

ART. IX.—OUR FISHES AND THEIR ENEMIES. BY REV. JOHN
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THE fisheries have been truly described as “the harvest of the sea,” “the harvest that never fails;” for although fish may easily be destroyed in vast quantities, or driven away from their accustomed haunts, still their amazing power of reproduction, and the impossibility of finding them in all the labyrinths of their surroundings, seem to set man’s power of destruction at defiance. The fish harvest, however, cannot always be depended on, especially in localities where man’s greedy interference with the laws of nature defeats his own purpose, and expels beyond his reach that which he would fain destroy.

The same short-sighted greed works still more rapid destruction in other productions of nature for the wants of man. From over-cropping and forest fires (mostly the result of carelessness), our timber supply, in this Province especially, is everywhere shewing premonitory signs of approaching exhaustion. Yet iron and other materials are largely taking the place of wood in building for marine and land purposes. Arboriculture will ere long be a matter of imperative necessity, and already legislators are beginning to protect the harvest of the seas and rivers, for the benefit of the present generation as well as of posterity. Our Republican neighbors are thus endeavoring to replenish some of their own denuded forest-lands, and also re-people their coasts and rivers with the finny tribes, and our own Government perceives the necessity of guarding our fisheries from depletion and ruin through modes of fishing which experience has shewn to be injurious to that country, as well as our own.

No other food-supply can take the place of fish, and the fisheries of our Dominion—under adequate protection and judicious management—will always furnish an unfailing and increasing

source of wealth. I find by the Government Report of 1886 that for that year the fisheries of the Dominion reached a total value of \$18,679,888. This was exclusive of the quantity of fish consumed by the Indian population in British Columbia, estimated at 25,000,000 lbs., and also of the total yield of Manitoba and the North-West Territories, of which only approximate data were available, which would increase the total value to fully \$22,000,000. This was capable of great enlargement, yet we find the total value of the Dominion fisheries of 1888 was \$17,418,570, shewing a shrinkage of no less than \$1,260,718 in two years, largely attributable—as the Reports of Fish Overseers and Inspectors shew—to destructive agencies perfectly within the possibility of repression.

I have alluded to the possibility of man's selfish greed and folly neutralizing, to a large extent, the bounty of Providence by driving fishes from their usual haunts, or greatly reducing in these localities the effect of their marvellous reproductive power. To make this clear, it will be necessary to speak of the habits of our migratory food-fishes. The Creator, Himself, has informed us that fish—like birds—were produced from the water, and I may observe that not only in point of fertility did their native element place them in advance of animals formed from the ground, but the great similarity in the habits of fishes and birds seems to be a further confirmatory proof of their kinship. All birds and most fishes are oviparous. Now, as there is no surer way to change the ordinary habits of birds and cause them to forsake their accustomed haunts than by disturbing them when laying their eggs,—so fishes, obeying the great law of reproduction, forsake, after a time, the localities where this law of nature is subjected to persistent and destructive interruption. Were it not for the persistent denials of mill owners and other self-interested parties it would be unnecessary to state and insist on these self-evident preliminary facts.

Again, fishes, like birds, resent by change of *habitat* any continuous interference with their food-supply, or on the other hand can be tempted to leave their accustomed feeding grounds by more abundant bait at even more dangerous places. For example,

our line-fishery along shore is now nothing to be compared with what it was before the commencement of trawl, or more properly, bultow fishing. "Trawls" or bultow lines were first introduced in 1874 off the shore of Digby County. As an example of the previous abundance of halibut along those shores, Capt. James Cousins, of Digby, states that in 1873, with six 'hands' in a small boat he caught, abreast of Gulliver's Hole*, in one slack of tide, with hand lines, 14 halibut. Now, he says, it would require four trawls, *i. e.*, bultow-lines with 2,400 hooks in all, to make an equal capture in the same time. The universal opinion of our fishermen is that bultow-lines destroy the inshore catch of all line fish to a very great extent. One cause assigned for this is that those set lines destroy too large a proportion of the gravid fish; another that they attract from their former inshore haunts all such fish to the distant banks at sea, where bultows abound, (and where so many fishermen attending them in their dories are, in foggy weather, lost or run down). Another means of destruction to line fishing is the offal of fish taken off the trawls and then thrown overboard, or eaten with the fish hangings from the set hooks. The "sound-bone" *i. e.* part of the vertebrae with the ribs attached, is swallowed by codfish, resulting in prolonged emaciation or death.

