

or "nail bed" is lost the nail does not again grow out, so in the case of the fish, if the entire investment of the scale, both internally and externally, was removed the latter would not be formed again.

This observation has some slight practical value, since in the transportation of young carp it frequently happens that the scales which, as in many fishes, are not firmly embedded in the superficial layers of the skin, are accidentally removed in handling, even when considerable care is exercised, to the apparent injury of the individuals. If it is true that under ordinary circumstances scales which have been lost without impairing the tissue from which they have been formed are again produced in the situation and of the same size as the scales which have been removed, then it is evident that such an injury is not very serious, even if not desirable, and that it will not very greatly interfere with the growth and health of the young fish.

WASHINGTON, D. C., *July 25, 1884.*

172.—THE STURGEON FISHERY.

By **H. C. HOVEY.**

In the month of May, when sturgeon most abound, the market is usually supplied with other and choicer varieties of fish. Hence, until recently, this really valuable food-fish has been neglected and its commercial importance underestimated. This difficulty has been met and overcome by the enterprise of New York packers. The process consists in placing the sturgeon, as soon as caught and dressed, in a large freezer, where, by a patented method, they are frozen solid as they lie in boxes. This process is so perfected in the works at Salem, N. J., that 125 sturgeon, averaging 85 pounds each when dressed, can be frozen every seven hours. The fish are afterwards taken out of the boxes and stored in large rooms, through the center of which a freezing apparatus extends which is charged anew every day. By this means the fish can be kept for months until they come into demand.

The sturgeon range from Georgia, in winter, to Saint John, N. B., in summer, and are followed up in their season by men expert in their capture. Large gill-nets are used in this business, each about 200 fathoms long and with meshes a foot in size.

The Delaware River is the principal field of operation. Sturgeon enter this stream about the 22d of May, and in such immense numbers that nets about a quarter length have to be used, larger ones being at that time unmanageable. Mr. Blackson, an experienced fisherman, tells me that he has seen them so abundant that his net would sink with their weight as soon as it was thrown out. The average catch per net is from 25 to 30 fish apiece at each cast. This lasts about two weeks. The sturgeon move steadily up-stream towards the head of the

river, and then suddenly disappear about the 10th of June, after which they must be sought elsewhere. How they get out of the river without being caught is a mystery. All that the fishermen know about it is, that one day they are busy catching fish and the next all their nets are empty.

The boats used in this business are all constructed on the same plan; about 24 feet keel, 7 or 8 feet beam, capable of carrying about 30 sturgeon apiece. A boat load of big ones looks, oddly enough, like a load of small logs.

The flesh of the sturgeon, as is well-known, is rather coarse and oily; and, as much depends on its right preparation for the table, we took some pains to inquire how it is cooked by the wives of the fishermen themselves, who ought to know as well as anybody, seeing that it constitutes a staple article of their diet. From several methods recommended, we give the two that seem the most promising:

The first method is to cut the flesh into slices and parboil them to get rid of the superfluous oil, and then fry them in a thin batter.

The second method is to cut up the meat into squares, 2 inches thick, which are to be thoroughly boiled, and then pickled for two days in spiced vinegar, after which they are ready for eating, and are considered excellent by the fishermen.

The usual way of preparing sturgeon for market, however, is by smoking. Strips an inch or two thick are put through a pickling process, then hung on hooks over slow fire of corncobs or sawdust of hard wood. After thus smoking for a single night they are ready to be shipped to any part of the country.

The preparation of caviare is an important part of the business. While this is not yet in as general use in this country as in Russia and other parts of Europe, where it is in so high esteem that no repast is served without it, it is coming into favor, especially in the Western and Southern States. There are two sorts of caviare, the soft and the hard, the latter being worth about twice as much as the former. The value of the best hard caviare in the South, early in the spring, is said to be from 15 to 20 cents a pound.

In order to make the best article, it is necessary to strip the roe from the sturgeon as soon as possible after the fish has been caught. Before being dried, it is rubbed through a coarse sieve to break the eggs apart, and to free them from the membranous tissue. Next, the roe is thoroughly salted, after which it stands a certain length of time. Then it is emptied into fine sieves, where it remains till it is so dry as to roll like shot. The finished caviare is packed in casks previously lined with napkin linen, each layer being salted with fine table salt. Each keg holds about 150 pounds. With proper care, the caviare may be kept for a year or longer. For the trade it is often canned like fruit, in which condition it will stand transportation to warm countries and will keep an indefinite length of time. It may be eaten as put up

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.

SCIENTIFIC AMERICAN, July 26, 1883.

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.