

## VII.—ON THE FISHERIES OF GREAT BRITAIN AND THE FISHERIES EXHIBITION OF 1883.

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[Abstract, by Chas. W. Smiley, of a lecture at Cullen, Scotland, January 3, 1883.]

The proposal to hold a great International Fisheries Exhibition in London was strengthened by the success which attended similar undertakings in Berlin, Norwich, and Edinburgh. These exhibitions were all extremely useful. They were the means of bringing valuable inventions before the public, and of suggesting improvements in important branches of fishing and maritime industry. They were also financially successful; in each case there were surpluses, ranging from £1,400 to £2,000. The Berlin Exposition was open only ten weeks; and in that time it was visited by 483,000 people. We propose to keep the London Exhibition open for six months. The population of London and the suburbs is now about 5,000,000; that of Berlin, only 1,100,000. We may therefore look forward to the number of our visitors running into millions.

The origin of the Exhibition was the result, in a great degree, of the success of the Norwich Exhibition. The proposal to promote a similar undertaking on a larger scale in London during the present year emanated from Mr. Birkbeck, M. P., and some members of the Fishmongers' Company of London. A preliminary meeting was held in the Fishmongers' Hall in July, 1881, when the Fishmongers' Company gave £500 to the prize fund and £2,000 to the guaranty fund, and appointed Mr. Birkbeck, who had acted with great ability as chairman of the Norwich Exhibition, to the chairmanship of the executive committee. That committee, limited to twelve, was composed of the representatives of the various fishery interests of the kingdom. The Marquis of Hamilton, as representing Ireland, and Sir A. T. Galt, as representing Canada, have since been added to the executive committee, while the duty of representing Scotland has devolved upon me. We succeeded in securing the support of royalty, Her Majesty the Queen graciously consenting to be patron, while the Prince of Wales became president, and the Duke of Edinburgh, our sailor prince, appropriately acting as our vice-president; the Duke of Richmond and Gordon, whose business abilities I am sure you all recognize, becoming chairman of our general committee. As foreign minister, Lord Granville offered us every assistance in bringing our project before foreign countries.

The Exhibition building stands on 23 acres of ground in the Horticultural Gardens, within three minutes' walk of a railway station. In

the open spaces in the gardens there will be fountains, large tanks containing various descriptions of live sea and fresh-water fish, full-sized fishing-boats, models of life-boats, including steam life-boats, full-sized fish-markets, and refrigerating vans for the conveyance of fish. In the covered space, extending over more than 300,000 square feet, will be shown the various exhibits, classed under seven different heads and sixty-one different divisions. In the building in which the Exhibition is to be held the committee have already authorized an expenditure of £20,000. We have a guaranty fund of £22,000.- America is spending £10,000 on her exhibits; and, looking to the long list of foreign countries that are competing, at least £100,000 will be spent in what they are sending us. America, Canada, Newfoundland, Norway, Sweden, the Netherlands, and Belgium apply for an average of 10,000 square feet each for their exhibits; while China, Japan, India, Chili, and New South Wales take together 30,000 square feet. From the United States we may hope to learn a good deal about the artificial propagation of deep-sea fish. Canada and Newfoundland, as British fishing-grounds, are second to none. They possess a fishing coast of over 4,000 miles; and Sir A. Galt tells us that they produce £5,000,000 a year, and employ 90,000 men and boys. From an industry conducted on so large a scale we may expect to learn something; and possibly the mother country may be able to impart some knowledge to her promising and hardy sons on the other side of the Atlantic. An important fish trade has recently sprung up with the west coast of America. The canned fish trade with the Pacific coast has risen from 4,000 cases in 1866 to 928,000 cases in 1882. The total amount of salmon exported from the same quarter is 45,000,000 pounds.

In a part of the building set aside for the purpose will be shown in active operation the process of curing fish. I believe Scotland, Germany, and Holland are the chief competitors in this section. I have great doubt if anything in the shape of cured fish can be procured to compete with a kippered herring or a Pinnan haddock. An effort will be made to introduce into the London market and make more popular what are termed the inferior classes of fish. Now, to appreciate the full importance of this subject I must ask you to bear in mind what an enormous place London has become. Including the suburbs it contains a population of five millions. Living within a radius of twelve miles you have a population nearly equal to the whole of that of Ireland, a third larger than the whole population of Scotland, and twelve times as large as the population of Glasgow. The amount of fish annually consumed in London is upwards of 130,000 tons, equal to 1,000 bullocks daily during the 313 working days of the year, and representing 90 pounds of fish per annum for every man, woman, and child in the metropolis. This large consumption has been attained in spite of the high railway rates and extremely defective market arrangements; but large as the present consumption of fish is, the demand goes on increasing.

