

PAPER IV.—ON SOME OF THE FISHES OF THE ST. LAWRENCE

BY F. W. G. AUSTIN, ESQUIRE, ADVOCATE.

(Read before the Society, April 4th, 1866.)

FISHES are described as vertebrated animals, with cold red blood, breathing by gills through the medium of water; without lungs; body covered with imbricated plates or scales or with a smooth mucous skin. They propel themselves in water by means of fins instead of feet, which vary in number. They are chiefly carnivorous. Fishes are divided by naturalists into two great groups, viz., the bony, such as the perch family; and the cartilaginous, such as the sturgeon. These again undergo subdivisions and classifications too numerous and technical to define on the present occasion. Some kinds are also known as mammalia, and partake both of the nature and habits of fish as well as of terrestrial animals. These produce their young alive, such as the whale.

There are two or three species of shark which affect or visit the Gulf of St. Lawrence. The thresher shark, which is one of them, is so called from the use it makes of its powerful and flexible tail, with which it literally threshes its enemies. This fish is a great enemy to small whales. In its attacks it is most persevering; and the whale may be often seen to leap quite out of the water and make the sea foam from the torment he endures. The basking shark is a formidable fish, of a dark slate colour, possessing, according to Dr. Storer, fourteen hundred teeth in the lower jaw alone. He inhabits the northern seas, but occasionally visits the American coast. His great size, and his habit of swimming near the surface with his upper jaw out of the water, has, according to DeKay, suggested the idea of the sea-serpent. A fish of this kind is said to have been captured in the Bay of Fundy, forty feet long. The tail was seven feet nine inches broad; the

head five feet across; the mouth three feet wide; the liver yielded 320 gallons of oil. This large quantity savours strongly of a sea-serpent story.

The whale fishery which is carried on in the Gulf, yielded, in 1864, \$17,000 worth of oil. The whale fishery of the Gulf, according to Sir Richard Bonnycastle, was formerly of great value, and employed a good many large schooners. The species caught within the Gulf of St. Lawrence are called "humpbacks," and produce about three tons of oil each. The mode of taking them is somewhat different from that followed by the Greenland fishermen. An active man accustomed to boats and schooners, may soon learn the mode of carrying on the fishery. Schooners from seventy to eighty tons burthen, manned by eight men, are employed. Each schooner has two boats twenty feet long, narrow and sharp, with a pink stern, 220 fathoms of line to each boat, spare harpoons and lances. The whale is approached by the men using paddles to make less noise. Whales are sometimes captured in fifteen minutes after they are struck with the harpoon. The largest are taken off the entrance of Gaspé Bay and on each side of the Island of Anticosti. A pretty fish, inhabiting the shores of the St. Lawrence, and which from its extreme diminutiveness forms a striking contrast to the great leviathan of the Gulf, is known by the name of stickleback. Of these there are two or three varieties. These little creatures, which are not often longer than three inches, are armed with sharp spines ranged along the back. One kind has fifteen of these spines, another ten, and the last three. The stickleback family are amusing, lively little creatures, though very pugnacious. They are said to possess the faculty of changing their color. When in a quite healthy state and not frightened, this fish is of a rich olive-green above, and silvery white below, with a golden band along the sides, as if it had been covered with burnished gold; but when unwell or alarmed, all the bright colors vanish, and the creature changes to sober grey, brown and white. It is a voracious fish, devouring great quantities of molluscs, worms, and little crustaceæ.

The sticklebacks are of domestic habits, and not only stay at home, but build their own houses. The nest of the stickleback is a very curious affair, and is constructed like that of a bird. The nest of the three-spined stickleback is made of hay and sticks, generally of the same color as the ground on which the nest is placed; it is about as large as a walnut, and has a cavity in which the tiny eggs are laid. These eggs are not larger than poppy seeds, and of a bright yellow color. The fifteen-spined stickleback has been known to weave its nest out of the loose strands of an old rope found in the water. The stickleback is very careful of its nest, always remaining close at hand, and will charge any creature that approaches its castle.

