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THE

HERRING FISHERIES.

BY

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[*PRIZE ESSAY.*]

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THE increasing interest shown year after year in all matters connected with our fisheries is a sign of the times that can neither be overlooked nor under-valued. It is practically a recantation of the doctrine that the subject was one merely concerning professors and students of natural history, and an acknowledgment that, considered with reference to British industry and commerce, it is a matter of paramount importance. One of the most interesting divisions of the fisheries is the herring fishery. It is interesting, not only on account of the large number of persons which it employs, and its influence on the country financially, but on account of the natural history of the herring, of the theories which have been advanced and overthrown respecting its migration, and of the veil of mystery which for a long time hid the secret of its reproduction from human understanding. It is obvious that whatever tends to elucidate and clear up disputed points in its natural history must react in a beneficial manner commercially. The record of the last few years has been far from being a blank page in this respect; but perhaps, for the sake of completeness, it will be well to state a few of the earlier facts ascertained of the natural history of the herring.

Let us consider first, then, the senses of the herring. They have been the subject of much difference of opinion, as indeed they have been concerning all fish. Yet the organs, though of course very minute, are so distinctly formed that we cannot avoid coming to the conclusion that they were meant to be used. The tongue, for instance, is very small, but there is no doubt about a tongue being there; and what is a tongue there for if not to be used? It is true that the senses of taste and smell of some of our fish are not always very correct, especially of those who prefer the neighbourhood of sewers and drains; but they are the exceptions which prove the rule. Then, as regards hearing, the balance of evidence seems to be in favour of their being endowed with that sense. We need not question whether they are able to see or not.

One of the most important points to be ascertained with certainty is—what constitutes the chief food of the herring? There has been much diversity of opinion on this matter; but it appears to be pretty clear that the herring does not feed upon one kind of food. The preference seems to be for small crustacea, although worms and the eggs of fishes have been found in their stomachs, and even young herrings. It will thus be seen that the cultivation of crustacea has a very important bearing on the prosperity of the fisheries; for we cannot hope to bring the latter to a high degree of efficiency if the food supply is not promoted in a corresponding degree. It is a noticeable fact that herrings caught in lochs and bays are superior in quality to those caught on the open sea-coast. What is the reason of this? Is it that the food is more abundant or more suitable? It is a point worth investigation.

The next important point to be solved is the settlement of the period of the year when they spawn. On the satis-

factory solution of this problem the very existence of the fishery greatly depends. If we do not know when to look for the fish, we cannot catch them; therefore anything that adds to our knowledge on this point is a very material assistance. A great many of our eminent men are of opinion that the herring spawns twice a year. We know, however, for certain that herrings appear at different times at different places; and the investigations of the last few years have led us to believe that the object of their appearance off the coasts is for the operation of spawning. For instance, at Wick they appear between July and September; at Eyemouth between June and September; at Arran between July and November; and at Thurso as early as May. In the Moray Firth the time is from June to September, but in the Firth of Forth it is from November to March. [It may be noted incidentally that the Scotch fishery of last year was very successful.] In England we find the herrings at Yarmouth between June and November, off Cornwall in August and September, off Kent in October and November, and off Yorkshire between July and September. In Ireland they are fished at Galway in September; off Kerry between January and March; and in the Irish Channel between June and November. Taken as a general rule, we may say that the winter herring generally spawns in February and March, and the summer—or autumn?—herring in September and October.

It is an easy transition from the subject of their spawning time to the subject of their migration, or supposed migration. There was a time—and we should not have to go back very far—when the theory of their migration from the Arctic regions was most stoutly maintained. We know better now. The interesting story was to the effect that the normal abode of the herrings was in the Arctic seas,

and that they made periodical visits to the south (led by an advanced guard of one or two fishes!) for the purpose of spawning. Little was wanting to complete this dramatic story. We knew that the herrings usually lived in the North; we knew that they sometimes came to the south; we knew that they divided off the north of Scotland, one corps going to the right and the other to the left,—all that was wanted were the herrings themselves. There is not, however, a shadow of a doubt about our previous belief being a huge mistake. The herring inhabits the deep water round our coasts all the year round, and comes periodically towards the shore to propagate its kind. The chief argument that has been set up in favour of this statement is, that year after year, and at the same time of the year, we always find the same kind of herring in the same place. It is therefore a very reasonable assumption that they are in the neighbourhood all the year round. Besides, herrings caught in the extreme north of Scotland are inferior and lean compared to those caught at the same time farther south, which should not be the condition of herrings that are just about to spawn. Whether there are any who still believe in the migration of the herrings from the Polar regions—and we would remind them that they must also believe in the advanced guard story, too—matters little; it is enough that a very large number of persons have long since abandoned it and accepted the other theory.

