

the piles of the wharves, shells along the beach and on the beds, and oysters, without finding any young of this year's growth, he thinks it possible that the failure of the experiment was due to conditions and influences beyond our control rather than to any inherent defect in the apparatus. Coupling the absence of any "set" about Hampton Roads, with the difficulty we experienced all summer in securing the fertilization of the eggs, it is possible that Dr. Brooks is correct in his opinion. Certainly the oysters did not die for want of food, as when from four to five weeks old they were in a healthy condition, with full stomachs and receiving an abundant supply of water.

I much regret that we should again have failed both in producing young oysters and in gaining additional information of biological interest. We have, however, discovered a method by which food can be supplied the oysters in unlimited quantities, which is a considerable advance, and may lead to the solution of the problem in the future.

At my request Dr. Brooks has stored the troughs with the apparatus and furniture of the Johns Hopkins laboratory at Hampton, so that they may be readily available for next summer should you consider it advisable to continue experimenting.

NORTH DUNBARTON, N. H., *September 13, 1883.*

178.—THE OYSTER AS A POPULAR ARTICLE OF FOOD IN NORTH AMERICA.*

By CARL RUMPF,

Member of the German Parliament.

[Read at the meeting of the German Fishery Association, March 8, 1884.]

Accidentally I learned last year, partly from the president of the association and partly from the published reports of the association, that after all attempts to transplant the North Sea oysters to the coasts of the Baltic had failed, the same failure had to be chronicled as regards the efforts to transplant to the Baltic the North American oyster (*Ostrea virginica*). The reasons why none of these oysters have propagated in the Baltic have been thoroughly investigated by Professor Möbius, of Kiel; and it has been ascertained that the failure was owing to two causes, viz., the smaller degree of saltness of the water (in the North Sea and on the coasts of the United States, 2½ to 3 per cent; in the Baltic only 1.3 to 1.5 per cent), and the colder temperature generally prevailing during a considerable part of the winter.

Further investigations of the German Fishery Association directed attention to more northerly districts of the American continent; and

* *Ueber die Bedeutung der Austern für Volksernährung in Nord-Amerika.* From Circular No. 3, 1884, of the German Fishery Association, Berlin, April 4, 1884. Translated from the German by HERMAN JACOBSON.

through the kind assistance of the Canadian Government it was proved by actual observations made near Prince Edward Island, not far from the mouth of the Saint Lawrence, relative to the saltness of those coast waters and to other circumstances, that the oysters in those regions, which are very plentiful, are for four months out of the year exposed to the most severe cold (often causing these waters to be covered with ice), and that the natural conditions greatly resembled those of the Baltic. These observations have made me feel confident that an attempt to transplant oysters from Prince Edward Island to the Baltic would prove successful; and I have therefore taken all the necessary steps to have the experiment made this spring.

I took up this matter with a great degree of interest, as a ten years' sojourn in the United States had given me the opportunity to learn the great importance of oyster-culture, not merely to supply the tables of the rich, but also to produce a popular article of food for the masses, which the oyster has become in a constantly growing degree. As far as my statistical information goes, the United States during last year consumed at least 30,000,000 bushels of oysters (200 oysters to the bushel). New York alone consumed about 20,000 bushels per day, making the enormous quantity of 4,000,000 oysters per day. This does not include the clams, the annual consumption of which in the United States I estimate to be at least 8,000,000 bushels.

The clams are bivalves, having very thick shells and resembling the oyster. They bury themselves in the sand of the coast, and can, when the tide is down, be dug out with very little trouble, as the places where clams are hid under the sand can easily be recognized by the narrow channel left in the track of the clam, so as to keep its connection with the sea water. Many people prefer clams to oysters, and next spring I intend to offer a chance for making an experiment on a large scale to acclimatize them with us; that is, I shall place a quantity of clams at the disposal of the fishery association for distribution along the coast of North Sea. The coast of the Baltic is not suitable for the purpose, because the less degree of saltness would be unfavorable to propagation.

Oysters, as well as clams, have in the United States actually become articles of food for the masses, including even the poorer classes. Three causes have principally contributed towards this result:

1. Oysters and clams are cheap articles of food in America.
2. The way they are prepared, even among the poorer classes, is exceedingly simple.
3. The poor classes in America entirely agree with our epicures that oysters and clams are a great delicacy.

Of the cheapness of the oysters in America I shall immediately convince you, when I state that for the larger number of consumers, especially the laboring classes, the oysters are taken from the shell as soon as caught, and are, as in New York, taken in barrels to the markets during the night, and are there sold by the liter [quart]. Such a liter

varies in price from 5 to 10 cents, and therefore costs on an average 30 German pfennige. To this are added 2 quarts of milk, at 12 pfennige = 24 pfennige, some salt, pepper, &c., and broken crackers to the value of 30 pfennige, and we get a most excellent soup or stew, enough for four persons (costing about 25 cents).

The second cause, the easy mode of preparing the oysters, is self-evident, for it takes only about ten minutes to cook such a soup, and this is done simply and cheaply on the small oil-stoves which are so generally used in America. Unmarried laborers find in the common restaurants, for the trifling sum of five cents, an oyster stew which is sufficient to satisfy their hunger.

As regards the third point, I can testify from my own experience that an oyster stew prepared in this manner is a most delicious dish, highly relished even in the best circles.

You are probably acquainted with the fact that in the United States oysters are eaten prepared in many different ways—stewed, roasted, broiled, pickled, &c.—and I am firmly convinced that these various methods of preparing oysters would soon become popular in Germany if oysters would cease to be a mere luxury and be sold cheaply everywhere.

Permit me to embrace this opportunity to remind you of another point, and one which awakens in me feelings of chagrin, viz., the fact that more than 6,000,000 marks [\$1,428,000] of German money annually goes to foreign countries for oysters imported by us. This financial reason ought to compel us to increase our own oyster-culture, if possible.

After the necessary beds of oyster shells, which form the best foundation for oysters, have been prepared in various places along the coast of the Baltic pointed out as favorable by Professor Möbius, I shall furnish a large quantity of both kinds of Canadian oysters—the long one (*Ostrea canadensis*) and the round one (*Ostrea edulis*)—to be planted in the places indicated, hoping that they may become the starting-points for the constant and permanent spreading of these valuable shell-fish. If we succeed in transplanting oyster-culture to the Baltic, there will be no limit to the fertility and the spreading of the oysters, for, according to Brooks, a full-grown oyster produces 9,000,000 eggs. It is to be hoped that the association will finally succeed in developing this small seed-grain to that point to which it has grown in the United States, viz., to furnish a cheap and palatable article of food for the masses.

On the continent of Europe we are constantly making efforts to render our soil more fertile; and we should endeavor to do the same not only with regard to our rivers and brooks, but also as regards the sea, and, by the experiments to which I have referred, make ourselves independent of foreign countries as regards the production of oysters.

BERLIN, GERMANY, *March 8, 1884.*