But a greater evil by far, as being infinitely more expensive and injurious to our shore fishing, arises from interference with the bait supply, formerly plentiful within our headlands and at the mouths of our rivers. Saw-mills and other mills in possession of the greedy and unscrupulous, have not only robbed posterity of their due share of the forest-trees, but by impassible dams, and vast accumulations of rotting sawdust and other decaying debris, have done and are now doing immense damage. Salmon, thus prevented from reaching their ancient spawning-grounds, or even if they could reach them from depositing their spawn amidst the gases of decomposing mill refuse, have been utterly expelled from streams formerly teeming with those delicious and gamesome fish. Nor is this all, for greater evil remains behind. Those dams have at the same time shut out alewives or

* Off Digby Neck.

gaspereaux, not only useful to man as a food-fish, but what is more important, one of the favorite bait fishes by which cod and other line-fish, so-called, were in other days drawn within the bays, estuaries and river mouths, and within reach of poor men, fishing near home with hand-lines. By means of the in-shore fishing many poor men in our country were enabled to obtain a livelihood in by-gone days, whereas this class of men in the present day, for want of means to prosecute the deep-sea fishery, are driven to seek employment in foreign vessels, poaching along our coasts, or find themselves compelled to forsake fishing altogether, and betake themselves to other and less congenial pursuits in other places. Even in my day, I have seen villages along our shores prosperous and growing, which are now half-deserted, whilst I have since met many of their former inhabitants, skillful and hardy fishermen, toiling at far less congenial employment in the neighbouring Republic and elsewhere.

“Princes and Kings may flourish and may fall,
A breath can make them as a breath hath made;
But a bold peasantry, their country's pride,
If once destroy'd can never be supplied.”

The “exodus,” of which some people in the Maritime Provinces complain, is clearly traceable in many instances to causes which a patriotic and unselfish foresight and wise legislation might in a large measure prevent. There is no better country for a poor man than that provided with abundant natural resources and a healthy climate, if these resources are properly developed and husbanded by those who take the trouble to understand and appreciate them, and work together towards the common benefit.

It may be said that our deserted fishing villages, being for the most part rocky and barren, were not worth preserving, but this cannot be said of the thriving villages on the shores of Digby Basin. But here a most valuable fishery is being very rapidly destroyed, and the delicate and delicious smoked herring, known all over the world as “Digby Chickens,” will soon be a thing of the past. The mode of capture is by closely-woven brush weirs, not like net-weirs, permitting the immature fish to escape, but indiscriminately slaughtering all,—some to be smoked and salted,

and the remainder to be carted ashore for manure. Not satisfied with this destruction of captured fish, an ingenious method has been discovered of breaking up and expelling the schools of fish swimming outside the weirs and near the spawning-grounds. Boats, carrying torches of oakum, saturated with kerosene oil, are to be seen any dark night in the fishing season in front of the Town of Digby, and in other parts of the Basin, catching with dip-nets the herring attracted to the boat by the light. Kerosene oil, abominable to the fish, dropping from the torches on the water drives away the fish, and, though but recently introduced, has already greatly injured the once famous Digby herring fishery.

Brush weirs have in like manner wrought much injury to the shad and gaspereaux fishery by their indiscriminate slaughter of the young as well as the mature fish. A net-weir, on the contrary, having the size of its meshes regulated and enforced by law, captures only the mature fish, leaving the rest to grow and multiply. Even net weirs should be kept open a certain number of times in each week—not less than five—to permit the gravid fish to ascend the rivers to spawn.

Outside the mouths of harbours, the purse-seine used within the three-mile limit by our own people, and outside of it by the Americans, is the means of destroying all fish captured by its use, except those sought by its owners, viz., mackerel, for large quantities of herring and other fish are killed and cast away. Purse seines, also, break up the schooling of mackerel and prevent their trimming the shore.

Another very injurious implement of fishing is the bag-net, enclosing, as it does, not only food-fishes, but many other species not used for human food, but very attractive as bait to line fish. The "lump fish," for example, boiled for the pigs by fishermen, are nevertheless, when not captured by bag-nets, very prolific depositors of large-sized spawn, eargerly sought for by line fish. Indeed, to mill-dams and sawdust in the stream, bag-nets and brush-weirs in the coves and harbours, and purse-seines and trawls, or bultow lines outside, may be fairly attributed the remarkable failure of our shore fisheries in recent years.