and an opinion prevails that the demand might in some degree be met by educating the palate of the London fish consumer to appreciate what are known in the metropolitan market as the inferior classes of fish. We have enlisted the sympathies and secured the services of the managers of the School of Cookery at South Kensington; they have undertaken to cook and present in the cheapest and most palatable form at breakfasts and luncheons to be served in the Exhibition, dishes of the inferior fish. Now the importance of this will be understood when we look at the prices paid for first and second-class qualities in London. Following is a list of the average prices, taking all the year round, at Billingsgate: Sole, salmon, brill, gray mullet, John Dory, whiting, and eels average 1s. per pound; haddock, sprats, cod, herring, coalfish, plaice, ling, and hake on an average bring only 2d. per pound. Now nobody but a cockney would give six times the price for a sole or a whiting that he would for a haddock, or even a good fresh herring; but the fact is these second-class fish are not much known in the West End. By presenting them in a dainty form, we hope to show that they are not inferior to fish that command exorbitant prices, and if we can succeed in doing this we shall benefit alike the London fish consumers and the fishermen on the coast. Fifty per cent is the average deduction you have to make in this part of the country on your sales of fresh fish in London for railway rates and commission. Sometimes the whole proceeds of a sale are swallowed up by these two items, leaving absolutely no profit to the fishermen. The committee recommend that the railway commission be made permanent, and that on the application of traders the commission have power to order through rates; but this power is not to enable the commission to order lower rates than the limit at present charged. The railway commission is to hold sittings in Scotland. This is not a large concession, yet it might prevent the excessive rates; and although uniform rates are, in the opinion of the committee, impracticable, yet we look to the action of the commission to lower the rates and to diminish the anomalies, which a comparison of the rates in different localities at present presents. For instance, the Caledonia Railway charged four times the mileage between Montrose and Glasgow that it charged in through rates to London. Even the competition of sea traffic to London ought not to make so great a difference as this, and we may look to the action of the commission and the legislation that will follow the report of the committee for some measure of redress. The question of rates forms part of a subject for which the Exhibition committee offer a prize of £100 in the essay department.

Improved fishmarkets are needed in many places, but particularly in London. In Mr. Spencer Walpole's report to the Home Secretary in 1881 he mentions that in the seventeen months preceding December, 1880, 777 tons of fish were destroyed as being unfit for human food, and he attributes this loss in a great degree to the defective state of Billingsgate Market. Two-thirds of the fish that reaches the London market,

about 90,000 tons, are brought by train. As all of this fish has to be carted through the streets of London to Billingsgate, and then brought back again to the West End and distributed over a radius of 7 or 8 miles, it is not surprising that the proportion of condemned fish arriving by train is far higher than that brought by water. Of the 777 tons of fish I have mentioned as condemned, 615 tons were brought to London by train, as against 162 tons by water. This affords conclusive evidence of the necessity of a commodious fishmarket in one of the sites recommended by the engineer and architect of the metropolitan board of works in the immediate neighborhood of the termini of the great railways on the north side of London. So long as London was supplied with fish by water transit, Billingsgate might have sufficed; but now that two-thirds of the fish are brought by train, it is ridiculous to carry such a perishable article as fish through crowded thoroughfares where, according to Mr. Walpole, "the risk of the fish going bad is increased by the delays, constantly extending for hours, and occasionally extending over days, which are due to the inadequate approaches and want of room outside Billingsgate." Let Billingsgate remain as the market for water-borne fish, but let us have another market in the immediate vicinity of where the greater proportion of fish reaches the metropolis.

What is termed fish offal is in this district, I believe, usually sold at 1s. to 1s. 6d. a barrel for manure to the farmers, and by them very much prized; but the question arises, and it is one of some consequence to the fishermen and curers, are you making the best use of this offal? We know that isinglass, medicinal oil, glue, and guano can be made from parts of what are termed offal. Specimens of isinglass of the finest qualities from Nova Scotia were shown at the Edinburgh Exhibition. The utilization of fish offal is attracting considerable attention in Norway, and a grant was voted last year by the Norwegian Parliament to Mr. Sahlstorm, C. E., to carry on experiments in the utilization of fish offal. Mr. Sahlstorm is, I believe, the patentee of an invention for utilizing every portion of a fish. The flesh is converted into extract of fish, the liver into oil, the bones into isinglass, the heads into guano, and the skin into leather. Probably Norway, particularly at such places as the Loffoden Islands (an interesting account of the fisheries of which, and of the manufacture of cod-liver oil, is given in Du Chaillu's "Land of the Midnight Sun"), affords a better field for the particular industry I am referring to. But with better means of fishing I believe the fisheries off the Shetland Islands might be turned to more profitable account.

