XIII.—PLEADINGS BEFORE THE SENATE COMMITTEE ON FISHERIES, OF THE RHODE ISLAND LEGISLATURE, AT ITS JANUARY SESSION OF 1872.

[I have already, on page 104, given the argument by Mr. Powel, before the Legislature of Rhode Island, on the subject of regulating the fisheries by law, as also the report of the special committee of the legislature on the same subject. The testimony and arguments presented to a subsequent committee have not been published, and I therefore embrace the opportunity, afforded by the courtesy of Mr. Pitman, to print from his manuscript the argument presented by him in January, 1872, in favor of legislation. I also give the substance of a lecture delivered by Captain Nathaniel Atwood, of Provincetown, Massachusetts, before the same committee, with the special object of showing that no such interference was necessary or proper.

As will be seen from my own report, I do not agree entirely with either line of argument thus presented, although both gentlemen present considerations worthy of careful consideration.—[S. F. BAIRD.]

ARGUMENT OF J. TALBOT PITMAN IN FAVOR OF A LAW PROHIBITING THE USE OF TRAPS AND POUNDS IN RHODE ISLAND.

Mr. CHAIRMAN: I do not propose to go into an examination in detail of the evidence presented at this inquiry further than is necessary in the course of the remarks I shall offer.

The record of this evidence, although necessarily imperfect, from the impossibility of taking down all that was stated by the witnesses, is in your hands, and where it is defective your recollection will doubtless supply the omissions.

The remarks will be chiefly confined to the discussion of the main points of the general question, in the endeavor, by the assistance of the information within my reach, and by the comparison of the facts presented with each other, to lead the minds of the committee to the conclusion that the grounds and theories upon which the trappers base their claim to continue this fishery, are unreliable and fallacious.

I shall take it for granted that the report of the joint special committee of 1870, and also the testimony of the witnesses annexed to it, although not allowed to be introduced in this inquiry, will not be entirely ignored by your honors, and that you will read that report and some of the testimony, especially that of Joseph Church, Daniel Church, Benjamin Munro, and Benjamin Tallman, all the witnesses presenting themselves on the part of the trapping interest; and also of Jeremiah B. and

William C. H. Whaley, C. H. Bassett, John Steere, John D. Swan, and George S. Burleigh, because all the evidence presented in that report ought to have as strong a claim to be considered as much of the testimony presented by the other side.

But before entering upon the subject, I wish to give a brief

HISTORY OF THE INVESTIGATION AS TO TRAPPING.

This question has been before the general assembly five times at least; was referred thrice to a committee of the house, once to a joint committee of both houses, and it is now before your honors as a committee of the senate.

In 1856 a petition was referred to Samuel B. Wheaton and others, a house committee, as would appear from the report, in relation to the effect of trapping on other fish; and in said report, made in 1857, recommending that the petitioners have leave to withdraw, it is stated—

"Your committee were satisfied that the fisheries * * should not be interfered with or restrained unless it seriously interfere with the fishing in the other waters of the State, or some other very important reason."

Again:

"But there was no evidence submitted to the committee that the number or size of these fish (scup) were injuriously affected by the trap or seine-fishing."

The inquiry, as now asked for, was not entered into by that committee, nor, so far as I can learn, by another committee, appointed in 1864, of which the late Hon. Samuel Ames was a member. I understand that the report made by this committee cannot be found among the files of the proceedings of the general assembly, and I have been unable to find any printed report in the papers of the day.

In 1870, upon a petition signed by a large number of citizens of the State, a third committee was requested to investigate and inquire into the scarcity of scup, and to report whether any legislation was proper.

After a long and patient hearing of the parties interested, four out of five joined in a report recommending the passage of an act prohibiting the use of traps and heart-seines, but excluded Seaconnet Point from the operation of the law, for the reasons, as are to be inferred from the report, viz, that—

"It was contended by remonstrants that the fish caught by the traps *at Seaconnet were leaving the waters of the State and would not return.* Also, that they were never *known to go up Seaconnet River and through Stone Bridge into Mount Hope Bay*," &c.