The so-called "sardine" factories in Maine make it their business to cut off the reproductive power of herring by purchasing none but immature fish. Most of the full-grown herring enclosed with them are first salted and next pressed for the extraction of their oil, the "pomace," or residue being sold for manure.

Eel weirs across our streams do much injury by preventing the egress of young gaspereaux and other small fish to the sea, and thus largely discounting the benefits which would here, as in western Canada, result from fish-culture in our lakes.

A word in parting with the subject of sawdust, shavings and other mill-refuse in our streams. Mill-owners are probably no worse, in a general way, than other people, but when direct pecuniary interest is the temptation it is but natural, though selfish, that reason becomes perverted. The conviction of all interested, in the fisheries, produced by actual observation and experience is that if our inland lakes and coves are to be thus filled up our fisheries will be ruined, not only by the prevention of spawning, but the expulsion of line-fish from our shores. It is of no use to insist on efficient fish-ways over mill dams, so long as the mill refuse prevents the accomplishment of the purpose which impels the struggle up the fish-ways.

Want of space forbids mention of other modes of destruction, waste or expulsion of our fish from our shores, formerly a favorite haunt for the finny tribes. We pass on, then, to a few remarks on the means at present in operation for similar destruction of our crustacean.

Oysters.—In the first place, to show the capabilities of our oyster-beds in the harbours bordering on the Gulf of St. Lawrence, it is well-known that comparatively a few years ago the abundance of oysters in those beds was so great as to effect their destruction. The beds so rapidly increased in height and diameter that the oysters in the midst of the mass were smothered by those above and around them, and when the accumulations approached the ice-level, those on the top were destroyed by the cold. The harbour of Shediac affords an illustration of this,—once famous for the abundance of its oysters, but now raked only for its dead shells, with their surrounding mud, to be used for

agricultural purposes. Hence also the so-called mussel mud-beds of P. E. Island. The remedy in these cases is keeping the catch equal with the production, after these old beds are cleaned out and re-planted. But over-fishing is rapidly destroying the productive beds. For this reason, as Inspector Duvar reports:—“The oyster fishing in P. E. Island is in a deplorable state—over-fished in some places, and in others not producing enough. There are no regulations whatsoever, except a close season from 1st of June to 15th Sept., to prevent the ultimate ruin of the beds, as they are open to be fished by everybody, and private culture has not been encouraged. Reckless fishing and continual shell-digging threaten a ruin to the oyster-fishing similar to that which from over-fishing has befallen the lobster industry. . . . It is time such profligate misuse of public resources should be checked.

“The oyster beds of New York give 7,000 oystermen a permanent living, and \$6,000,000 is invested in culture therein. In the whole of Canada no one man makes his whole living from oysters, but less than 1,000 men give themselves occasional employment in oyster-catching in a perfunctory kind of way, and the total annual product at \$3 a barrel is no more than \$187,580, of which P. E. Island provides \$109,324.”

As a remedy against these evils, Mr. Duvar suggests: “(1) to reserve certain natural beds for fishing by the public; (2) to offer liberal encouragement for full development of the fishery under private culture; (3) to plant new beds and re-plant old ones (cleared of their dead accumulations, as a preliminary necessity, we presume, and a benefit to agriculture); (4) these improvements to be effected under efficient Government inspection, such as would guard against over-fishing and give leases from the Minister of Marine to plant, transplant or restock exhausted fisheries.”

By the prevention of undue accumulation and consequent smothering of the parent-oysters, the spat or spawn would have full opportunity of rising and attaching itself to the hurdles or other objects in its native locality, thus insuring the natural and rapid increase in such protected beds. The capital required for oyster culture is very small and yields an amazing profit, as the

oyster is in four years developed from the spat to marketable size, and in the meantime is nourished without cost to its owners. It is, moreover, a sure crop, if guarded with ordinary care; and there are abundant locations for oyster culture in the sheltered bays and estuaries bordering on the Gulf of St. Lawrence. The bed should be covered with tidal water, from one to six fathoms deep. Such bottoms as these are Government property, and the price of licenses to occupy them would yield an annual revenue more than sufficient to pay for their thorough protection, whilst conserving a great public benefit. But in the present unprotected state of the fishery, no one will venture on oyster culture. When at Shediac in March, 1887, I saw gangs of men with machinery propelled by horses scooping up dead oyster-shells and weed in large quantities for agricultural purposes, and was then informed that the vast quantities of oysters in those old beds have perished through their own fecundity, being either smothered or frozen, as I have already described. But, on enquiry, I found that all attempts at oyster planting in other parts of Shediac harbour had been frustrated by the interference of people living on the opposite shore. The hurdles placed for catching the floating spat had been pulled up, and the planted oysters taken out.