The Magdalen Islands, situated at the mouth of the Gulf, are important fishing stations. They were frequently visited by French vessels after the discovery of Canada. The Magdalen Islands were conceded, in 1663, by the Company of New France to one François Doublet, of Honfleur, who associated himself with Gon de Quimé and Claude de Landemare for the purpose of trading and fishing. These Islands, it is supposed, reverted again, in 1719, to the French government, as, according to Charlevoix, they were conceded to Lecompte de St. Pierre. In 1763 they fell to the British; and were inhabited by a few French and Acadian families, who lived by fishing for the walrus, an amphibious animal, now extinct in the waters of the St. Lawrence. An American gentleman, named Gridley, founded on Amherst Island a trading and fishing establishment. He took into his service several families of French origin residing upon the Islands, to carry on, upon a large scale, the hunting of the walrus and the seal, the oil from which found a ready market in the New England colonies, as well as the skins, from which a thick leather was manufactured; the tusks of the walrus were used as a substitute for ivory. Gridley's establishment was destroyed by the privateers of the revolted colonies during the American war. After this was over, he resumed his occupation. The walruses, however, which resorted to the beach in herds, were subject to incessant at-

tacks from the fishermen, or rather from the hunters, to whom they were of great value. A number of fishermen, after the conquest of Canada, came from the English colonies to engage in walrus hunting. They carried it on with such perseverance and energy that the extinction of this fine animal, second only in value to the whale, was very soon accomplished. For this brief sketch of the Magdalen Islands, and the walrus fishery, as well as for other information, I am indebted to the Reports of Commander Fortin, the officer in charge of the Gulf fisheries; and it is due to Commander Fortin that I should state, and I have much pleasure in doing so, that that gentleman has largely contributed to the cause of science by describing and classifying over sixty species of the fish of the Gulf.

A fishery of much value to the hardy population of the island and coasts of the Gulf, is the seal fishery. The seals are found in the spring of the year, upon fields of ice, in large herds. They are stunned by blows from clubs, and sometimes obtained by shooting. When the ice is closely packed together, and there are no open spaces to admit of the escape of the seal, a rich harvest repays the severe toils of the hunter. High winds blowing from the same quarter drive the fields of ice, covered with seals, towards the shores, and keep them aground near the coast until a change of wind takes place. On such occasions great prizes fall to the hardy islanders. The approach of the ice-fields, laden with seals, is the signal for the greatest excitement among the whole population. In a short time the news is spread all over by the ringing of bells and the firing of guns. There is a general rush to the shore. Young and old men, each armed with his knife, a rope and a club, spring out on to the fields of ice; while the women remain on shore, within reach, to prepare refreshment and supply warm drinks to enable the men to resist the damp and cold to which they are exposed. With the clubs the seals are stunned, when the knives are employed to despatch them and to remove the skin and blubber. When the harvest is large enough, the spoils are tied together with the rope

and dragged from one field of ice to another until the shore is gained, when the men return for a fresh supply. This fatiguing labor continues throughout the whole day, and even during the night in clear weather, so long as the seals remain and can be got at. During the season of 1864, \$18,000 were earned in three days by this industry. It is needless to add that this kind of hunting upon fields of ice is attended with great danger; for should the current or the wind detach the ice from the shores before the hunters regain the land, if not reached by boats they are carried off to sea, there to perish miserably of cold and hunger. Such accidents have frequently occurred.

