark; but care must be taken when using it, not to overdo the process, otherwise the meshes may become contracted, and too much hardened. Sir William Burnet's patent likewise has been found extremely good for the preservation of nets. And further, while on the subject of nets, it may be well that fishermen should know that Messrs. Jamieson, of Kilbirnie, and Mr. Paterson, at Musselburg, have manufactured a particular description of small twine for nets, which, whilst it is equally strong with the common net, is much less easily seen by the fish in the water, and has

consequently been found by experiments made by order of the Board, to be much more successful than the ordinary nets.

The train of nets having been carefully and regularly coiled up in the boat, should, on arriving at the fishing ground, be gradually shot out with equal care and attention, and then the boat lies with the train attached to it. After the train shall have remained in the water for such a length of time as may appear necessary for allowing the herrings to mesh, during which time the nets must have been occasionally pulled up a little and examined, so that when no likelihood of herrings may appear, the nets may be hauled, the ground shifted, and the nets shot elsewhere; and when it is found that the herrings have meshed, the train must be carefully and not too rapidly hauled up. And now comes a part of the fishing process which demands the most serious attention from the fishermen, as the future value of the fish may be immensely deteriorated if this part of these instructions be neglected. The whole of the fish should be carefully shaken out from each successive part of the net as it is taken into the boat. If this is not done, the herrings are liable to be much jerked about with every pull the net receives whilst in the boat, and so they are stripped of their scales, are bruised, torn, and broken, and become soft, and more or less tainted, and consequently they are thus, even before cure, rendered to a great extent unmarketable; whilst herrings immediately shaken from the nets in the manner here enjoined, being alive at the time, fall easily from the meshes into the bottom of the boat, where they remain in a beautiful state, with every scale adhering to them, and continue firm and uninjured until the boat reaches the beach, where they are immediately and promptly delivered. To secure attention to this most important matter, fish-curers, in contracting with fishermen, should make an arrangement that all herrings brought to the shore in the nets should be paid for at a reduced price; and no indulgence should be allowed as to this rule, unless in cases where stormy weather may have rendered it impossible for the fishermen to shake the herrings out of the nets whilst hauling. It becomes the more essential to impress all this the more strongly both on fishermen and curers, that the plan of shaking out the herrings from the nets as they are hauled is but too seldom followed, and this in defiance of all the means which the Board of Fisheries has taken to get the proper practice pursued, its Commissioners having, so far back as the 22nd June, 1816, issued, through its Secretary, an order to its officers to do all in their power to promote the adoption of this most important practice; but notwithstanding all the exertions of the officers, it is still universally neglected. It is earnestly hoped, however, that the fish-curers, to whom a mode of correcting the evil has been pointed out as existing in their own hands, will now seriously bestir themselves to put an end to the practice of allowing the herrings to be brought ashore in the nets, which so much destroys them even before a single step is taken in the process of cure. Another precaution would be highly valuable if it could be adopted. If a piece of an old sail were fitted so as to cover the space from the mainmast of the boat to the pumps, the moment after the herrings were shaken into it from the nets, and made fast over each gunnel, so as not to interfere with the management of the boat either in sailing or rowing, the fish would be kept from all risk of suffering from the sun, and if a boat-hook or boom were placed fore and aft under it, they would be protected both from rain and sea water until ready for delivery. These precautions would not only

preserve the fish in prime condition till the curing process should commence, but the boat's crew would find their account in attending to them, from the great saving of time and labor which would thus be secured to them on their landing. Thus a crew which might reach the shore at six o'clock, A.M., with a large take of herrings, having their nets all shaken, and the fish ready for immediate removal, might land, spread their nets, or hang them on the drying poles, and, in ordinary circumstances, they might have their fish delivered by ten o'clock, get themselves washed, and take their victuals, and then go to bed and sleep comfortably four or five hours, after which they would have ample time to mend their nets, and to carry them down to the boat, so as to be ready to proceed to the fishery, full of all that strength, vigor, and energy necessary to prosecute it successfully; whilst other fishermen, on the contrary, who have had similar success, but who may have hauled their nets without shaking the fish out of them, have all this to do after reaching the harbor, and that with much difficulty, for it is often found to be so impossible to draw the nets from under the fish, that those on the top require to be shoveled to another part of the boat, or landed, before all the nets can be got out, the effects of all which on fish caught during the hotter months may be easily imagined. But as regards the fishermen themselves, from all these difficulties, the day is far spent before the fish are delivered, and the nets all spread out or hung up, so that before they have reached home, washed and had food, there is no time left for sleep, or for mending their nets, and the preparation for the ensuing night's fishery is begun without befitting energy. Such crews, too, often arrive so late at the fishing ground from these causes, that they cannot easily find a clear berth to shoot their nets in; and when they do obtain it, no sooner are the nets fairly out of the boat than the men are asleep, or at all events they are so fatigued from want of rest, that they have not courage to haul their nets, so as to change their ground if necessary, and to take a second shot, and therefore, they thus too often return disappointed.

When the herrings are landed from the boat, they ought to be measured by the legal cran measure, and not counted, unless the quantity taken be so small as not fill a cran measure. As it is for the interest of both fishermen and fish-curers that the cran measure should be used, as it affords the truest and justest mode of dealing both for buyer and seller, every one should unite in putting an end to the practice of reckoning the fish by numbers, as the law is, that nothing is to be used but the cran measure, having the brand of the Board of Fisheries on it.

FISH-CURERS.

If fish-curers have the desire they ought to have, to compel the men who fish for them to handle the herrings with proper care from the time of their capture to that of their delivery, they should certainly do their best to set them a good example, by seeing that every thing is done in their own department strictly as it should be. If they leave their herrings after delivery in the curing-boxes, exposed to the sun or rain, it is not very likely that they will have much influence in persuading the fishermen to shake the herrings out of their nets as they are hauling them, or to take any other necessary precaution for their preservation, seeing that all such care would be thrown away if the fish-curer should thus neglect the herrings after he has received them. It is the fish-curer's business, therefore, to see that the

receiving-boxes and tubs have proper awnings over them, and likewise that the barrels, when packed, are properly covered and protected from the sun and rain; and much of the good or bad character of British-cured herrings will depend on the attention which may be paid by curers to these injunctions, for the neglect of them may, and probably will give an incurable taint to the fish. The sooner salt is applied to the herrings the better, as it secures the adhersion of the scales, so important to the after appearance of the fish. For this purpose, salt should be sprinkled over them as they are emptied in successive portions from the cran measure into the receiving or gutting-box. All herrings should be gutted, cured and packed on the day they are caught. If this cannot be accomplished, they ought not to be cured as gutted herrings. They may, however, be cured as ungutted herrings, or made into red herrings.