And the majority of this committee could not decide whether this was so or not, from the conflicting evidence, but they "were of the opinion, from the evidence, that the impurities in the water did not interfere with the fish spawning, feeding, or staying in the bay below Nayal Point."

The act recommended, after being amended, was passed by the house, but defeated in the senate.

And the matter was then referred to a joint special committee at the same January session.

This committee made a unanimous report, in which it is stated—

"It appears to the committee that some legislative restraint as to the use of new instrumentalities for fishing, which impair or destroy individual rights, should be provided and enforced.

"After a careful and anxious investigation of the subject, the committee have come to the unanimous conclusion to recommend that the

use of all traps and heart-seines, and other contrivances for catching fish, not including pike-nets, shore or purse-seines, be prohibited in all the waters of Rhode Island northerly of a line drawn from the southerly point of the rocks at Brenton's Reef to the southerly point of Point Judith, and north of Stone Bridge at Howland's Ferry."

Although satisfied with the conclusions thus unanimously arrived at by the committee, the act recommended by it did not meet the approval of many of the friends of the measure, for the reasons, that as Seaconnet Point and vicinity, excluded from the action of the proposed law, caught nine-tenths of all the scup trapped, it seemed to them that this locality was the very seat of the evil complained of, and it would be more fair to reverse the exclusion; that this exclusion made the law partial in its effects, and would be so distasteful to the common sense of the people of the State, on account of its injustice, that it could never stand; and that it was the opinion that the question, whether trapping was one of the chief causes of the scarcity, could only be tried by experiment, and to do this properly and fairly, all trapping should be prohibited during the time necessary to try it. Under the act as proposed, this question could never be decided; and upon its failure, as was sure to be the case, the trappers would then turn round and ask to have the act repealed, on the ground that, under our law, it was evident that some other cause than trapping was the chief cause of the scarcity. With this feeling, the act was amended in various ways in the house; it was passed and sent to the senate, and there defeated.

The present inquiry, for want of the act introduced at the last May session and referred to your committee, is raised under a petition to the same effect as those presented in January, 1870.

In investigating a business about which the committee had little or no personal knowledge, you would naturally rely upon that class of men whose occupation it is, for information upon all matters connected with it, and if reliable, your views and opinions would be much governed by their statements.

It would be presumed that, from their opportunities of observation and personal experience, the trappers would possess a large amount of correct knowledge as to the habits, food, modes of spawning, habitations in winter and summer, &c., of these fish, and be able to satisfy you upon the various questions that must necessarily arise in an inquiry whether scup and other fish have been diminished by the use of traps, or by other causes beyond or under the control of the legislature.

That these fishermen should know so little as to these fish, *beyond what is connected immediately with their pecuniary interests*, would have been a matter of surprise to me, had not this been already affirmed to be the case by Captain Atwood, who made the statement nearly two years ago, and re-affirmed it before you the other day. And not only is it his opinion, but it is that of the British commission, whose report will subsequently be referred to; and I shall endeavor to show that this is also confirmed by their own representations made to your honors.

For this reason any statement or theory emanating from the trappers is *presumptively made in favor of their pecuniary interests*, and, as such, should be thoroughly examined, subjected to all the tests by which it may be affected, and its soundness proved beyond a reasonable doubt, before it is accepted.

These are to be tested chiefly by the information received through the writings of those acquainted with these or similar fish, or obtained from the personal observation and experience of fishermen, but particularly by the examination of facts which, apparently isolated, may have been

accidentally brought out without the knowledge of their effects upon the subject-matter.

By comparing and examining these, it not unfrequently happens results are produced that completely overthrow the theory they were expected to support.

In order to arrive at a rational, careful, and correct judgment of the effect of traps upon these fish, I shall endeavor, by the light of the limited information we are able to obtain, and of some of the facts as to the habits of fish, to show that the theories upon which the trappers mostly rely are deceptive and unsound.