The next point on which we would willingly have more information is—what period elapses between the time of depositing the spawn and the appearance of the young fish?

This is a matter very difficult to ascertain, chiefly from the difficulty experienced in observing the operation; but we may take it that the eggs are converted into fish in a fortnight or three weeks. In about nine weeks' time the

fish are 3 or 4 inches long, and are full-grown herrings in about a year and a half. Any information on the latter point would also be extremely useful. It would dissipate some doubts as to when the operation of spawning is performed for the first time by the young herring.

After all, it must be confessed with regret that our knowledge of the natural history of the herring is exceedingly limited. It has been thought that we may learn a good deal from those whose vocation it is to catch them. That, however, is very far from being the case. The ignorance among the fishermen of the habits of the herring is certainly not very flattering to our insular pride. That it betrays a want of observation on their part, or incapacity to connect their observations with their occupation, cannot be denied. Perhaps the remedy might be found in erecting schools for fisher-boys, where the young generation might learn something of elementary Natural History that might act as an incentive to further observation of animated nature. The aim of all knowledge should be to apply it to the affairs of our every-day life.

A study of the fisheries of other countries is always interesting, and often instructive. We may in this way often learn methods of capture and curing, that may be profitably followed by ourselves; and we may also gather fresh facts concerning the natural history of the fish. It is but fitting to commence with a reference to the Dutch fisheries. We cannot help feeling a respect and admiration for a people who once possessed the finest fisheries in the world. We recall with envy the picture of their former superiority, a superiority which has long since passed away. The naturalists tell us that their superiority was owing to their fishing on our coasts in our absence on other matters. Whether that was the case or not we cannot say; but

even supposing that it was, it looks as if the Dutch still deserved the palm for superior strategy. While, however, we willingly accord whatever praise is due to the Dutch, we are far from endorsing the extravagant eulogy that many have thought fit to bestow on them. The Dutch fishermen of old acquired, and for a long time maintained, their proud position by their method of curing herrings. It is somewhat strange that, great as England was in many respects at the meridian of Dutch prosperity, she should have been so far behind in this matter. Probably those great events of the time of Elizabeth were themselves the cause. The people were too much occupied by foreign affairs to attend to humbler matters at home. The Dutch fishermen kept their secrets pretty much to themselves ; but it will probably be found that they owed much of their success to their curing the herrings immediately they were hauled up from the sea.

The French fishery is chiefly remarkable for the cure of sprats (about which we shall have something more to say presently) in oil.

The Norwegian fishery is noted for various methods of smoking the young herring.

A very interesting mode of fishing under difficulties is practised in Russia. Owing to the severe climate of that country, and to the consequent freezing of the water, the fishing industry is much curtailed ; but the fishermen manage to secure a good many fish by making lines of holes in the ice, and inserting their nets in them.

It may not be inappropriate to say something here about the whitebait, the sprat, and the pilchard. As regards the whitebait, the question that chiefly interests us is whether it is the young of the herring or not. For a long time naturalists held that it was not ; and there is a good deal

that might seem to support that view. The head of the whitebait was thought to differ slightly from the head of the herring; the comparative length of the head to the rest of the body was supposed to differ, and the body itself was flatter than the herring, and lighter in colour. But there is an argument that completely over-rules and destroys these minor objections, viz. that the whitebait is never found with milt or roe. This, to our mind, taken in conjunction with the fact that large quantities are sometimes caught with herrings, demonstrates very clearly that the whitebait is the offspring of the herring. The length of the whitebait is between two and four inches, and, very rarely, five inches. It is very plentiful in the Firth of Forth, and in the Thames, and is sometimes found in the Clyde and other rivers.