The chief fishery of the Gulf is that of the cod, which commences early in June and continues until the end of November. It is prosecuted in almost every part of the Gulf. The mode of capturing these fish generally resorted to is by hand-lines of from thirty to forty fathoms in length. Each man has two lines, with spare leads and hooks. The fishermen go out in boats. The hooks are baited with herring, caplin, or other small fish, which the cod pursue and prey upon; and so soon as these fish appear on the coast the cod fishery commences. The squid, a strange-looking mollusc, is also a favorite bait for the cod. The success of the cod fishery depends greatly upon the numbers of small fish to be found on the coast. A most improvident use is made in many places of the herring and the caplin, a small fish of the salmon family, by taking them in immense numbers for the purpose of enriching the soil upon which they are spread; these small fish, with several other kinds, have been devoted to this purpose without intermission for the greater part of a century. This cannot fail to have a most injurious effect upon the cod and other fisheries, as it is impossible thus to disturb one operation of nature without upsetting several, so harmoniously blended are the works of the great Creator. The Reports of Commander Fortin, the officer appointed to protect the fisheries of the Gulf, inform us that wherever the bait fails the cod fishery is defective. It has long been remarked, in many places, that owing to

this waste of the smaller fish—the sustenance of the cod—that the cod fishery recedes as agriculture advances. The farmer who thinks he can increase the fertility of his land by making such a use of the small fish, does so at the expense of the fisheries; although a bountiful Providence has placed within his reach inexhaustible quantities of kelp, sea-weed, and other valuable ingredients, which would really enrich the soil, while it is admitted that the use of fish much deteriorates it. Colonel Rhodes, a scientific agriculturist, has tested the value of fish as a fertilizing agent, and found that it did not answer, particularly for the cultivation of green crops, and abandoned the use of it. Strenuous efforts have been made to prohibit the waste of the smaller fish of the St. Lawrence for this ignoble purpose, but hitherto without success. A prohibitory law existed in 1824; this law has been repealed, and no other equivalent provision has been enacted, notwithstanding that this subject has been brought prominently before the authorities having charge of the fisheries. In 1864, 5,110 barrels of herring and other fish, suitable for human provision, was wasted on the soil in the county of Bonaventure alone. Towards the close of that season the charity of the benevolent was solicited, and a government steamer, laden with clothing and provisions, despatched to the lower St. Lawrence to save suffering fishermen from starvation.

On the return to shore of the fishing boats from the grounds where the cod is taken, the boats are run along side stages, built over the edge of the water; upon these stages the fish are thrown out. The first man that handles the fish cuts its throat with a stroke of his knife, and slides it along a table to another, who removes the head and drops it, with the other refuse, through a hole in the table, retaining, however, the liver from which the cod-liver oil is made; the next man splits the fish and takes out the backbone. On the nicety with which these operations are performed the quality of the fish for market mainly depends. They are then washed and rubbed with salt, in which they remain for a few days; they are then again

washed and placed in a pile to drain; after draining for twenty-four hours they are spread out to dry on frames or stages, called "flakes." The fish should be frequently turned, or else they may become "saltburnt." They cure in about three weeks. When sufficiently cured they are laid in small circles, with the tails outwards; these circles are continually built upon, each row being larger than the one below it, until the pile is about three feet high, when the circles begin to diminish so as to form a conical roof; this is covered with birch bark, and stones are placed upon it. The piles are thus secured from the rain, and the fish are left to season before being packed for exportation. In 1864 the total value of this great source of Canadian industry, which cannot be too carefully husbanded, was \$621,122. I must leave to the faculty, the task of expatiating on the uses and virtues of cod-liver oil, and content myself with a nicely garnished cod-head and shoulders—a dish on which even *Punch*, the prince of gastronomers as well as of wits, descants in the following stanzas:—

I.

"When round the Busy world we scan,
And learn each human wish,
We surely never find a man
Who'd dine without his fish.

II.

Though some may praise the tender sole,
Or choose the trout instead—
They may be right, but, on the whole,
Give me my prime cod's-head!

III.

With parsley garnished gaily round,
And laid on china dish;
Complete with butter and with sound—
Sure 'tis the King of fish!"