GUTTERS.

Gutting, and packing also, should commence immediately after the first cran is delivered; but this practice is too much neglected, particularly on days when the fishing has been partial, or when the state of the tide may have occasioned an irregular delivery. Although a number of gutters are in attendance, they do not begin until such a quantity of fish is delivered as will give constant employment to all. Thus unnecessary delay, exposure, and deterioration of the fish take place; all which might be obviated on such days, and the parties satisfied, by dividing the payment, for the whole number of barrels gutted and packed, equally among all. A most important matter is, to see that the herrings are properly picked and assorted into maties, full-fish, and spent-fish; and this should be done as the gutting goes on, by having baskets or tubs for each particular sort; and to prevent all after mistake, the barrels into which these several sorts of fish are separately packed, should be immediately and severally marked by means of a marking-iron, with the respective letters, M——, F——, or S——.

Great care should be taken by gutters and packers to remove all fish which have lost their heads, or which have been broken, bruised, or torn in the bellies, so that they may be packed separately.

Bad gutting, and tearing the bellies of the fish, often arises from the knives being blunt. To prevent this, the gutting-knives should be collected, and delivered to one of the coopers every evening, who should have the particular duty of seeing them all carefully sharpened on a smooth stone, and returned to the gutters in the morning. Due attention to this will be likely to produce neater gutting; the bones will be cut and not left exposed; and the fish will not present that ragged appearance which so often disfigures them. Whether the fish are gutted for continental sale or for exportation out of Europe, the orifice left at the top of the belly of the fish should be as small as possible, and particular attention should be paid that the breast be not lacerated or torn down, so as to leave the bones exposed. The incision with the knife should be made in the throat quite down to the back bone, and the knife turned round with the hand, and drawn upwards under the breast fins, and not downwards along the belly of the fish, otherwise the orifice will be made too large, and the roe or milt will be exposed.

The fish must be cleared, not only of the gut, but of the liver, stomach, and gills; which last, being full of blood, is known to taint the fish in a short time after it is killed; and the incision of the knife should be made down

to the back bone, so as to allow the blood to flow freely from the great blood-vessel of the fish, which tend much to the after preservation of the herring.

In order to understand the Dutch manner of gutting herrings, we must suppose that the fish is held in the hollow of the left hand, with its belly uppermost, and the head and shoulders projecting about an inch before the fore-finger and thumb; that the gutting-knife is held in the right hand, with the fore-finger and thumb grasping the blade to within an inch or so of the point; let the knife then be plunged into the throat of the fish at the side next the right hand, and thrust down so as to touch the back bone, and so forced through the other side, with the point a little projecting therefrom, and let the fore-finger then be turned over the head of the fish, and placed under the point of the knife, and the flat part of the thumb laid on the breast fins or grip of the fish, and pressed on the broad part of the knife; the entrails are then to be gently started, the gut and gib seized between the knuckles of the fore and middle-fingers, and a sudden pull given, by which means the crown-gut, anatomically called the pyloric appendages, will be left hanging from the body of the fish, while the gills, fore-fins, heart, liver, &c., will fall into the hollow of the hand. This is what is understood to be the mode of gutting practised by the Dutch, in which it is necessary to observe, that only one pull is required to bring away every thing that they consider to be necessary, when the operation has been performed in a proper manner. In the British method, the only difference is, that a second, and sometimes even a third and fourth pull are necessary, because the whole of the intestines, including the crown-gut, are extracted. It will thus be found, that the breast or belly of the fish is most frequently lacerated in the act of removing those parts of the entrails, owing to the gutters making the pull downwards towards the tail of the fish, instead of making it upwards towards the head. Curers should therefore give the most particular instructions to their gutters to make the pull upwards and not downwards, so as to leave the orifice as small as possible, and to prevent the breast of the fish from being torn. That mode of gutting by which the crown-gut is left attached is peculiarly well adapted for the continental market, where it is believed that the crown-gut has a powerful influence in improving the flavor of the fish, and where the appearance of the herring is held to be greatly injured when it has been by chance removed.

PACKERS.

The packing of the fish should be proceeded with as expeditiously as the gutting, and in fact, both operations should be carried on at the same time, the usual proportion of persons employed being two in gutting to one in packing. The moment the first herrings are gutted, the curing process should begin. The proportion of salt to be used must vary according to the season of the year and the nature of the fish, as well as the market for which it may be destined. The Dutch use one barrel of small Spanish or Portuguese salt for sprinkling eleven barrels of herrings, in order that they may be more conveniently handled, and one barrel of great salt for packing seven and a half or eight barrels of herrings for the European market; and if this quantity should be found rather small, an additional plateful of salt is introduced into the middle of the cask to supply the deficiency. The calculation for each barrel of herrings may be about five-sixteenths of a barrel of coarse Spanish salt. It must be observed, however, that whilst

