of the Midland Counties Fish Culture Establishment, but we have not heard its fate. In Japan the subject of fish culture appears to be receiving considerable attention, both from the Government and private persons. Its waters are said to be peculiarly well adapted for aquaculture, and the young fish are fed on wheat, flour and the chrysalides of silk worms.

Additional interest in the means of transportation of fish has recently been aroused by an "invention" of an American gentleman, who thinks this can be done successfully by hermetically sealing them in vessels partly filled with water. As it is stated that tests of the invention have been made by one of the professors on the United States Fish Commission the matter would appear to have received some serious consideration, but it does not wear a likely look. It would, perhaps, be too much to say that we shall never attain to the means of transferring fish of any age or size from localities widely apart—probably by some adaptation of the compression of air—and no invention could be more valuable; but it must, we fear, be admitted that as yet we have had no approach to this.

With regard to the all-important matter of feeding of fish kept in confinement for domestic purposes, or in nurseries, till they are fit to defend themselves from all attacks, whether of their natural enemies or foes of their own species, it may be best to refer the reader to the various manuals on the subject. But here it may be briefly stated that after the young fish have passed the alevin stage, till which period they require no subsistence but that of the sac or ova from which they have sprung, they are in the nest or fry stage generally fed several times a day with finely divided yolk of egg; afterwards with liver and milk curd; and still later with vegetable, or meat or shellfish diet, such as vermicelli, finely triturated raw horseflesh or clams, or with any other available food of similar character. At Howietoun, where several millions of ova are annually hatched, and a proportionate number of fish of all ages have to be fed, the flesh of a considerable number of horses, and a very large quantity of shell fish are annually consumed—the latter being given to the large stud fish. Similar provision for feeding is made at every fish farm. The writer, having access neither to horse-flesh nor shell-fish, has found venison a very good substitute when finely divided. Besides this, the fish depend largely on natural supplies of food both at the bottom and surface of the water, and much may be done to augment and improve these natural supplies by the selection of sites for ponds supplied by water rich in natural food for fish, and by a judicious stocking of the ponds with aquatic plants suitable for fish rearing.

The preceding remarks have related chiefly to "Private Fish Culture" and to its bearings on domestic economy, and the stocking of private fisheries for purposes of sport. This is what may be called the recreative and minor side of the case. The political economist would regard it as the mere elements or outer rim of a great question laden with potential benefits to the great consuming public of the most important kind. Let us now try to set forth what is understood by "Public Fish Culture," and what its present position is both at home and abroad.

What is here signified by "Public Fish Culture" is the cultivation of food fishes carried on for the public needs at the public expense. Its legitimate sphere is the adequate stocking of public waters with valuable fish, and the maintenance of the same—in which fisheries the public interest is universal, and no individual or private rights exist. The scope of acquaculture is, it should be said, not restricted to food fishes, but, in the words of one of its ablest exponents, "is now understood to signify the exploitation of all products of sea, lake and river, including the capture of whales, turtles, pearls, corals and sponges." The present intention is, however, to limit the application of these remarks to such products of the ocean, lakes, and rivers as are really valuable for human food. Doubtless, the whale is a most precious animal, whose preservation is most desirable. Whale oil is a very valuable commodity, and whalebone is nearly invaluable, selling, as it does at the present time, at over £2,000 per ton. Every one knows how precious to the epicure is the turtle; how beautiful and valuable are pearls and corals; and how useful are sponges. But these, not being regarded as necessary wants of the public, may here be left out of our account. We must, however, here allude for a moment to one of the latest feats of aquaculture in connection with sponges, which are now being successfully raised by means of cuttings, just as land plants are. A new industry, to which the Austro-Hungarian Government has extended its protection, has been created on the coast of Dalmatia by this method, first discovered by Professor Oscar Schmidt, of the University of Gratz, of multiplying sponges by breaking off and transplanting pieces of living sponge. Attempts have been made to transplant live adult sponges from the bottom of one sea to that of another, but, so far, the success of this experiment has not been encouraging.

Notwithstanding the interest in commercial fisheries which was aroused by the International Fisheries Exhibitions held in Berlin in 1880, in Edinburgh in 1882, and in London in 1883, it is still improbable that more than a small minority of the British public at least ever associated the ocean with the land as a field fitted and prepared for a great cultivation of food. And yet it really is so. There are in the great sea expanses of unexplored and virgin water capable of yielding prodigious stores of fish food, just as there still are on the land immense tracts of unpopulated country, now mere wastes, but capable by cultivation of abounding returns of fruits of the earth. When the creative fiat went forth man was awarded dominion over the sea and all therein, just as much as over the land; but just as he must win the gains of the soil by the sweat of his brow, so must he reclaim the harvest of the sea by unceasing and intelligent methods of labour.

Further, all or nearly all the conditions and methods of land cultivation have their analogues in the economic cultivation of the waters. The sounds and shoals and banks in the ocean are the great fish farms; the ocean-going fishing craft are the necessary farm offices; and the various appliances of fish capture are the complements of our scientific implements of land husbandry. Many foreign substances are in the present day applied to the soil for maintaining or renovating its fertility, and we do, or should do, something like this for our fish farms by the cultivation of *algæ* and other forms of aquatic vegetation upon which breed and live those minute organisms which so largely contribute to the support of fish life. When with regard to the land reparative measures are neglected, its fruitful elements soon become exhausted. We can easily do the same to our ocean food possessions. We have too often, alas, done so already by a long course of improvident and wasteful reaping without adequate nursing or building up By judicious interbreeding and preservation of the fittest we have enormously improved our agricultural stock; and by a like process, though not yet to an equal extent, we have done the same with some kinds of aquacultural stock, and have demonstrated that similar treatment may be extended to all. Scientific and provident farming ashore is