The herring is perhaps, in a mercantile aspect, the fish next in value and importance to the cod. It is a native fish which breeds along the shores of the lower St. Law-

rence, and disappears after spawning time, either by returning to the sea or sinking into the depths of the river; a few, however linger on the coast during the whole season; it approaches the shores in dense shoals. The naturalists, DeKay and Storer, assert that our species differs materially from the herring of European waters, and have distinguished it from the latter by the name of *clupea elongata*; the fishermen designate this fish by the name of "blue back." Scotland and Holland are famed for their herring fisheries; indeed, herring fisheries have been appreciated by all maritime countries. The editor of Baron Cuvier's Natural History of Fishes, thus alludes to the herring fishery: "The coffee-bean, the tea-leaf, the spices of the torrid zone and the silk-worm have less influence on the wealth of nations than the herring of the northern seas. Luxury and caprice may seek those productions, but necessity requires the other. This fishery sends every year numerous fleets to collect from the depths of the stormy ocean an abundant and certain harvest, which the vast shoals offer to the courageous activity of different nations. The greatest statesmen, the most intelligent political economists, have looked on the herring fishery as the most important of maritime expeditions. It has been called the great fishery. It forms robust men, intrepid mariners, and experienced navigators. The nations industriously occupied in this fishery know how to make it the source of inexhaustible riches." In well-regulated European fisheries, the herring is captured by an instrument known as a drift-net. In the second volume of Yarrell's History of British Fishes, it is stated "that the proper mode of fishing for herrings is by drift-nets, but, whether in deep or shallow water, the nets are only in actual use during the night. It is found that the fish strike the nets in much greater numbers when it is dark than when it is light; the darkest nights therefore are the most favorable. Nets spread in the day time alarm the fish, and cause them to abandon the places where that practice is followed." Mitchell, a recent writer on the natural history and national importance of the Herring, also asserts "that fishing during the day time for herrings should be prohibited, as

it drives away the shoals." The same doctrine is laid down by Mr. Perley, in his Report on the Fisheries of the Bay of Fundy.

The inhabitants on the shores of the St. Lawrence capture these fish at all times, as well by day as by night, in brush fisheries attached to the shores; the fishermen sell them generally in a fresh state in the country parts, and some are brought to our markets. Extensive herring fisheries are carried on in the Bay of Fundy and in many other places. The brush-weirs are supposed to be most injurious to this fishery, as they are constructed in the course of the fish when approaching the shores to deposit their ova. Fishing for herrings in the day time, as has been already stated, drives away the shoals; besides, the weirs destroy a great quantity of the fry or young every season. Cochran Craig, Esquire, a magistrate who resided at Grand Manan, represented to Mr. Perley, when visiting the fisheries of New Brunswick on behalf of that Province, that he considered the extent to which the herring fisheries were injured by the destruction of herrings, both fit and unfit for proper use, taken in the weirs, to be almost endless; the heavy shoals of herring fry being yearly cut up by the weirs, and the cod having no bait to draw them in shore, they were only to be found out in deep water, where boats and small vessels—the poor man's dependence—could not follow them. Bouchette, in his History of Canada, alludes to the quantities of herrings which, at the time he wrote, affected the shores at the Eboulemens; these fish were at the same time found in great numbers on the opposite coast,—but they have entirely disappeared from both places, to the great loss of the inhabitants. Their disappearance was no doubt caused by the number of weirs in use both day and night. In the Bay of Fundy quantities of herrings were formerly cured by smoking: they were styled by the fishermen "Digby Chickens." Large quantities of herrings are still caught in the Gulf: these are salted and packed in barrels for commerce. In 1864 the herring fishery realized about \$55,000.