the Dutch mode of cure may produce a perishable article of luxury for the table, it is not capable of producing that imperishable article of commerce required by British and continental merchants. But the parties employed in the cure must be the best judges of the quantity of salt to be used for the different markets for which the herrings may be intended. It is, moreover, difficult to lay down any well defined rule as to this point, from the circumstance, that there are several qualities and sizes of Liverpool fishing salt, which are of different degrees of strength. Many curers use only one kind, whilst others use a mixture, and very frequently both Lisbon and Liverpool salt are jointly used for curing the herrings of the same barrel. Thus the quantity of salt required for fish free from glut, and early salted under cover, would be quite insufficient for fish mixed with glut, and delivered in the afternoon of a sultry or wet day. It must be remembered, however, that the use of Spanish or Portuguese salt would produce a much better cured article than is produced by Liverpool salt. The herrings are then carried to the rousing-tubs, where they receive the first part of the cure, called rousing or roiling—that is, working them well to and fro among salt. In performing this operation, the packers should mix a proper quantity of salt among the fish as they are emptied into the rousing-tubs, and the herrings should be turned over continually, until a proper proportion shall have adhered to each. When this has been done, a small quantity of salt should be scattered in the bottom of each barrel, and the packer should begin by laying the herrings into the barrel in regular tiers, each tier being composed of rows laid across the barrel, taking care to keep the heads of the herrings at each end of the row, close to the inside of the staves of the barrel, with their tails inward, and making up the deficiency into the middle of each row by laying herrings in the same line. Care should be taken to scatter salt on the heads. The head herrings should then be placed. These are laid across the heads of the herrings already forming the tier, and these herrings should also receive a sprinkling of salt, which should likewise be thrown into the centre of the tier. The second tier must be packed in the same way, taking care that the herrings shall be placed directly across those of the first, and so on alternately, the herrings of each successive tier crossing those of that below it. A proportion of salt should be distributed over each tier, St. Ube's or Lisbon salt being always preferred for this purpose. When the barrel is completed, a little additional salt should be put to the top tier. Herrings intended for the Continent should be packed on their backs; but for the Irish market they are preferred when packed flat, or more on their sides. The fish in each barrel should be all of the same kind and quality throughout. The nefarious practice of packing inferior herrings in the middle of the barrel, or superior herrings at the top is always discovered, sooner or later, to the confusion and loss of character of the curer. The barrels should be filled above the chime of the cask, in which state they are allowed to stand till the following day, or even longer, when by the pining or shrinking of the herrings from the effects of salt, they fall down so much in the barrel, that it requires to be filled up. The moment the barrels are packed, they should be properly covered over, to prevent the sun's rays or rain penetrating the fish. All vessels which go to cure on open beaches or shores should be provided with old sails, or some other such covering, to protect the fish from the sun and rain; for if spread on the beach without any such protection, they will infallibly be spoiled.

COOPERS.

It is the duty of the cooper to see that all his barrels are properly made, and of the legal size. It is of the greatest importance that he should ascertain whether they are sufficiently tight for containing the original pickle, because there is no after remedy for the evil effects produced in the fish by its escape. Barrels should be constructed of well seasoned wood, and be made tight in the bottoms and seams, and croze, by introducing the broad-leafed water plant called the sedge or flag, which would tend to secure the original pickle under all circumstances. During the period of the curing, the cooper's first employment in the morning should be to examine every barrel packed on the previous day, in order to discover if any of them have lost the pickle, so that he may have all such barrels immediately repacked, salted, and pickled. A very common practice is to pour pickle repeatedly into barrels of the previous day's packing, which have thus run dry, without having in the first place secured the leak; and then afterwards to use the herrings of such dried barrels for filling up such barrels of herrings as are well cured and tight. This is a practice which should never be allowed, as the distribution of these dry, and consequently bad herrings, amongst the herrings of a number of otherwise well cured barrels, has a tendency to destroy the whole.

As already stated, the cooper in charge should see that the gutters are furnished every morning with sharp knives. He should be careful to strew salt among the herring as they are turned into the gutting-boxes — give a general but strict attention to the gutters, in order to insure that they do their work properly — see that the herrings are properly sorted, and that all the broken and injured fish are removed — take care that the fish are sufficiently and effectually roused. Then he should see that every barrel is seasoned with water, and the hoops properly driven before they are given to the packers. He should likewise keep his eyes over the packers to see that the tiers of herrings are regularly laid and salted, and that a cover is placed on every barrel immediately after it has been completely packed. The cooper should write with red keel or black coal the name of the packer on the bottom or quarter of each barrel as it is delivered, together with the date of packing, and the letter M, or F, or S, for mixed, full, or spent fish, as the case may be. Where this excellent regulation is practised, it is found to be a check to bad or imperfect selection, as well as to bad gutting and irregular salting; and it prevents the different descriptions of herrings from being packed up together, when the barrels are unheaded in order to be filled up, or for being bung packed.

After the herrings have been allowed one, two, or at most, three days to pine, the barrels should be filled up with herrings of the same date as to capture and cure, and of the same description as those which they contain, care being taken not to pour off much pickle, or unduly to press the fish. The barrels should then be headed up and tightened in the hoops, and laid on their sides, and this always under cover, so as to be shaded from the sun's rays, which are seriously injurious to the fish; and they should be rolled half over every second or third day, until they are bung-packed, which part of the process of cure should be performed within fifteen days from the date of the capture of the herrings; and not sooner than that period, if it be the object of the curer to obtain the official brand of the

Board of British Fisheries at bung-packing. When the pickle has been sufficiently poured off, a handful of salt, if required, should be thrown around the insides of the barrels, and the herrings should be pressed close to the insides of the casks, and additional fish of the same description and date of cure should be packed in until the barrel is properly filled, after which it should be flagged, headed, blown, and tightened; and the curing marks should be scratched on the side. The barrel may then have its pickle poured in, and be finally bunged up.

REPACKING HERRINGS.

For the purpose of preserving the fish in warm climates, and in order to enable them to be exported out of Europe, all herrings must be repacked; and before the repacking commences, fifteen days must have intervened from the date of their capture and first salting. For this purpose the herrings must be emptied out of each barrel in which they were originally packed, into a large tub or box, filled with clean fresh water, where they are washed and freed from all glut; after which they are placed in open baskets to allow the water to escape, and then weighed, when 224lb. of fish are allowed to each packer for every barrel. The fish are then regularly repacked into the same barrels, and Liverpool great salt is strewed on each tier as packed, until the barrel is full; the fish are then dunted, that is, the head is jumped upon by the packer, and when the quantity of fish weighed does not fill the barrel, more is added. The barrel is then headed, flagged, and tightened; the quarter of the head end of the barrel hooped up, and an iron binding-hoop, one inch in breadth, driven on each end; the chime hoops are then nailed, which completes the process of full-binding. The barrels are then placed in tiers — each bored in the centre of the bulge — filled up with strong pickle made from clean salt — and bunged; and they are then ready for inspection, official branding, and shipment to any place out of Europe.

