

without further preparation, though it is thought to be improved by the addition of a little vinegar or lemon-juice. Pressed caviare is a favorite with Russian soldiers, who are said to take a liberal supply in their knapsacks whenever they are going on a long march. Improvements might be made, no doubt, in the preparation of American caviare, and the subject is worthy of receiving the especial attention of packers.

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173.—THE CULTIVATION OF THE SEA.*

By Dr. KARL VON SCHERZER.

Yesterday's meeting of the Society for Promoting Useful Knowledge (*Gemeinnützige Gesellschaft*) was taken up by an exceedingly interesting and instructive lecture by the ministerial counselor, Dr. von Scherzer, on the subject of "The Cultivation of the Sea."

"Neptune's empire is far more fertile than the most productive field. There are no waste places in the water as there are on the land, and it is only owing to the comparative ignorance as regards nature's institutions and purposes that thus far aquatic animal and vegetable life has been cultivated only to a very limited degree. How many thousand square miles of virgin soil would have to be plowed to produce uninterruptedly as much nutritive substance as the vast sea produces without ever becoming exhausted! The constant and rapid increase of population, in connection with its constantly-increasing demand for food, makes a corresponding increase of the articles of food an absolute and urgent necessity. Agriculture is encroaching upon the pasture-grounds which are needed for stock-raising, and threatens to make meat still more expensive than it is at present. For this reason it seems the part of true wisdom to benefit mankind by supplementing the insufficient harvests of the fields by the harvests of the watery empire."

In this connection Dr. von Scherzer in his lecture gave a vast number of highly-interesting facts, which deserve to be known in wider circles.

In Great Britain 120,000 men and 37,000 boats are engaged in the fisheries proper (not including the various manufactures of fishery products), and the capital invested in this maritime industry amounts to about 1,000,000,000 marks (\$238,000,000). The quantity of fish annually caught in British waters amounts to about 600,000 tons, so that on an average every fisherman annually catches 5 tons of fish. At Billingsgate, the famous London fish-market, about 800,000 pounds of fresh fish are sold every day, which as to nutritive matter corresponds

* *Die Bewirthschaftung des Meeres.* In *Leipziger Tageblatt und Anzeiger.* Leipzig, March 13, 1884. Translated from the German by HERMAN JACOBSON.

to about 1,000 head of cattle. The annual total value of the British sea-fisheries is 500,000,000 marks (\$119,000,000).

Norway, with its unfavorable climate and its small population of about 1,800,000, annually exports 50,000,000 marks' worth of fishery products (\$11,900,000), which does not include the amount consumed at home, valued at from 15,000,000 to 20,000,000 marks (\$3,570,000 to \$4,760,000).

France employs 22,000 boats with 80,000 men in the sea-fisheries proper, and 46,000 persons (mostly women and children) in the coast-fisheries, the total yield amounting in value to 70,000,000 marks (\$16,660,000).

Italy's harvest of the sea annually amounts to 40,000,000 marks (\$9,520,000); and Russia's annual harvest from the sea-fisheries alone amounts to 70,000,000 marks (\$16,660,000).

The German Empire, on the other hand, and the Austro-Hungarian Empire, whose combined population is about one-fourth of the entire population of Europe, and whose coasts are washed by the waters of three seas rich in fish, have as yet done but little towards the cultivation of the sea, and towards gathering in the harvests which it affords to any one who stretches out his hands. According to official statistics the entire German coast states have not more than 30 large fishing establishments, employing about 300 persons, while the small establishments number 10,700, employing about 14,000 persons, making an average of hardly $1\frac{1}{2}$ persons to each establishment. This state of affairs can scarcely be considered satisfactory, considering the fact that Hamburg, Bremen, Lubeck, Hanover, Schleswig-Holstein, the two Mecklenburgs, Oldenburg, and finally Prussia, with its long coast line from Stralsund to Memel, offer numerous opportunities for maritime enterprise. Unfortunately there are hardly any exact and special data as regards the annual result of the German sea-fisheries. Even the voluminous and expensive official report of the Berlin International Fishery Exposition of 1880 does not give the desired information. From various commercial reports we gather the fact that the entire quantity of products of the sea imported into Germany in 1882 represented a value of 77,000,000 marks (\$18,326,000), including 52,800,000 marks' (\$12,566,400) worth of salt herring! But it is not stated in these reports how much of this quantity was imported by foreign fishermen in vessels sailing under foreign flags.

Even in such a specifically German ocean as the North Sea we find but comparatively few German fishing vessels, while the English, Dutch, Danes, Swedes, and Norwegians enrich themselves from this sea, and thereby also increase their naval strength. The annual result of the Austrian sea-fisheries, which employ about 9,400 persons and 2,900 boats, scarcely reaches 4,000,000 marks (\$952,000), and therefore bears no proportion to the wealth of fish contained in the Adriatic, and to a coast line extending for more than 2,600 nautical miles.

After Dr. von Scherzer had given an interesting sketch of the vast extent of the fisheries of some countries outside of Europe, especially in the United States, accompanied by some characteristic illustrations of the most important treasures of the watery kingdom, he passed from the sea-fisheries to the fresh-water fisheries in rivers, ponds, and lakes, and gave a vivid description of the vast and truly beneficent efforts for improving the fisheries, made by the United States Government, efforts which have been crowned with the most astonishing and brilliant results. In this respect Prof. Spencer F. Baird, the distinguished ichthyologist and director of the world-renowned Smithsonian Institution at Washington, which, under the modest motto, "to diffuse knowledge among men," has done so much for science and accomplished such great results, has, by his wise and extensive measures, given a great and healthy impetus to artificial fish-culture, and has in these efforts been supported most liberally by his Government, which, during the years 1871 to 1879, has appropriated no less than \$1,306,000 for this useful purpose.

From the almost overwhelming mass of statistical data and instructive information, which kept the attention of the audience till the end of the lecture, we will quote only the following as showing the vast importance of the cultivation of the sea. The daily quantity of fish food consumed per head of the population is: In London, one-seventh pound; in Paris, one-half pound; in Berlin, one-fortieth pound; in Vienna, one four-hundredth pound. This comparatively small quantity in the German cities indicates a neglect in the matter of utilizing the vast treasures of the sea as food for the masses, for recent scientific investigations have shown that one hundred parts of fish-flesh contain 12 or 13 per cent of blood and strength-producing matter, therefore only 5 per cent less than beef, and 4 or 5 per cent more than wheat bread.

One pound of beef costs, in Leipsic, from 70 to 75 pfennige (about 16 to 17½ cents), including a great many bones (for the butchers of all civilized nations have made the custom of the so-called "throwing in" of the bones an economical principle), while one pound of codfish, even at the retail price, only costs 20 pfennige (4½ cents).

"All that is needed for supplying the great masses of our population all the year round with a cheap, well-flavored, and wholesome article of fish-food is to cultivate our water area in a suitable and rational manner, to improve our means of communication, and to reorganize our local markets."

The large audience rewarded the lecturer by loud and long-continued applause. Dr. von Scherzer stated that he would gladly comply with the wish of the chairman and publish a full report of his lecture, thereby making it accessible to a larger circle.

LEIPSIC, GERMANY, *March 12, 1884.*