The sprat is also an interesting fish. It has been accused of following the example of the whitebait; but, although it is remarkable that sprats are taken in large numbers with herrings, we will not, on our present knowledge, go so far as to say that they are the offspring of the herring. There is some relationship between the two. However, the fact of sprats having milt and roe at the proper spawning-time seems to show that they are not the young of the herring. The sprat fishery commences in November, and lasts till February or March. The principal coasts on which it is prosecuted are Norfolk, Suffolk, Essex, and Kent.

The pilchard resembles the herring in some respects, although there are important differences both in the formation and in the habits of the two. For instance, the scales of the pilchard are larger than those of the herring. Again, the pilchard will rest in a horizontal position if suspended by the dorsal fin; while the herring dips towards the head.

Further, the pilchard has an exceedingly limited distribution, while the herring has a very wide distribution. The pilchard fishery generally commences about July, and continues to December. Like the herring, the pilchard is a migratory fish, lives in the deep water, and approaches the shores to spawn. The coasts that it most frequents are those of Devon and Cornwall; in fact, we may say that the fishery is confined to those counties, and the fish appear in great numbers.

There is yet one other digression that we would make. Scotland has the honour of being the home of two very puzzling fish, namely, the powan of Loch Lomond and the vendace of Lochmaben. Careful observation has "almost persuaded" naturalists to believe these fish to be descendants of herrings; and the reason they assign for the existence of the fish in fresh water is that the monks of old, who, it is to be presumed, lived largely on fish, brought them there. The habits of the fish certainly very much resemble those of herrings.

We will now consider the question of the herring brand. A very slight examination of the subject will suffice to show that the system is opposed to the principles that should regulate trade. It is true the brand is not compulsory, which, while robbing it of many objections, really amounts to very little, because every large curer is bound to use it for the simple reason that everybody else does. The brand, however, is very useful to small curers, because it gives them a chance of competing with the large curers. But it is a distinct form of State interference—an interference in the sale of an article of extensive consumption. What are the reasons that can sanction such an arrangement? Why are not our potatoes, and cabbages, and boots, and chairs and tables branded? The chief reason that can be

urged in favour of the continuance of the brand is that it is convenient for foreign trade. The brand has been in existence for so many years that the buyers in foreign countries have learnt to regard it as a guarantee that they are not being cheated. Barrels bearing the Crown brand are never waiting for a buyer, and they are passed on from hand to hand with nearly as much convenience as paper money. We cannot deny, either, that the system greatly assists the people in their purchases by the rejection of inferior fish. It is best as a rule to choose for ourselves, but there are certain occasions when the judgment of a skilled officer is preferable to our own. In the next place, those whom the question most nearly affects are in favour of the continuance of the brand. If those who are most nearly concerned are content to pay the small fee for the brand to the Scotch Fishery Board, it certainly seems unwise and unnecessary to disturb a system that has worked so well.

We have here, then, a remarkable instance of a system undoubtedly wrong in principle working well in practice. It would seem that our objects have been accomplished by means which are open to question. Nevertheless, although, in the circumstances, we would wish to see this particular system maintained, we strongly disapprove of it for other articles. No fresh system should be *started* on these principles. It may be urged that a fresh system would become as successful as this has become. We think not. This system was instituted when the fishery was comparatively undeveloped, and therefore, having grown with it, the system has become, as it were, a part of the fishery. But to start a similar system now, in connection with an article of extensive use, would be a decided mistake. We may depend upon it that the less we have of Government

interference the better it will be for us. There are, of course, a few matters, such as the regulation of cab-fares, that are, for simple convenience, best done by the Government. But it is a dangerous principle. It has led to tyranny in the past, and it may lead to tyranny in the future. The times have passed—we trust for ever—when justice was openly bought and sold, and when monopolies were bartered for political objects. We cannot forget those days, never to be recalled without a feeling of shame, when one class was raised by the degradation of another. It is a dark page in our history; but it is, nevertheless, one that must be guarded against for the future. If ever the time should come when Englishmen will submit to all trade being arrested by imposts and fetters, we confess that we should have little hope for the future of England. Are we to be treated as children—as persons who are incapable of judging for themselves? No; the noblest aim of man should be to think and act for himself, to exercise the intellect with which God has endowed him above every other creature, and to contribute as far as in him lays to the sum of human happiness.

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