THE FISH AND FISHERIES OF MARYLAND.

BY A. F. GEORGE.

No other State in the Union, in proportion to its area, has a greater coast line than Maryland. From a bulletin of the United States Commission published in 1894 we find that the States of New York, Pennsylvania, Delaware, Virginia, New Jersey and Maryland have an area of 159,635 square miles of which 7,635 square miles is water. Maryland, with one exception, the smallest of these States, has the largest water area of any mentioned—about 20 per cent of the entire surface of the State being water. New York has 1,550 square miles; Delaware, 90 square miles; New Jersey, 360 square miles; Pennsylvania, 230 square miles; Virginia, 2,325 square miles, and Maryland, 2,359 square miles. Other unassigned waters in Lower New York, Delaware and Raritan Bays, 720 square miles. The Chesapeake Bay, extending into the State for a distance of 120 miles, is from four to twenty miles wide and covers an area of 976 square miles. If we include its tributaries up to tide water we have an area of 2,359 square miles within the State. Then to this we add the inland rivers and mountain streams and we are not surprised to find the fish industry of Maryland to be one of the greatest in the country, occupying, as it does, a place in the front among the States engaged in the fishery industry. Nor are we surprised when the United States Fish Commission tell us that the fisheries of Maryland give employment to more than 41,000 persons, with an invested capital in 1890 of $7,649,904, having the largest fleet of vessels engaged in its fisheries and the most extensive packing and canning houses, while its fishing products, including shell fish, were valued at $6,019,165.

In each of eleven counties of the State there are more than one thousand persons employed in this important industry, Somerset county having the largest number engaged in fishing, larger in fact than any other county in the United States, with the possible exception of Essex county, Mass. Of the 23 counties of the State, sixteen of them border on important bodies of water—only one of which—Worcester—borders on

the ocean. The others on the Chesapeake Bay and the rivers tributary thereto.

The census of 1890 shows Maryland to rank first as to the number of people employed in the fish industry, second as to amount of capital invested and second as to the value of products. While the natural advantages which we possess over some of our sister States are those for which Marylanders should be thankful, we can also boast of being foremost in our unsurpassed natural opportunities for improving and multiplying our fisheries. Maryland may well feel proud of the grand fisheries which nature has lavished upon her with such a bountiful hand, but she should not rest satisfied until she greatly improves the vast opportunities she has by increasing these great resources to their utmost capacity, which we believe will be done in the very near future by the thrift and intelligence of her people.

Never before were our people so much interested in this important matter as now. Never before has the public press given so much space to this great question as during the present year, and when the people fully realize the vast opportunities which they possess to increase their wealth by fully developing the fish industry, then it will not be long until our State makes very rapid progress in this direction and the fisheries of Maryland will become the most important in the country. The amount of money appropriated by our State for the artificial propagation of fish is not near so large as the importance of the work demands, especially when we consider the large returns made for the amount invested, but we are expecting great advancement along this line in the very near future.

Prof. Baird, ex-United States Fish Commissioner, has made the statement "than one acre of water properly cared for will produce five times as much as an acre of land." If this is correct (and we have no reason to believe that he who was so well versed in these matters made a mistake when he made the above statement) then what great possibilities lie before the people of Maryland for the increase of their wealth, for the employment of still larger numbers of her people and the furnishing of great quantities of the best food fishes at moderate prices. The thing that is needed to be done to bring this about is to give the Fish Commission larger means to properly develop the fisheries, to propagate the best kind of food and game fishes in larger numbers and enforce proper laws for the sufficient protection of the same.