Herrings are called sea sticks when they are shipped off soon after being taken and cured, so as to be first in the market for early consumption, and so to obtain a high price. When barrels containing sea stick herrings are cured on board of vessels cleared out for the fishery, or shipped to be carried to other stations, if the lower tiers are not carefully stowed, and the barrels well hooped and tightened, they are apt to lose the pickle, and if kept for any length of time in this state they will be found on landing to be gilded and tainted. Sufficient attention and care will prevent this, and if it be properly guarded against, the cure of the herrings will be improved by the voyage, as they will be free from undue pressure, and as they will be found when opened to be well flooded with pickle. Whether the barrels of herrings are prepared for the official brand of the Board of British Fisheries or not, they should be kept constantly full of pickle, and where a leak appears, the barrel should be made tight, or the fish should be taken from it and repacked into a sufficient barrel. Barrels should be rolled half round weekly until shipment. Herrings must have been cured for fifteen days before the official brand can be applied for. If the curer wishes to have the brand, he must give the officer notice, stating that it is his intention at such a time and place to have so many barrels of herrings branded — maties or full fish — as the case may be, and as a matter of course the officer attends. In the first place he sees that the owner's name, with the place where and

the year when cured, are branded on the barrels, all of which should be done prior to the officer's appearance. The officer having taken the required declaration of the curer, and guaged the barrels, each of which ought to be of a size capable of containing 32 gallons English wine measure, he proceeds to examine the casks and herrings, causing so many thereof to be opened for his inspection, taking out the heads and the bottoms of the alternate barrels respectively, so as to satisfy himself that the herrings are in all parts of the barrels perfectly what they ought to be, before he proceeds to apply the brand to them.

A cooper should be in constant attendance on board of every vessel during the time herrings are shipping, to replace hoops, chimes, or any other damage the barrels may have sustained by cartage, and to nail the chime hoops, if not previously done. The master of every vessel should be bound to use slings, and not crane hooks, for hoisting the barrels on board, and to stow every barrel bung upwards, without the use of a crow-bar.

The superiority of Dutch cured herrings arises chiefly from scrupulous attention being given to the different directions which have been detailed in this Treatise, and in a great degree also to Lisbon or St. Ube's salt only, being used in their cure, as well as to their being packed into oak barrels alone, whilst ours are cured with Liverpool salt, and packed into barrels made of birch or alder.

As it is extremely desirable, and very much for the interest of fishermen, and all parties concerned in the herring fisheries, that the practice of taking herring fry, or undersized herrings, should be put an end to, each fisherman should hold it to be his duty to aid the Board of British Fisheries in stopping it. It is chiefly under the pretence of taking sprats or garvies that this destructive practice is pursued. It is therefore important that the distinguishing marks of the young herring, and the garvie or sprat, should be so generally known as to be rendered familiar to all. These have been described by Mr. James Wilson, of Woodville, the well known naturalist, in a communication made to the Secretary of the Board, from which the following is extracted:—

"1st. The first character to which I would direct your attention, is one which is so distinguishable by touch as well as sight, that it would be quite easy by means of it to divide into two separate portions the largest and most intermingled mass of these fishes, even in total darkness. I refer to the jagged or spiney edging which prevails along the lower outline of the sprat or garvie, almost all way from throat to tail. This character is scarcely at all perceptible in the true herring. It is slightly developed in the fry, but soon disappears. It seems never absent in the garvie, but grows with its growth, and presents so stiff a toothing along the abdominal line, that if a fish is held not very tightly by the sides between the finger and thumb, and then a finger of the other hand is pressed along that under line from tail to throat, the projections will present so much resistance that the fish itself will be moved forwards.

"2nd. The eye of the herring is proportionally larger than that of the garvie, so that if you place a young herring beside a garvie of greater size, its eye will nevertheless be larger than that of the garvie, and if the fishes are themselves of the same size, the difference of the eye will be of course the more perceptible.

"3rd. The third character is less obvious, till attention is called towards

it, than the two preceding, but it is of equal importance, being not less constant and discriminative. If you observe the position of the dorsal or back fin of the herring, and suppose a line drawn perpendicularly downwards from its foremost portion where it enters the back, you will find that such line will invariably fall *in advance* of the ventral or belly fin beneath it. But if you draw a similar line from the front portion of a garvie's dorsal fin, it will invariably drop *behind* the insertion of the ventral fin.

"4th. The fourth character of distinction results from or is connected with the character just mentioned. There is a shorter space and fewer divisional lines between the pectoral or breast-fin, and the ventral fin in the garvie than in the herring, so that the anterior portion of the body is less elongated.

"5th. The divisional plates, or segments, which occupy the lower space between the pectoral and ventral fins, are larger in size and fewer in number in the garvie than in the herring, there being about fifteen in the former, and about twenty in the latter. In conformity with this distinction in the outer aspect, the number of ribs is different, being considerably smaller in amount in the garvie than in the herring.

"Many other distinctions of a minuter kind are known to naturalists, but I think the preceding will suffice for the object you have in view, viz.: that the difference between the sprat or garvie, and the fry of the true herring, may be ascertained with ease and accuracy by all who desire to do so."

By order of the Honorable the Commissioners.

THOMAS DICK LAUDER,
Secretary Board of Fisheries.

Royal Institution, 26th June, 1845.

(No. 7.)

IMPROVED MODE OF PREPARING COD-OIL.