Another fish which annually ascends the shores of the

St. Lawrence, and constitutes an economic element with which we are all familiar, is the shad. A few years ago this fish was very abundant, and could be furnished in the fresh state at a very low price; it has not been quite so plentiful during the last few years. In alluding to the decline in numbers of this valuable fish, I shall merely cite the opinion of a gentleman engaged for many years as a Missionary among the fishermen of the Bay of Fundy, where these fish formed an important object of trade:—
“Standing weirs and standing nets are unquestionably the most effectual means of destroying shad altogether in our bays, or at least of thinning their quantity to an incredible degree; both ought to be discontinued at once and prohibited by strict laws. My reasons,” asserts the writer, “for condemning both modes are, first, that by a standing weir shad of all sizes are stopped, and those that have hardly attained half their natural growth are either left to perish on the mud-flats or else are cured pell-mell with the larger ones. I have seen with my own eyes what I here mention.” The Reverend gentleman reiterates his suggestion that both weirs and standing nets should be prohibited by law, as being destructive to shad and very injurious to fisheries and to commerce. The shad of America is said, by Wilson and Dr. Storer, to differ materially from the shad of Europe. It feeds upon the shrimp and the shad-worm, and loses its fine flavour after being some time in the fresh water; it affects muddy shores where its food is abundant, and sometimes attains the weight of six pounds. The mode of fishing recommended to obtain a supply of this fish for consumption is by drift-nets, as these do not form the same obstacle to the growth of the fish as the standing engines. No reliable statistics of the annual value of the shad fishery are available.

The American fishermen derive large profits from the mackerel fishery of the Gulf; these profits may be interfered with by their exclusion from the coast fisheries, which they have enjoyed under the Reciprocity Treaty which has recently ceased to exist, as the convention of the 20th October, 1818, revives. The law officers of the Crown, in

interpreting the convention of Great Britain with the United States of America, are of opinion that, by the terms of the convention, American citizens are excluded from any right of fishing within three miles of the coast of British America, and that the prescribed distance of three miles is to be measured from the headlands, or extreme points of land next the sea, or the coast, or of the entrance of bays or indents of the coast; and consequently that no right exists, on the part of American citizens, to enter the bays of Nova Scotia, there to take fish, although the fishing, being within the bay, may be at a greater distance than three miles from the shore of the bay—as the term “headland” is used in the treaty of 1818 to express the part of the land above mentioned, including the interiors of the bays and the indents of the coasts. The convention did not, according to the opinion of the Queen’s Advocate-General and the Attorney-General of England, concede a right to any foreign country of navigating or using the passage of the Gut of Canso. Casting bait, to lure fish in the track of American vessels navigating the passage, would constitute a fishing, within the negative terms of the convention. American citizens have no right to land either, or fish from or conduct a fishery from the shores of the Magdalen Islands. The rights of fishing ceded to the United States, and those reserved for the enjoyment of British subjects, now depend altogether upon the convention of 1818, which is the only existing treaty on this subject between the two countries. The manner of fishing for mackerel pursued by American fishermen is described in Perley’s work on the Fisheries of the Gulf, but is rather too lengthy to explain now. This fishery is worth a large sum of money annually to the American fishermen. Canadian fishermen do not appear to understand the importance of the mackerel fishery, and do not engage in it to the extent they ought. The produce of this fishery to this Province in 1864 did not much exceed \$28,000.

There are other fisheries carried on in the Gulf, which, however, are of minor importance to those alluded to; they are the haddock, hake, halibut, tunny, smelt, and sar-

dine fisheries. Oysters, lobsters, and other molluscs and crustaceæ are to be met with in many parts of the Gulf in great abundance.

The common lobster is too well known to need any description; he is plentiful on many parts of the coasts, sometimes ascending the St. Lawrence as high as Tadousac. The fishermen are accustomed to insert a peg of wood into the joint of the lobster's claw, to prevent it from wounding them; this is a most cruel process, and is most injurious to the lobster, causing it to pine away, lose weight, and become unfit for food. Fishermen should be forbidden to use pegs, and compelled to tie the claws or forceps with a string. When the lobster is alive and well, its color is nearly black, in some cases having a deep green tinge. But when boiled, or put into spirits of wine, the color changes to red.