The rivers and inlets of Eastern and Southern Maryland furnish a large supply of the very best food fishes, while in the rivers and mountain streams of Western Maryland can be

found the bass, brook trout and rainbow trout. In Garrett county, which is the largest in area of any county of the State, there is fine trout fishing. There, nearly three thousand feet above the sea, you can find the beautiful speckled trout in its native element. In that county are more trout streams than in all the rest of the State combined. There brook trout have been caught twenty-three inches in length and weighing four pounds. There you can have the happiness and pleasure of angling for trout and bass which comes to every true disciple of Izaak Walton. The historic Potomac river, which is the southern boundary of the State, takes its rise up in these mountains and runs thence through some of the finest scenery in the country. This river furnishes an illustration of what can be done by stocking streams. Prior to 1853 there was no bass in the Potomac. In that year a lot of those fish were brought from Wheeling Creek, near Wheeling, West Va., in the tender of a B. & O. R. R. Co.'s locomotive and planted in the river. At the close of the war that river was one of the best bass streams in the United States and at this time there are certain parts where the excellent sport of catching large numbers of bass can be had. In 1870 some sportsmen of Pennsylvania successfully stocked several of their rivers with bass taken from the Potomac at Harper's Ferry, West Va. In the lower Potomac large numbers of shad are also taken; the annual catch being about 750,000. Among other important rivers we might name the Susquehanna, Patuxent, Pocomoke, St. Michaels, Choptank, Severn and several others in which there are important fisheries, giving employment to many of our people.

Among the fishes caught in our waters we mention the following, with their local names: Alewife or menhaden, blue fish, sheepshead, butter fish, crocus, sea bass, squeteague, spot, tautog, harvest fish, black bass, brook trout, rainbow trout, sea trout, shad, summer herring, croaker, Spanish mackerel, rock or striped bass, salt water chub, white perch, yellow perch, catfish and others.

The large variety and excellence of the food fishes of Maryland will compare favorably with those of any State in the Union. Of course in this short paper we do not intend to say anything of the diamond back terrapin and the Chesapeake oyster. It would require a longer and more elaborate paper than this one to describe their excellence.

Among our fisheries the shad takes first place. In 1880 the catch in Maryland was 1,074,121, valued at $140,326. In 1896 the shad catch of the Atlantic coast numbered 13,053,429, weighing 50,498,860 pounds and worth to the fishermen $1,651,443; of this amount Maryland furnished 1,541,059 shad,

weighing 5,541,499 pounds, valued at $166,551. The shad is our principal food fish, taking the lead both in quantity and quality. Before the artificial hatching of shad was introduced the supply was very limited but since that time there has been so much attention paid to this important work the supply has greatly increased. Capt. John Tyler, an old resident and fisherman upon the Manokin river, states that prior to 1885 shad were unknown in that river but after an interest was manifested in the artificial propagation of shad and the stocking of Manokin river they have greatly increased for the past ten years and are now being caught in large numbers. This has been the experience with all our rivers which have received proper attention in this direction. With increased interest in artificial propagation, the supply has increased from year to year. In some places where there was one fisherman catching a very small number, now there are ten, and the catch has increased greatly. In shad hatching we commence to strip the fish or take the spawn about April 1st, and continue as long as we can get ripe shad. It takes us from three to six days to hatch them. There is no doubt that had it not been for artificial hatching of shad they would now be almost as scarce as the diamond back terrapin. We have four shad hatching stations in Maryland operated by the State the past season from which 48 millions of shad were distributed. The United States Fish Commission also operates stations at Battery Island at the mouth of the Susquehanna and at Bryan's Point, below Washington, on the Potomac.

It has been well said: "In some respects the shad is the most remarkable of domesticated animals, for it is the only one which man has as yet learned to rear and to send out into the ocean in great flocks and herds to pasture upon its abundance and to come back again fat and nutritious to the place from which it was sent out." From this point of view, the maintenance of the shad fishery by man by the use of artificial means is one of the noble triumphs of human intelligence over nature.