The apparatus for the manufacture of this oil is not expensive; it is very easy to make; the whole consists of a box made of common boards, which may be lined with tin as being more easy to wash; a cloth is laid inside the box, and upon it the cod-livers are placed; the box is provided with a closely fitted solid cover. A pot holding 40 to 50 gallons, with a close wooden lid is placed some feet from the box, and a wooden pipe or tube leads obliquely from the lid and communicates with the box in which the livers are; 25 or 30 gallons of water are put into the pot, and the steam entering the box eliminates the oil and water resulting from the contents; a barrel is placed beneath the centre of the box, in which a hole is pierced to allow the oil to escape. After the steam has been allowed to remain in the box for two or three hours the cover is removed, the livers stirred up, and a little salt thrown in to precipitate the strong parts of the liver; the contents are allowed to settle for five minutes, after which the oil which comes to the surface is removed; the box is then closed again, and the process repeated

every hour; this must be carefully carried out in order to obtain white and sweet oil of the best quality. When it is apparent that no more oil remains in the livers, they are exposed to the sun, and become fit to be used in making soap. As will be perceived, this new method of obtaining cod-liver oil is inexpensive, and the difference in the cost and in the quality of the article produced should encourage all those who are engaged in this branch of the fisheries to adopt it.

(No. 8.)

EXTRACT FROM REPORT OF B. N. A. COMMISSIONERS TO WEST INDIES, MEXICO, AND BRAZIL, RELATING TO FISH IMPORTED INTO THOSE COUNTRIES.

Codfish is sent to Brazil in drums and tubs, each containing one Portuguese quintal. In the Pernambuco market drums are preferred to tubs, but in Bahia and Rio de Janeiro, the same quality of fish in tubs commands from one dollar to one dollar and a half per quintal more than drums. No fish should be shipped to Brazil, especially to Rio de Janeiro, but small hard cured merchantable fish, free from salt and sun-burn.

To illustrate the value to any country of extended communications with others, affording the choice of many markets for the sale of their products, the Commissioners may here remark that at the very time fish was selling for $12.50 per quintal in the Brazils, the price in Demerara and the neighboring islands ranged from $5 to $6.

The Brazilian duty on fish is but 30 cents per quintal, but it appears to the Commissioners that negotiations for its abolition might not be unattended with success, and would produce results beneficial to the trade between Brazil and the Provinces. An equivalent concession in reference to coffee would, no doubt, be highly valued by the Imperial Government of Brazil.

FISH.—The Codfish preferred in Trinidad is of the kind which is sent from Ragged Island, Nova Scotia.

CODFISH.—In Casks of 1, 2, 3, and 4 quintals each, and also Drums of 100 lbs. each, should be full weight. The quality ought to be a good clear yellow and well cured, the size, medium and small. Large fish is not liked, nor should it be thick.

HADDOCK has of late been a good deal used. The packages, quality, and size, are the same as Codfish.

MACKEREL.—In barrels and half barrels. Size, small, medium, and large No. 3.

HERRINGS.—Pickled—in barrels of 200 lbs. each, both round and split, but not mixed in the same barrel. Large No. 1 preferred. *Smoked*—in boxes. Medium and small sized only used.

SALMON.—A few barrels and half barrels will always find sale. Tierces not so much liked.

ALEWIVES.—The same remark applies to these as to Herrings. In cargoes with Pickled Fish there cannot be too much care taken in seeing that the barrels are filled with pickle and properly coopered before shipment, as in this climate they soon rust and spoil.

(No. 9.)

ACCOUNT OF A REMARKABLE OYSTER FISHERY IN THE RIVER THAMES.

Of the private fisheries in the estuary of the Thames the most important is that of the Whitstable Company. It is probably the most productive oyster bed in the world, though its extent is but small. It lies immediately off Whitstable, and is protected from the easterly winds by a spit of sand which runs out from the shore for a distance of 1½ miles. Inside of this the ground which belongs to the company is about two miles in extent each way, but at present not more than two square miles are cultivated. Except during very extraordinary tides the beds are never uncovered at low water, the depth not falling below from four to six feet. From this comparatively small piece of ground the produce of oysters is very considerable.

The company is an ancient corporation of fishermen in the nature of a guild, and is probably an example of the ancient guilds which were formerly so common in this country. They had from time immemorial been working on their present ground, but in the year 1793 they were empowered by Parliament to purchase the exclusive right of fishing from the lord of the manor on the ground where previously they appear to have been only customary tenants. At that time they were only 36 in number and they had to borrow a sum of £20,000, which was subsequently increased to £30,000, for the purchase of the ground and for stocking it with brood. Their numbers are now increased to 408, including widows, and of these about 300 are working members. They have succeeded in paying off their debts; their annual receipts are now sufficient to enable them to lay out a great amount of money in the purchase of brood, and they have a stock of oysters in hand which is valued at a very large sum. At the commencement of the season of 1862–3 their stock was valued at £400,000, and during the season they sold oysters of the value of £90,000. The company is governed by a foreman, deputy-foreman, treasurer, and a jury of twelve; the officers are elected by the whole body, and the jury is nominated by the officers. The only persons who have a right to become members of the company are the sons of dredgermen. The officers and jury decide what shall be the quantity of oysters dredged up and sold in the market, and what amount of brood shall be bought, and how much shall be paid to the members for work done for the company. The rate of wages varies according to the quantity sold and the price of oysters; on the average of the last eighteen years the rate of pay to the members has been 23*s.* per week; the last few years it has

been considerably more, and a bonus was divided in 1863 of £20, and 1864 of £16, so that the amount each member has received during the last twelve months has been altogether £100. The widows of members are also entitled to one-third of the pay which working members get. Between £33,000 and £34,000 has been paid over by the company to its members in thee ourse of one year. For this pay the average work performed by the dredgermen, during the open season, when they are engaged in dredging up oysters for sale in the market, is about two hours a day; and during the close season, when they are occupied in dredging and clearing the ground and moving and separating the oysters, four hours a day. The rest of their time is generally occupied in dredging the "Flats" for brood, which they sell to the company for laying down, and in good years they often make more by work outside than they receive from the company itself in wages.

(No. 10.)

LETTER FROM MR. TOWNSEND TO HON. JOHN LOCKE ON THE PRACTISE OF SET-LINE OR BULTOW FISHING.

SIR,—Since I addressed you last year on the evils of set-line fishing, I have obtained some rather important information on the subject, which brings out in strong colors the evils of that method of fishing for cod.