To overrate the value the fisheries would be to Canada, under a stringent system of protection and management, would be almost impossible. The British fisheries have become—since the scarcity of other food caused by the cattle disorder, which is still marching onwards—the principal source from which subsistence is obtained by the masses of the English people; and it is a blessing to know that so productive are the waters which surround the British coasts, that this vast resource is not likely to fail. A report published by men of science and experience, among whom was Professor Huxley, at the beginning of the present year, on the deep Sea Fisheries of England, affords an insight into the magnitude of this resource, which is capable of supplying not only the metropolis, but the entire United Kingdom. The most frequented fishing grounds are more prolific of food than the same extent of the richest soil: once in the year an acre of good land, carefully tilled, produces a ton of corn, or three hundred weight of meat or cheese; the same area at the bottom of the sea, on the best fishing grounds, yields a greater weight of human food every week in the year. The city of London annually consumes 90,000 tons of beef, and an equal quantity of fish produced by the neighboring waters. The immense

consignments of herrings—the large catches of salmon—the tons of other fish, which arrive daily in the English markets, are astonishing. The consumption of fish-food is prodigious; the supply, nevertheless, is constantly at hand.

Besides the deep sea-fisheries of the Gulf, Canada possesses, in the St. Lawrence, the link connecting the great lakes of the West with the salt of the ocean, joined in its downward course by more than seventy tributaries, including the Ottawa and the Saguenay and their several branches—a field for the cultivation of fish unrivalled in the known world. When the continent was first peopled, this vast fish-farm formed the rich pasture ground of untold numbers of the finny race. The salmon family roamed throughout this vast domain, extending from head waters of Lake Ontario to the extremity of Labrador, in incredible numbers. Most northern regions, in the earlier periods of their history, were famed for their enormous supplies of these interesting fish. So abundant were salmon at the mouths of certain rivers of Boothia Félix, that 3,378 were captured in a single haul. Sir George Simpson found them so plentiful in the Columbia river, that as many as, 1,000 were daily captured in a basket. A stream in Russian America was so full of salmon, that the ascent of it in a canoe was impeded by their numbers. 3,000 barrels of these fish were annually shipped from the Restigouche. The north shore formerly supplied them in immense quantities. Up to the year 1842, this part of the St. Lawrence was literally teeming with salmon. The Hudson's Bay Company used to export thousands of barrels. "I used to see them so numerous," asserted a member of the Legislature, "that, when a boy, I killed them with stones." These localities are now nearly deserted and barren. There are several species of the salmon family inhabiting the waters of this Province: *salmo fontinalis*—the brooktrout; *salmo ferax*—the great grey trout; also the *lunge*, or long-finned trout, and the salmon—*salmo salar*. Some of these species are migratory; even the brook trout, when in its power, descends to

the sea and returns to perpetuate its kind in the coolest and most limpid waters. There is but one distinct species of the brook trout, though the same fish inhabiting different waters, according to Agassiz, is affected by the color and quality of the water; trout even in the same river vary in color accordingly as they haunt the shady or sunny side of the stream. The fish of streams rushing rapidly over pebbly beds are superior, both in appearance and quality, to those of ponds or stagnant pools. The *salmo ferox* is found in the large lakes, and sometimes reaches the weight of 25 lbs., and corresponds in description with the *salmo ferox* alluded to by Yarrell in his work on British Fishes. The *salmo trutta* found in this Province, and which ascends the fresh-water rivers from the sea like the salmon, possesses the same habits as the species found in European rivers, and described by Sir W. Jardine. The *salmo canadensis*, and the *lunge* are alluded to by American naturalists, and are supposed to be a well-defined species. *Salmo salar*--the salmon--is a well-known fish; as in Europe so in America, it has been long supposed that there is but one species, though American naturalists affect to have discovered three kinds in America. The salmon of Europe and that of America is believed to be the same fish identically: all kinds, should more than one exist, are marked by the same general characteristics. The salmon is born and nursed in fresh-water streams; the female casts her ova on a gravelly shoal over which a current gently flows, forming a bed by making a shallow trench in the gravel, which she afterwards fills up and covers the ova. The autumn is the time of the year chosen, when the water is about 10° above freezing; the water requires to be pure and highly oxygenated, by falls and the rapidity of its course. The young emerge from their stony couch in about one hundred days, and swarm in the stream; they attain the length of an inch and a quarter in a couple of months, and are then called parr, and are easily recognized by their silvery scales and dusky grey bars crossing the lateral line,--they, however, resemble small trout, having red spots on the sides. They grow very slowly for a