The menhaden is not sold in our markets directly nor used for food by our people, although it is one of the most abundant fishes on the Atlantic coast. As a food for predaceous fishes the menhaden is an important fish and its commercial value is by no means small. The catch in the Chesapeake Bay has been in a single year 92,000,000 pounds of this fish, which yielded 214,000 gallons of oil worth $85,000; 105,000 tons of guano worth $210,000; 212,000 tons of compost worth $19,000, or a product in one year of $300,000. This fish is very abundant along the Atlantic coast from Cape Cod to Florida and has many local names. There are sixty establishments along the

Chesapeake for the manufacture of menhaden oil and fertilizers.

In the menhaden or alewife fisheries of the United States Maryland holds first place as to the number of fishermen employed, the amount of capital invested and the number of gill-nets, boats and traps. The number of the catch in the United States in 1896 was nearly 148,000,000, weighing 62,000,000 pounds and valued at $459,600. There are $26,000 invested in the alewife fisheries of Maryland. In 1896 17,667,315 pounds were taken, valued at $126,050, or more than one-fourth of the value of the entire catch of the United States.

The bay mackerel or Spanish mackerel, as it is often called, is known to our people as the bay mackerel. It is stated that many of our fishermen had never seen this fish prior to 1875. It is one of the choice food fishes of the nation. In 1880 Earl discovered that one of its chief breeding grounds was the Chesapeake Bay. It lays its eggs in the summer, each female depositing from 20,000 to 60,000 eggs. They are so small that there are 20,000 in a cubic inch. They float upon the surface of the water until hatched. The chief supply of our bay mackerel are caught with gill-nets or trapped in pounds.

We might say much more about the many other good fishes of Maryland: the perch, the bass, the trout, etc., but our paper is getting lengthy and we do not want to become tiresome. Many other varieties of choice and commercially valuable food fishes abound in our waters, famous as well for their extreme delicacy as for their abundance: the fine blue fish of the coast, the sea trout and striped bass, pike, white and yellow perch.

Too much cannot be said in praise of the Chesapeake Bay and the rivers of Maryland, of the great opportunities for development and for the increase of the wealth of our people from the fisheries.

We have these splendid natural resources, and we hope and believe that the time will soon come when Maryland shall take her proper place in the great work of the artificial propagation of fish.

Our Fish Commission is not so old as some, nor has it the means at command for investigation, research and experiment, which it needs, but we believe that in the near future the people of Maryland will fully realize the great and growing importance of this great work, and that all necessary money will be appropriated for the work of the Commission to give it the place its importance demands, and that the fisheries of our State will then be second to none among the great fish producing States of the Union; that then the large and valuable water area will be a far greater producer of wealth for our people than at the present time. We must have a great ad-

vancement in fish propagation and proper laws rigidly enforced for the protection of our valuable fisheries.

REMARKS FOLLOWING PAPER OF MR. GEORGE.

Mr. Dickerson: I would like to ask if you have any trout hatcheries?

Mr. George: There is one hatchery at Druid Hill Park, Baltimore, propagating brook trout and rainbow trout. We have put out more than five hundred thousand of these this season. We have also experimented with black bass.

Mr. Dickerson: When is your open season for trout?

Mr. George: We can catch them in April, May, June and July. The rest of the year is closed season.

Secretary Whitaker: Have you many trout streams in the State?

Mr. George: Yes, in western Maryland. Not many on the eastern shore.

Mr. Gunckel: I wish to state I have to return early this evening, and I would like to say that my home is at Toledo, Ohio, and any time any of you gentlemen are stopping in that little town I should be very glad indeed to have you call and see me. We have good fishing all around there and I will surprise you how I can catch fish. You gentlemen who have fished up in northern Michigan have your thousands of fish, but when you come there I will show you how you can catch fish where you can not see any, where there are no fish.

On motion, duly seconded, meeting adjourned until eight o'clock in the evening.

EVENING SESSION.

At the evening session Hon. J. W. Titcomb gave his lecture on "Photography and the Stereopticon in Fish Culture," with illustrated views with the stereopticon, after which the meeting adjourned until Thursday at 2 o'clock.