Up to the year 1857 the set-line fishing was only practised by the French fishermen in the neighborhood of St. Pierre, on the off-shore banks, where their vessels anchored, and the lines were set, and fished from them in boats built for the purpose. In the same year a few of the large fishing firms commenced set-line fishing in shore to occupy the spare time of the shore hands. The lines were of course set close in shore, so that they could be readily watched and tended from the island. The experiment proved so successful in 1857 that the following year nearly every firm had two or three large boats engaged in the inshore set-line fishing.

At St. Pierre there are a large number of poor fishermen who earned their living by going out daily in open boats from three to five miles off the shore and fishing in the old method, by hook and line. By the latter part of 1858 the poor inshore fishermen had suffered so much in their business, from the effects of the set-lines, that they were compelled to petition the authorities against it. The Government appointed a Commission to enquire into the injuries to the petitioners, as set forth in their petition, and the result was the Commission was so well satisfied with the injurious effect of set-line fishing, that before the commencement of the Spring fishing of 1859 an ordinance was promulgated prohibiting cod fishing with set-lines within *six miles* of the island; consequently in shore set-line fishing has been wholly discontinued.

Here we have a direct proof, if proof were wanting, of the injurious effects of set-line fishing. From every fishing ground that you can get information, the same story is told of the gradual destruction of the cod-fishery by set-line fishing.

A gentleman from the Magdalen Islands, informed me that the practice of set-line fishing on the Banks of those islands, by United States fishermen and others, but chiefly United States fishermen, is completely destroying the cod-fishery in the neighborhood of those islands, and that the inhabitants have to leave and go elsewhere in search of fish; when, before set-line fishing was practiced, they had no difficulty in getting good fares at home.

It is the duty of every person interested in the preservation of the North American fisheries (and who among us is not?) do all in their power to have a stop put to set-line fishing and all other injurious methods of taking fish.

I may here add that the United States fishermen, with scarcely an exception, are now fully aware of the injurious effects of set-line fishing, and wish that it was put down by law. The only reason they give for practising it is because others do so.

Set-line fishing by the French, on the Banks off the coasts of Newfoundland, is not only destroying the fishery on these banks, but is also materially affecting the fishery on the coast of Newfoundland,—the fish being intercepted in their course towards the shore and taken there by the constant baiting of millions of hooks.

Set-line fishing is very generally condemned by the French themselves, but it is a serious matter to change the whole system of fishing, so long practiced, of between six and seven hundred sail of vessels, four-fifths of which are of heavy tonnage, especially at a time when they can hardly make both ends meet. They will, it is likely, continue their present method of fishing until necessity compels them to abandon it or the fishery altogether. With a few years like the past, the French fishery will not be worth following, even with the ten franc bounty. Set-line fishing realizes the fatal result of sweeping off all the fish within its reach. Like all evil systems, it is sure to entail ruin in the end on those who practice it. Man is certainly a strange animal, and extremely inconsistent; he builds monuments of all kinds for posterity, but does not hesitate for a moment to destroy the bountiful provisions of Providence intended for all times.

It is to be hoped that the commission, agreed to by the British and United States Governments, to enquire into the state of the North American Fisheries, with a view to the best means of fostering and protecting them, will take the whole system of fishing in the North American waters into consideration.

In my letter of last year to you, I stated that I did not believe that any arrangement could be made with the French Government, and the refusal to appoint a Commissioner proves that my anticipations were correct. The French Government cannot, I almost say dare not, interfere with the method of fishing so long practiced by the French fishermen. It is well known that the French fisheries at St. Pierre and Newfoundland are not in a prosperous condition, even with the ten franc bounty, and I believe that many of the French fishing firms would gladly avail themselves of any dictation or interference in their manner of taking codfish, to give up the business and impute their loss to such interference, and demand redress.

The French fisheries at St. Pierre and Newfoundland are very expensively conducted. The one fact that nearly all their fishing craft and crews have to traverse near six thousand miles, every fishing season, to get on the fishing ground, is a heavy drawback to their profits. This was not felt when fish were plenty, but the vile system of fishing which they have practised

to increase their immediate profits, is now being felt, not only by themselves but by others, and is fast sapping the source from which the supply has been drawn, and I am of opinion that they are ready to grasp at any excuse to escape from the consequences of their cupidity and folly. It is my opinion that if the French do not alter their system of fishing, or get new ground to fish on, a very few years will witness a material falling off in their fishing interest at St. Pierre and Newfoundland.

As no arrangement can be come to with the French, the true policy will be to confine them strictly to the grounds they already possess, and on no account extend their fishing privileges. The British and United States authorities can then save, protect, and foster all the fishing grounds which the French are debarred from using.

April 5th, 1862.

(No. 11.)

TRAWL-NETS.

Two kinds of net properly bearing this name are in use among professional fishermen, viz., the beam-trawl and the pole-trawl. Another net, designated a "trawl," was formerly employed for catching herrings by the fishermen of Loch Fyne, and of some other parts of the west coast of Scotland, but as it was used as a sweep or circle-net it may be more suitably described under the head of seines; its use in the districts mentioned is at present prohibited by Act of Parliament.

The *Beam-trawl.* In describing this particular form of net we may take as a fair example such a trawl as is employed by the large deep-sea trawlers of Torbay and the North Sea.

It consists of a triangular purse-shaped net about 70 feet long, usually having a breadth of 40 feet at the mouth, and gradually diminishing to four or five feet at the commencement of the "cod," as the smaller end of the net is called. This part of the trawl, about 10 feet long, continues of a nearly uniform breadth to the extremity, which is closed by a draw-rope when the net is used. The upper part of the mouth, the "square of the net," is secured to a wooden beam about 40 feet long which keeps the net open; this beam is supported on two upright iron frames, three feet high, known as the "trawl-heads, or irons," each having a socket above to receive the end of the beam, and a thick flattened shoe below to bear on the ground. The under side of the net corresponds to the back, except at the mouth, where, instead of being square with the beam, it is made with a deeply-curved margin which is bordered by the ground-rope — a stout piece of old rope covered over or "rounded" with smaller rope to protect it from chafing when the trawl is being worked over the bottom; the ground-rope thus having the front edge of the under part of the net attached to it, extends with a long sweep from one trawl-head to the other, each end of the rope being made fast at the back of the shoe; its whole length therefore rests on the ground. The cod or small end of the trawl is usually strength-

ened on the under side with pieces of old net, called "rubbing pieces," to protect it from chafing when a large quantity of fish has been collected within, and the strain on that part of the net is consequently increased.