Lobsters were literally crawling in vast numbers near our shores but a few years ago. Very few canneries were then in operation. One was started, however, on a pretty vigorous scale at Sambro, by an American. There being then no legal protection against over-fishing, large and small, light and gravid, were canned, and soon—as I was informed by fishermen on the spot—the lobsters in-shore began to diminish in number very rapidly, as also to exhibit fewer individuals of large size, so that it became necessary to sink the traps much further from shore. This was an indication that the factory was rapidly cutting off the supply at head quarters, for these creatures invariably have the habit of coming in from deep water outside so soon as the tenants of coveted holes along shore are out of the way. The fishermen conversing with me at that time—when as yet canning on our shores was in its infancy, and lobsters in other harbours were abundant—predicted that the system pursued at Sambro,

if imitated elsewhere, would in a very few years destroy the supply. The Sambro factory at first attempted boating lobsters from the neighboring harbours, which were so soon depleted as to compel the owner to remove it to Peggy's Cove at the mouth of St. Margaret's Bay, and shortly afterwards to collect from places still more distant from his factory.

Since my removal to Digby in 1870, where lobster canning did not commence until some years afterwards, I have noticed the same exterminating process in operation. Lobsters, until the canning began, could be captured by hand occasionally, crawling amongst the sea-weed on the flats at low tide, at Smith's Cove and the mouth of the Joggin, near this town. After the Digby factory began its operations, depletion soon became manifest. Lobsters are now brought to this factory, in the open season, from places as distant as Gulliver's Cove, some eight miles from this town. When the traps are brought ashore, too often containing small lobsters, these—instead of being returned to the water—are, in some cases, carried ashore for family consumption, or boiled for the pigs. Considering that it requires three years from the ova before the lobster is capable of reproduction, and that the average life of the creature is but about nine years, the evils of over-fishing and the destruction of the immature can scarcely be over-estimated. And yet, like some saw-mill proprietors, some lobster-catchers can be found in this selfish world clamouring in political newspapers and otherwise for larger extension instead of reasonable restriction of their destructive methods.

In the first case, the improved fish-way over mill-dams, with its lower end always in deep water, should be insisted upon in every instance, as also the utter prohibition of saw-dust and all other mill-refuse from our streams. In the other, lobster-traps should never be permitted near shore in shoal water, but at a reasonable distance outside, in not less than a depth of four fathoms. This, with an annual close season, certainly not shorter than the present length, would go a long way towards preventing the destruction of lobster-fishing, which at present seems inevitable, and in the near future. But restrictions such as these will

require the appointment of active, impartial, and fearless inspectors and overseers in adequate numbers,—whilst the occasional and unexpected visit of a chief inspector, as in the case of Banks and Post Offices, would be of salutary effect in some places.

Last, but by no means least, let us hasten to avail ourselves to the fullest extent of the extraordinary facilities afforded by the very great number and suitableness of the lakes in this Province for fish-culture. The increase of salmon by this means, even under present protection, in Nova Scotia is very perceptible, as shewn by the Dominion Fishery Report of last year. This is capable of very great extension if not only human hinderers, but the lower order of depredators, such as eels, otters, etc., are circumvented.

The result of salmon culture in Nova Scotia lakes since 1876 is a return of six dollars for every dollar expended, as is shewn by the Report for 1889. But this system of fish culture in our lakes may be largely increased in its results by the introduction of white fish, (already begun). These delicious fish have already been multiplied to an amazing extent in Ontario,—and in Pennsylvania at an expenditure of \$7,000, a business in these fish has been established worth one hundred thousand dollars a year by this means.

In short, for the protection and increasing benefit of our fisheries we need not only a 3-mile limit, but mainly an inshore limit, to protect "the harvest of the sea" from the blindly-selfish, who have no regard for the rights of those who come after them, no patriotic desire for the benefit of their country. Protection against such people is a matter of prime necessity, and should extend far within the 3-mile limit.