few months, but when they attain six or seven inches in length, which about one-half do in a little over the first year of their existence, they undergo a rapid change—the dusky bars and red spots disappear, and they assume a bright silvery appearance, and bear some resemblance to a salmon. They are then called smolts, and descend to the sea. The next season, the half that remained in the river as parr, assume the bright silvery appearance, and, in their turn, descend to the sea. Some return, in two or three months from the time of their migration to the sea, back to their native river as grilse, weighing from three to eight pounds each. So rapid is their development in salt water, that they attain over a pound in weight during every fortnight of their stay, and become marketable fish in about twenty months from the time the ova was deposited in the gravel. They do not all return from the sea the first year; about one-half continue in the salt water until the following season. It appears to be a natural law for these fish to ascend to and return from the sea by double or divided migrations—one half the brood during one season, and the other half during the following year.

A prominent feature in the migration of these fish to and from the sea is, that they always—to use a nautical phrase—“hug” the shore on their way up and down. They do not, asserts Mr. Russel, in his work on the Salmon, lie off in mid ocean, and then, as with a needle and compass, steer right into the river’s mouth; but they feel, or, as Sir Humphrey Davy expressed, scent their way along the shore for many miles and follow closely the indents of the land. There appear to be wise reasons for this habit of the fish in pursuing a course along the shores: enemies which would prey upon them are thereby avoided, and they find their natural sustenance, the smaller kinds of fish, along the shores near the land. It is a habit of the salmon, also, to make the coasts of the sea their highway; and this coasting disposition being known to the fishermen, according to Yarrell they project their nets in such places as are most convenient for intercepting them in their course from the sea to their native rivers and favorite breeding grounds.

In 1860 the British salmon fisheries, owing to the use of stake-nets, were in the same depressed condition in which we now find those of Canada, which have declined to such an extent that many rivers where salmon formerly abounded, do not now contain the vestige of a fish. In that year a Royal Commission was issued to enquire into the subject, at the head of which was Sir William Jardine, the eminent English naturalist. These Commissioners reported to the House of Commons, in 1861, "that the stake-nets were opposed to the whole aim and spirit of the fishing laws; that these engines were baneful to the fisheries, not only on account of the numbers of fish they destroyed, but also because they scared and drove them away to sea when they came in shoals seeking the rivers, thereby exposing them to be injured and destroyed in a variety of ways." This system of fishing was accordingly prohibited by an Act of the Imperial Legislature, based upon Sir W. Jardine's report; and three years afterwards the fishery officers for England and Wales reported "that all round the coast the fisheries yielded an unusual return, and the fishing grounds also contained a number of fish hitherto unknown. On the west coast, and on the east, in the north, and in the south, there was scarcely a river where salmon could be found in any numbers in 1860, that was not becoming of importance to the public; or one where salmon then existed, that did not give sure promise that it wanted but care and time to take its place among the market-supplying waters of England." Thus in three years the salmon fisheries of England and Wales were, by timely and prudent legislation, restored to a productive condition; and the people, during the ravages of a rinderpest unparalleled in intensity, are deriving the greatest benefit from this wise foresight.

