

REPORT ON THE EDINBURGH FISHERIES EXHIBITION.

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[Dispatch to the State Department; transmitted to the U. S. Fish Commission.]

The International Fisheries Exhibition referred to in previous dispatches from this consulate, was held at Edinburgh, Scotland, opening on the 12th and closing on the 29th of April, 1882. It was, both in the extent of the exhibition and in the attendance it attracted, very satisfactory. Notwithstanding the prevalence of bad weather during much of the time, the attendance was quite large, the number of visitors ranging from 7,000 to 15,000 a day, and aggregating about 150,000 for the whole sixteen days. The visitors were principally from Scotland, and most of them from places easily accessible to Edinburgh. It was remunerative, taking in about \$29,000 as the proceeds of admission tickets. The exhibition was under the control of the Scotch Fisheries Improvement Association and other societies, and was intended to include all kinds of articles connected with or illustrative of the fisheries of the world. The number of exhibits was 527, of which 302 were from Scotland, 89 from England, 44 from Sweden, 31 from Norway, 21 from Germany, 12 from Denmark, 4 each from Ireland, the United States, and Italy, 3 each from Russia, France, and Switzerland, 2 from Canada, and 1 each from Holland, Spain, Iceland, China, and Africa. It will be noticed that there were very few exhibits from the United States.

Messrs. Conroy, Bissett & Mallison, of New York, had on exhibition some samples of fishing-rods of their manufacture. Their peculiarity consisted in being made of cane split and joined in such a way as to secure lightness, combined with strength, and they were, besides, very handsomely finished. I was told by a Scotch manufacturer that the Americans gave their rods a finish that cannot be got in this country, but that the American article costs more than those made here, say about \$5 on a \$30 set. A silver medal was awarded to Conroy, Bissett & Mallison for their exhibition of rods and tackle. The Gloucester Isinglass and Glue Company, of Gloucester, Mass., made an excellent exhibition of several varieties of isinglass and glue manufactured from fish-skins, samples of articles in the manufacture of which they are used, specimens of fish-skins before manufacture, and samples of guano. They were awarded a silver medal for glue and isinglass, a silver medal for the application of them to many useful ends, and a diploma for guano made from the refuse of the company's manufacture. E. G. Blackford, of Fulton Market, New York, sent from there samples of American fresh fish, striped bass, shad, red snapper, pompano, and brook trout. Hugh D. McGovern, of Brooklyn, N. Y., had on exhibition a rare prepared specimen, a year-old trout, surmounted by the fish-eating bug, *Belastoma*

grandis, which was destroying the fish by piercing its head. There were some samples of canned fish from the United States, exhibited by importers, among collections showing their imports from different countries. Models of California salmon-breeding trays with catch-box were exhibited by Max von dem Borne, of Berneuchen, Custin, Prussia. He was awarded a silver medal for the deep and for the plain California trough. A collection of very handsome, large, colored illustrations of the game water fowls and game fishes of America were exhibited by Professor Archer, director of the Edinburgh Museum of Science and Art. A series of large, handsome photographs of American salmon were exhibited by John Clark, of Glasgow, Scotland, for which he was awarded a diploma. A plaster cast of an American black bass was exhibited from the collection of the late Frank Buckland.

The most extensive contribution to the exhibition was the Swedish collection, comprising preparations from the Gotenborg Museum, showing all the stages of development of fish and their condition at different periods of life, a large number of scientific specimens and curiosities obtained in the Arctic voyage of Professor Nordenskjold in the *Vega*, and a great variety of products of the fishing industry of Sweden. In the department of the history of fishing there was an interesting collection of fishing implements found in the Swiss lake dwellings, which were sent by the Society of Antiquaries of Zurich. In the loan collection were a great many very fine specimens of stuffed fishes and aquatic birds and casts of fishes, the largest display being from the museum of the late Frank Buckland, at London. There was a good display, more than one hundred exhibits, of cured, packed, and preserved fish, principally from Scotland, but a large proportion from Norway.

A prominent feature was the exhibition of boats and implements used in fishing, including a number of models of boats of various classes, especially those adapted to herring fishing. The frequent losses of life that have occurred by the destruction of fishing boats off Scotland and neighboring coasts have made the substitution of safer vessels than those now in use of great importance, and the increased profits resulting from the use of steam trawlers has made the substitution of steam for sails on fishing craft generally a question of much practical interest.

Pisciculture has not received the attention in Scotland that might be expected from the importance here of the subject, but interesting displays of hatching and feeding apparatus were made from the hatcheries of Byram Littlewood, of Huddersfield, England; Sir James Gibson Maitland, of Stirling, Scotland, and Joseph J. Armistead, of Dumfries, Scotland. Mr. Littlewood also exhibited oysters produced by artificial contact of the sperm and ova in artificial sea water by a process of his invention. He claims that, while an American experimenter has succeeded in hatching the oyster, no one but himself has succeeded as yet in growing it beyond one of the earliest stages of development. He showed living specimens which he had kept in continuous growth from three to five months, which is as long as he has been experimenting in

that direction, and expressed full confidence in the practicability of hatching and rearing oysters abundantly and profitably. Ten thousand fish about three weeks old were on exhibition by Constantine Muszynski, of St. Petersburg, Russia, which had been transported from there in a large glass bottle of his invention, with concave sides, without the loss of more than a dozen of the fry, and in excellent condition. A live sea anemone, *Actinia mesembryanthemum*, was exhibited, which was taken from the east coast of Scotland in 1828, and has ever since been kept in the jar in which it was shown. It was at that time thought to be at least 7 years old. During a period of 20 years it produced 334 young. In 1851, after being unproductive for many years, it gave birth, in a single night, to 240 young, and last February it gave birth to 7 more, of which 3 were exhibited with it. It is kept in sea water, and is fed once a month with half of a live mussel, and on the following day the water is changed. A number of models of salmon ladders and fish passes were exhibited, those built around high falls in a river in Norway showing the greatest skill in overcoming natural obstacles.

The purification of the water, which, after use in factories, is returned to the streams in a condition fatal to fish, is a subject of great importance in connection with the preservation of the salmon and trout of this country. There were models of apparatus and samples of water exhibited showing the success that had been attained at several places in England and Scotland in separating the impurities in a condition suitable for reuse or merchantable for manure, and returning the water to the streams purified. The Native Guano Company exhibited living fish surviving in water from the factories of Aylesbury, England, which had been purified by this process. An exhibition of Balmain's luminous paint attracted a great deal of attention. The paint, which in the light looks like common white paint, has the peculiar quality of emitting a pale light (phosphorescent in appearance, though said to contain no phosphorus) when shown in a dark chamber, and it is claimed that vessels, buoys, or other objects painted with it may be plainly distinguished at a distance in the dark. A machine for fish-cleaning, the invention of John Ross, of Stonehaven, Scotland, was exhibited. It is claimed that by its use five girls can clean a hundred score of haddocks in three hours, and that the fish are less liable to be injured than by hand-cleaning. It consists of a series of stiff brushes, revolving on a cylinder. Among the nets, Thomas Davidson, of Aberdeen, Scotland, exhibited one called the jackal net, a long, narrow net, by dropping which from a boat it is claimed that it may be seen whether there are any herring under the boat and at what depth.

The exhibition was not only interesting as a collection of a great variety of articles well worth seeing, but there can be no doubt that it has well subserved the main object of its projectors, that of directing attention to the extent and importance of the fishing interest, which constitutes one of the most valuable industries of the country.

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