A trawl is generally fitted with two pockets, one on each side. These are made by lacing together the upper and under parts, beginning at the outer edge, and gradually working towards the middle and small end of the net. The mouth of the pockets, that is, where the lacing stops, therefore faces any fish that may have passed between them into the cod, and escape being impossible at the cod-end, many of the fish swim in a sort of backwater into the pockets until they are stopped at the narrow closed extremities.

The meshes in a large trawl, such as has been described, are of four sizes, and range from four inches square near the mouth to an inch and a quarter square in the cod.

Two stout ropes of about 15 fathoms each are fastened, one to the front of each of the trawl-heads, the other ends uniting to form a bridle, to which is shackled a warp 150 fathoms long; by this warp the trawl is towed, the quantity of rope paid out depending on the depth of water, the state of the weather, and other conditions. Trawling is, as a rule, always carried on in the direction of the tide, sometimes across it, but never against the stream, as under such circumstances the trawl could not be kept on the ground. The trawl is generally kept down for one tide, and its rate of progress is usually only from half a mile to two miles an hour faster than that of the stream, depending on the kind of fish sought after; the object being to keep the trawl steadily working on the ground, on which most of the fish caught by the trawl are habitually found, and this object could not be attained if the vessel were going fast through the water.

The action of the trawl will be readily understood.

The net is towed with the mouth and beam in front, the beam being raised about three feet from the ground by the trawl-irons, and, contrary to general belief, never touching the bottom at all unless the trawl capsize before it arrives there. In such a case the mouth of the net closes, and the irregular jerking of the warp warns the fishermen that the net must be hauled up and "shot" a second time before any fish can be taken. If, however, the trawl sinks in a proper position, (and this depends in a great measure on the way in which the vessel is managed, as soon as the trawl is overboard,) that is, with the beam uppermost, the ground-rope then comes into play and sweeps evenly over the bottom, disturbing any fish there may be within reach; and as the rope extends forwards on each side of them, and the back of the net prevents escape upwards, the fish, lying, according to their habit, head to stream, dart forward into the bag of the net, and in many cases ultimately find their way into the pockets, from which they are shaken out with the rest of the fish when the trawl is hauled on board and the end of the net opened.

The trawl can only be used with advantage on smooth ground; a sandy bottom is preferred, not only from that being the usual resort of soles and other valuable kinds of ground-fish, but from the less danger there is on such a surface of tearing the net to pieces. Mention has already been made of the use of old rope for the ground-rope; such a material is employed to prevent the loss of the trawl in case of any unforeseen obstruction, such as patches of rock or heavy stones, which are sometimes found on large tracts of sand. In such a case the ground-rope gives away, and the worst that can

happen is the tearing open of the under part of the net, a result serious enough in itself, but preferable to losing the trawl altogether, which might occur by the parting of the trawl-warp if the sudden and violent strain were not relieved by the ground-rope breaking.

The vessels from which these deep-sea trawls are worked runs from 35 to 60 tons O.M., or even more; the size of the trawl depending on that of the vessel. They are fine sea-going craft, smack-rigged, and capable of standing a great deal of rough work, as will be evident when it is remembered that the large fleet of trawlers exposed to the uncertain weather of the North Sea stay out, as a rule, for six weeks at a time in all seasons of the year, their fish being collected daily, packed in ice, and conveyed to market by fast-sailing cutters of 100 tons burden, constructed expressly for speed, and whose captains or owners are interested in getting all the fish delivered in marketable condition.

Trawls of a like construction, but of a smaller size, with a larger number of pockets or without any of them, and with meshes of various dimensions, are extensively used in estuaries and shallow bays on various parts of the coast. The mode of working them is the same as with the deep-sea trawls; but from the restricted limits of the ground over which they can be towed in one direction, the net is necessarily hauled up more frequently than it might be if there were room to work it continuously through a whole tide. The craft employed in such localities range from six to twenty tons, and are either half-decked or entirely open boats.

The Pole-trawl. This kind of trawl appears to be now only used in the south and south-west of Ireland, it having been for a long time superseded elsewhere by the more effective beam-trawl.

The net is of much the same form as in the ordinary trawl, except that in the pole-trawl the back is cut away to correspond with the under part, leaving a bag with a square mouth, and a long wing or sleeve extending outwards and forwards on each side. The free end of each wing is fastened by its upper and lower edges to a "hammer," consisting of a stout flattened piece of iron to act as a shoe, and an upright handle of either wood or iron rising from the centre. The back-rope is supported by cork floats, and the ground-rope is weighted with lead. There is no beam by which the mouth of the net can be extended. This is managed, however, by the use of a pole 25 or 30 feet long, rigged out on each side of the trawl vessel; a rope from the hammer leading through a block at the end of each pole and coming inboard enables the net to be worked and hauled up very much after the manner of the beam-trawl.

(No. 12.)

PROVINCIAL LAWS RELATING TO COAST AND DEEP SEA FISHERIES.

Sect. 1. Officers of the colonial revenue, sheriffs, magistrates and any other person duly commissioned for that purpose, may go on board any vessel or boat within any harbor in the province, or hovering within three marine miles of any of the coasts or harbors thereof, and stay on board so long as she may remain within such place or distance.

2. If such vessel or boat be bound elsewhere and shall continue within such harbor or so hovering for twenty-four hours after the master shall have been required to depart, any one of the officers above mentioned may bring such vessel or boat into port and search her cargo, and also examine the master upon oath touching the cargo and voyage; and if the master or person in command shall not truly answer the questions demanded of him in such examination he shall forfeit four hundred dollars; and if there be any prohibited goods on board, then such vessel or boat, and the cargo thereof, shall be forfeited.

3. If the vessel or boat shall be foreign and not navigated according to the laws of Great Britain and Ireland, and shall have been found fishing or preparing to fish, or to have been fishing within three marine miles of such coasts or harbors, such vessel or boat and the cargo shall be forfeited.