The first essay for which £100 is offered relates to the natural history of commercial sea-fishes. We require to know more about the food of sea-fishes, also at what age these fish become reproductive, and what localities particular fish frequent at different seasons of the year. A knowledge of these matters would be of great assistance to fishermen. Another essay is on the "Relation of the State to Fishermen and

Fisheries," including all matters relating to their protection and regulation. This would deal with home legislation, lights to be carried by fishing-boats, &c.; regulations for trawlers would also be included. The fishermen have gone so far as to propose to petition Parliament to abolish trawling altogether. Mr. Barclay, in addressing his constituents at Broughty Ferry, has showed that London and our other large towns were mainly dependent on the trawlers for supplies of fresh fish. He says that in London nine-tenths of the fish were trawled, but since 1866 the trawlers have gone on increasing in number, and the proportion of trawled fish that finds its way to the market must be still greater than that referred to by the commissioners. Most of the trawlers now use steam, and the direction we appear to be moving in is the greater application of steam power to all branches of our fishery industry. There is an important consideration which seems to have escaped the attention of those who advocate the abolition of trawling. They seem to overlook the fact that any regulations made by our Government are only binding within territorial waters, *i. e.*, within 3 miles of the shore. Supposing trawling abolished, or a close time for trawlers established, without an international convention the law could only be put in force against our own fishermen. This would simply be an inducement to Frenchmen, Dutchmen, and Norwegians to come and fish off our coast 3 miles from the land, and supply fish to London and other large towns after our own fishermen had been driven from the ground. At the same time I am decidedly of opinion that trawling should be carried on in a manner as little hurtful as possible to drift and line fishermen. The sea fisheries act of 1868, which was passed after we had entered into a convention with France, making the act binding on both nations, provides, "Trawl boats shall not commence fishing at a less distance than 3 miles from any boat fishing with drift-nets. If trawl boats have already shot their nets they must not come nearer to boats fishing with drift-nets than the distance above mentioned." Clause XIII. of the act protects line fishermen, as it is deemed an offense against the act if any one causes damage to the property of another sea-fishing boat. In 1881 another act was passed, entitled the "Clam and bait beds act." This gives the board of trade power, by provisional orders, to protect bait beds (within 3 miles of the shore) from injury by beam trawls. The order may be obtained on the application of the fishermen through a justice of the peace, a town council, or a rural sanitary authority. But there is another charge brought against trawlers; it is said they injure the fisheries by capturing immature fish, and that they destroy the spawn of fish. On this point the sea fisheries commissioners speak very decidedly. They say: "There is no evidence to show that trawling has permanently diminished the supply of fish from any trawling ground, but that there is proof to the contrary," and "we have sought in vain for any proof that the trawl brings up and destroys the spawn of fish." Another suggestion is that the mesh of the net used by trawl-

ers should be larger, so as to allow immature fish to escape. This, like other regulations which apply to the open sea, could only be carried out by an international convention.

Money properly laid out in harbors should come under the head of reproductive expenditure. Take the case of Fraserburgh, £100,000 was borrowed at  $3\frac{1}{2}$  per cent. In ten years the number of boats fishing from Fraserburgh was doubled, while in the same time the harbor revenue and the value of the exports were nearly trebled. If this is not reproductive expenditure, I fail to understand the meaning of the term; but at the present time it is impossible to obtain money on the terms that Fraserburgh borrowed it. Now, the committee invite essays to inquire into the reasons which have led the loan commissioners to raise the terms on which the money is lent for harbor improvements. Between the years 1861 and 1880—that is, from the date of the harbor and passing-tolls act till December, 1880—the public works loan commissioners lent for harbor purposes £2,781,820. During that period the losses, including principal and interest, only amounted to £16,434 and there is no single case given in the parliamentary return I am quoting from, where there has been any loss on money borrowed for Scotch harbor improvements. I am not saying there has been no loss to the revenue from money spent on Scotch harbors, but the losses—and they are comparatively insignificant when contrasted with those that have taken place in other parts of the Kingdom—have been in instances where special grants have been made, and not in those cases where the people have taken the initiative and borrowed money on harbor dues from the loan commissioners. I think inquiry into this matter will show that the commissioners have raised the rate of interest, in consequence of injudicious loans for other than harbor purposes. Hence the object of the harbor and passing-tolls act of 1861 has been defeated by Sir Stafford Northcote's act of 1879, and I think those interested have a right to ask that the borrowing powers conferred by the act of 1861 be restored to them. I attach importance to this, because I think it is by supplementing local efforts by money lent at the lowest possible rate of interest, that the Government can best encourage harbor improvements. The amount at the disposal of the fishery board, including £3,000 surplus brand money, given for the first time this year on the recommendation of the committee I had the honor of presiding over, only amounts to £6,000 annually. This money is at present being spent in the neighboring harbor of Findochtie, from the construction of which I hope you may derive some benefit. Another source from which we may look for some assistance in the construction of harbors is the employment of convict labor.