The engines employed in the salmon fisheries of Canada are very similar to those abolished in 1861, as too destructive to the English fisheries; the official reports of Canadian fishery officers will establish with what pernicious effects. In 1861 the yield of salmon on the Gaspé coast was 688 barrels; in 1864 the yield was only 513 barrels; in

1860 the north shore, covering 510 miles of coast, produced 1,689 barrels of salmon; in 1864 the yield was only 1,169: showing a decline in both sections of 665 barrels, notwithstanding a large annual expenditure of public money in the protection of the fisheries. The same causes which decreased the salmon fisheries of England and Wales are now injuring those of this Province; Commander Fortin confirms the opinion of the Royal Commissioners in their condemnation of the stake-nets as fishing engines, when he alludes, in his Report for 1864, to the fish escaping from the nets bearing, in many cases, the marks of more or less serious wounds, of which many die and are lost to mankind. A certain number, he adds, no doubt, when recovered of their wounds, re-appear in fresh water, but generally, it is said, in a different river from that in which they have been wounded. This year nearly all the first salmon taken in the Kegashca river bore marks of wounds on the front part of the body, evidently caused by nets, and were not of the same kind as the fish of that river. They came, he concluded, from the Natashquan, where they had striven, without success, to overcome the numerous nets set at its mouth, as they bore clearly defined marks on the head, back and breast, of the nets they had broken through. Every river in the neighborhood of this city where salmon are taken, affords confirmatory evidence of the assertion of Commander Fortin, as wounded fish are constantly captured in them. Engines which inflict wounds upon the fish, scare and drive them away to sea, and thus deprive them of access to their native rivers and favorite breeding grounds, are unfit to be used in our salmon fisheries. The same reasoning applies to all other kinds of fish affecting the shores of the St. Lawrence: and until these pernicious engines, now prohibited in the fisheries of England, and to a great extent in those of Ireland and Scotland, are banished from our coasts and estuaries, the extensive field Canada possesses, for the creation of food and wealth for her people, can never be effectually developed.

[NOTE.—As well shortly previous, as subsequent to the reading of the above paper, the subject of the employment of stationary nets,

and their effect upon shore and river fisheries, was elaborately discussed in some of the leading journals of the Province. The discussion served to establish that these engines are most injurious to the fisheries in which they are used. The editor of the London *Field*, whose opinion, throughout the British dominions, is recognized as authority upon such matters, in alluding to this discussion, writes, in the number of that journal of the 7th last: "If you want to destroy a salmon fishery, poach it, leister it, net it, and rod-fish it as hard and as long as you like, and you cannot do it; but lock the salmon out by means of fixed nets, and the thing is done forthwith. The fish cannot breed, and there is an end of him. This result is so plain, so manifest, that it is one of the most wonderful things, even in an age when rapacity and chicanery abound, to find any one so blinded by short-sighted greed as to defend a system which is so atrociously unnatural that no one ever dreamt of applying it to any other part of the creation." In the number of the same journal of the 19th May last, the editor further observes, "we need not inform our readers either in Canada or here, that we have always condemned such engines utterly and without any reservation whatever." Russel, at page 193 of his admirable work on the Salmon, acquaints us, that it is the nature of the fixed engines on the coasts "to operate in deterring, and obstructing, as well as in capturing; and they so operate in a more injurious way than the similar causes operating in rivers, when salmon are stopped or frightened back within a river; it is generally speaking only a matter of delay and return; but in the sea, the fish stopped by the standing nets, if they escape capture, are driven out among their natural enemies, the seals and porpoises, who systematically wait outside for the chance." This was strikingly exemplified at the Tadousac salmon fishery during the season of 1864, when the fixed machinery planted on the shore, by changing the course of the fish striking it, attracted a large whale and a number of seals to prey upon the stragglers. The actual decline in the product of our salmon fisheries between the years 1861 and 1864, both inclusive, is stated by official documents (the last published) to have exceeded in money value \$10,000; and this large sum is, of course, entirely apart from the expenditure involved in their protection during the same period.]