4. All goods, vessels and boats liable to forfeiture may be seized and secured by any of such officers or persons so commissioned; and every person opposing them or any one aiding such opposition shall forfeit eight hundred dollars.

5. Goods, vessels and boats, seized as liable to forfeiture under this chapter shall be forthwith delivered into the custody of the officers of the colonial revenue next to the place where seized, to be secured and kept as other vessels, boats and goods seized are directed to be secured and kept by law.

6. All goods, vessels and boats condemned as forfeited under this chapter shall, by direction of the principal officer of the colonial revenue where the seizure shall have been secured, be sold at public auction, and the proceeds of such sale shall be applied as follows: the amount chargeable for the custody of the property seized shall first be deducted and paid over for that service, one-half of the remainder shall be paid to the officer or person seizing the same without deduction, and the other half, after first deducting therefrom all costs incurred, shall be paid into the treasury of the province; but the board of revenue may nevertheless direct that any vessel, boat or goods, seized or forfeited, shall be destroyed or reserved for the public service.

7. All penalties or forfeitures hereunder shall be prosecuted and recovered in the court of vice admiralty.

8. If any goods, vessel or boat shall be seized as forfeited under this chapter, the judge of the vice admiralty with the consent of the persons seizing the same may order re-delivery thereof, on security by bond to be made by the party with two sureties to the use of her majesty. In case the

property shall be condemned, the value thereof shall be paid into the court and distributed as above directed.

9. All suits for the recovery of penalties or forfeitures shall be in the name of her majesty, and shall be prosecuted by the advocate general, or in case of his absence by the solicitor general. If a dispute arise whether any person is authorized to seize under this chapter, oral evidence may be heard thereupon.

10. If any seizure take place under this chapter and a dispute arise, the proof touching the illegality thereof shall be upon the owner or claimant.

11. No claim to anything seized under this chapter and returned into the court of vice admiralty for adjudication, shall be admitted unless the claim be entered under oath, with the name of the owner, his residence and occupation, and the description of the property claimed; which oath shall be made by the owner, his attorney or agent, and to the best of his knowledge and belief.

12. No person shall enter a claim to anything seized under this chapter until security shall have been given in a penalty not exceeding two hundred and forty dollars to answer and pay costs occasioned by such claim; and in default of such security the things seized shall be adjudged forfeited and shall be condemned.

13. No writ shall be sued out against any officer or other person authorized to seize under this chapter for anything done thereunder until one month after notice in writing, delivered to him or left at his usual place of abode by the person intending to sue out such writ, his attorney or agent; in which notice shall be contained the cause of action, the name and place of abode of the person who is to bring the action, and of his attorney or agent; and no evidence of any cause of action shall be produced except such as shall be contained in such notice.

14. Every such action shall be brought within three months after the cause thereof has arisen.

15. If on any information or suit brought to trial under this chapter on account of any seizure, judgment shall be given for the claimant, and the judge or court shall certify on the record that there was probable cause of seizure, the claimant shall not recover costs, nor shall the person who made the seizure be liable to any indictment or suit on account thereof. And if any suit or prosecution be brought against any person on account of such seizure, and judgment shall be given against him, and the judge or court shall certify that there was probable cause for the seizure, then the plaintiff, besides the thing seized or its value, shall not recover more than three and a half cents damages nor any costs of suit, nor shall the defendant be fined more than twenty cents.

16. The seizing officer may within one month after notice of action received, tender amends to the party complaining or his attorney or agent, and plead such tender.

17. All actions for the recovery of penalties or forfeitures imposed by this chapter must be commenced within three years after the offence committed.

18. No appeal shall be prosecuted from any decree or sentence of any court in this province, touching any penalty or forfeiture imposed hereby, unless the inhibition be applied for and decreed within twelve months from the decree or sentence being pronounced.

19. All coasting vessels under sixty tons burthen owned in this province and engaged in the coasting trade thereof, shall be furnished with a narrow piece of plank or iron affixed to the bottom of the keel and level therewith, extending aft at least six inches beyond the aperture between the stern post and rudder, and well secured on the keel. But this section shall not extend to vessels in which the main or false keel extends six inches beyond the aperture between the stern post and rudder.

20. Any owner or master of a coasting vessel not so furnished or built, running foul of any net set off the harbours, bays and rivers of the coast, shall upon due proof thereof forfeit twenty dollars, to be recovered by the party injured to his own use as a private debt; leaving to the party aggrieved, nevertheless, his rights at common law for any further damage.

21. In this chapter "vessels" shall include ships; and "harbors" shall include ports, bays and creeks.

22. The first eighteen sections are suspended as regards citizens and inhabitants of the United States of America, and shall continue so suspended and not in force so long as the treaty between her majesty and that country, signed on the fifth day of June, 1854, shall continue and be in force.

23. The master of any vessel registered and belonging to this province, and bound from any port therein, to be employed in the deep sea fishery, shall before proceeding on such fishing voyage enter into an agreement in writing with every person on board, apprentices excepted, which agreement shall express whether the same is to continue for one voyage or for the fishing season; and shall also express that the fish or the proceeds of such fishing voyage or voyages which may appertain to the crew of such vessel, shall be divided among them in proportion to the quantity or number of fish which they may respectively have caught; which agreement in addition to the signatures of the master and crew shall be countersigned by the owner of such fishing vessel, or his agent, and shall be as nearly as possible in the form given in the annexed schedule.

24. Any person having engaged for a voyage or for the fishing season, as before provided, who shall while the agreement therefor continues in force, desert or absent himself from the vessel in which he shipped, without leave of the master, shall be liable to the same penalties and forfeitures imposed on the like offences under chapter seventy-five; and every master of a fishing vessel taking any person on a deep sea voyage without entering into the before required agreement, shall be liable to the penalty imposed on that offence by the same chapter.

MEMORANDUM.—Laws for Regulations and inspections of Fish are to be found under Chapter 85, Revised Statutes. These, laws though minute in their application and stringent in the penalties that are attached to their infraction, are practically inoperative because they are left to the option of the county sessions to adopt them.