Very interesting experiments have been carried on at Peterhead and Aberdeen by pouring oil on the troubled waters at the entrances to the harbors. I have been able merely to read the accounts of those experiments, but they have excited considerable interest in the localities, and

Mr. Shields, the enterprising gentleman who has so energetically taken up this matter, will, I hope, be able to give us the result of his experience in the form of an essay.

An essay for which £25 is offered, is on the best means of increasing the supply of mussels and other mollusks (oysters excepted), used either for bait or food. Each individual fisherman in this district requires two tons of mussels annually for bait. Considering the importance fishermen attach to the easy supply of mussels, it is surprising that greater efforts have not been made to attain it. I have suggested, on previous occasions when speaking on this subject, that the Crown should buy up all the right of mussel proprietors where these rights exist. I believe in some cases they are claimed on very doubtful grounds. That mussel beds so acquired should be placed under the control of the fishery board, and let out to the fishermen. I believe a great deal might be done to increase the supply of mussels. To those who wish to read an interesting account of a mussel farm, I commend that given of the one at Aiguillon, by Mr. Bertram, in his interesting and valuable work, "The Harvest of the Sea."

Is there any ground for the statement we sometimes hear that the sea is being overfished? I believe investigation will prove that there is no cause for alarm. Although no doubt it can be shown that inland firths, and in some districts the sea near our coasts, are not so productive as formerly, yet in the open sea I believe it can be proved that our constant fishing has had no appreciable effect in diminishing the number of fish in the sea. By the railway returns it is shown that in the fourteen years between 1864 and 1878 we have increased by 50,000 tons annually the fish sent inland, while the herring fishing in 1880 was 73 per cent more productive than the average of the last ten years. With these facts before us, I should be sorry to see any attempt to put restriction on fishing by legislation, which it would be extremely difficult to enforce; and if Professor Huxley's calculation, that we do not by fishing take 5 per cent of the herring that are annually destroyed, is correct, I think we may leave the herring in full enjoyment of "home rule," and make no attempt to force any of our legislation upon them at present.

The power and influence of Great Britain depend on her naval supremacy. History teaches us that naval supremacy depends on a hardy and energetic seafaring population. It matters not how rich or powerful a nation may be, or how many ships she can put on the ocean, without seamen to man them she is powerless. What could the Spanish Armada, with all its ships, and soldiers, and sea-sick grandees, do against the little navy of Queen Elizabeth, skilfully handled by Drake and Hawkins, and manned by the hardy fishermen of Devon and Cornwall? It was the naval power of this country that subdued the First Napoleon; but, however great may have been the victories of Nelson, these victories would never have been achieved had he not commanded

real seamen. But although it is our navy that has given us security on the ocean, it is not alone to our men-of-war's men that our maritime supremacy is due. The mercantile marine of the Empire is represented by 8,500,000 tons of shipping. The whole of the rest of the world together has less than 13,000,000 tons. Our gigantic fleet of merchantmen conducts the most enormous commerce the world has ever known, having entered and cleared cargoes at ports in the United Kingdom from foreign countries and British possessions in 1880 of nearly 36,000,000 tons, the foreign trade to this country during the same period being represented by less than 14,000,000 tons. It was the power of our magnificent merchant fleet that enabled us, without disturbing our commerce, to transport in little over three weeks 46,000 men and 17,000 horses to the shores of Egypt, not the least remarkable part of our recent brilliant campaign. But if the maritime power of Great Britain excites the admiration rather than the jealousy of foreign nations, it is because that power has been exerted in the cause of freedom and in the cause of civilization. Our navy suppressed the slave trade; our merchantmen are the pioneers of commerce. Long may we continue to enjoy our strength and to exert it for noble purposes! But let us ever remember that the fisheries along our coast are the cradle of our seamen, the origin of our strength, and the source from which that strength is largely drawn.