

future. The success of the Gloucester, Wood's Hall, and Ten Pound Island hatcheries, is now a matter of history. Many millions of codfish have been hatched and "planted," and the benefit is already felt in the fishing grounds off Cape Ann, and at Nantucket Shoals, where we are told, on the best authority, "millions of these species, of one and two years' growth, are reported as being on the fishing grounds near the coast, while young cod have been taken in traps and otherwise, where the oldest fishermen have no recollection of seeing them before. The restocking of the shore grounds is proving a bonanza to the local fishermen, their catches being greatly increased." The shad fishery from Connecticut to North Carolina is reported to have increased twenty-five per cent in five years, in consequence of artificial propagation.

Not less remarkable has been the success of cod-hatching in Norway, where it was carried on in the Flodevig hatchery simultaneously with the work in the United States, and with equal skill and perseverance. In the spring of 1891, 620 litres of cod-spawn were dealt with, representing 279,000,000 eggs. At a part of the Norwegian coast between Sornskill and Hambo, 166,500,000 cod-fry were planted, in addition to 26,000,000 in other places. From 1884 till 1890, there were hatched in all 140,000,000 ova. As a consequence of these satisfactory results, the hatchery at Flodevig has been doubled in size, and a large pond has been constructed in which the cod are placed and allowed to spawn in the natural way, instead of undergoing the "stripping" process as formerly. The eggs when fertilized by contact with the milt in the pond, are skimmed off and placed in the hatching boxes. By this improved method, there is a gain of from twenty to forty per cent in the number of eggs hatched, the injury to the ova through handling the fish being avoided.

The confidence of the Norwegians in this method of increasing their sea-fisheries may be judged from the fact that this year (1892) they are engaged in the erection of another cod-hatchery at Dobak, sixteen miles from Christiania, sufficiently large to turn out four hundred millions of cod-fry annually. This is done with the view of restocking the Christiania Fiord, where there has been a great falling off of late in their number; and the supply of fresh cod to the markets of the capital and other towns on the Fiord, has been getting shorter every year, and the prices for codfish exceedingly high. In connection with this hatchery there will be erected a Biological station, where students from the University of Christiania will have an opportunity of studying, and of obtaining a practical and scientific knowledge of Ichthyology and Marine Biology, in all their branches, and where fresh specimens of marine fauna will be constantly on hand. This is not all. Another hatchery, with a fishing school attached, is in course of erection at Bodo, and will be in full operation in 1893. As Bodo is only a short distance (ten miles) from the Lofoden Islands, where the greatest of the Norwegian cod-fisheries is carried on in winter and early spring, it will be an easy matter to furnish the hatchery at Bodo with spawn from Lofoden, as all the fish caught there are spawning fish.

When we compare the work done in the United States, Canada and Norway, in connection with fish-culture and the improvement of the fisheries, with similar work in Great Britain, the contrast is surprising. In all matters relating to fish and fisheries, Britain is far behind the countries named. At one of the Fishery Conferences, during the London Exhibition of 1883, Professor Huxley remarked that "if they were going to deal seriously with the sea-fisheries" (of England) "and not let them take care of themselves, as they had done for the last thousand years or so, they had a very considerable job before