And, as a part of the information, I shall refer to various books on the general subject, and in relation to the particular subject-matter, to the report of the joint special committee, and to some of the statements of the witnesses accompanying it; the latter, however, to be taken as hearsay testimony, if no greater weight can be accorded them.

In an inquiry of the character now under consideration, the committee must, from its very nature, depend in a great degree upon the statements of the persons appearing before it, of whom many, if not all, are more or less interested, but none so much as the trappers and those connected with them. In the testimony of these last, much has been stated upon information derived from others. Desiring that the committee should be possessed of all the information the question afforded, I have not objected to the reception of such hearsay testimony, except for the reason that the testimony *taken under oath* before the joint special committee was ruled out.

I am yet to be convinced that this testimony, so taken, and for the purpose for which it was taken, is not as fully entitled to credit as much that was presented to the committee, especially since there has been nothing adduced to question its authenticity and correctness, or to contradict the facts or opinions therein stated, any further than the evidence at that inquiry on the part of the trappers tended.

With all due deference to the committee, I must confess that I am still of the opinion, particularly after conferring with gentlemen conversant with the usage prevailing in such investigations before committees of either house, that the committee was incorrect in its decision, and did not follow the customary practice usual and necessary in such cases.

Inasmuch as the question is one affecting the interests and rights of every citizen of the State, it would seem but reasonable that witnesses coming before the committee should be paid for their time and expenses; but as the honorable Senate declined to provide for this, and as there was no other way to procure the evidence of persons acquainted with the subject of and interested in the hook-and-line fishing, except by their voluntary appearance, I had to content myself with the few that did appear, and who were sufficient, and all, that in my opinion, were necessary to establish the main points of our case, trusting to prove the remainder by the testimony of the witnesses on the other side.

Several very important witnesses reside at such distances that they could not be expected to present themselves at their own expense.

I hold that the trappers are and have been endeavoring to establish, as the main support of their cause, two principal theories, viz:

1. That scup and other similar fish cannot be affected, as to numbers and size, by any kind or any amount of fishing.

2. That scup, when caught at Seaconnet Point in the traps, are on their way to the eastward, out of the waters of the State.

A third, subordinate to and connected with the last, is—

3. That scup found above Stone Bridge are lost fish, coming in by the

west passage and not by Stone Bridge, and to regain their course will not go down to the sea through Stone Bridge, but return by the west passage round Brenton's Reef, and then eastward.

All these are presented to subserve the purpose, and the only purpose, of preserving the great trapping-ground at Seaconnet Point from being interfered with. So long as the trapping at this locality is not restrained, the main opposers to a law to this end are indifferent, and do not care what the law is.

Not a word has been said in defense of trapping at other places, except so far as these interests could not be separated.

As this locality is the great head and front of the trapping interest, my attention will be chiefly confined to the discussion of matters connected with it.

The actual facts, shown by the testimony of the trapping interest, are substantially these:

That scup begin to appear at Seaconnet Point and along the coast in schools, and in three runs, of which the first remains about a week, the second follows immediately after and remains about ten days, when it is followed by the third.

That the two first runs are full of spawn, some of them spawning when taken; are sluggish, not moving faster than two or three miles an hour; will not bite at the hook; apparently do not eat; and when opened, nothing is found within them.

That at this period they are a surface fish. After they have spawned, the schools break up and scup become a bottom fish.

That the first run is to the second run as about 1 to 50.

That the traps are set so as to take the fish coming, as they allege, but do not prove, from the eastward.

That they were first set at Seaconnet Point in 1845, and none were set west of Brenton's Reef until after 1860.

That from 1823 to 1845 scup were very plenty above Stone Bridge, and from 1845 they have gradually been growing scarcer.

That in 1870 and 1871 from 15,000 to 20,000 barrels were caught each year.

FISHING.

Upon the evidence it is shown, that about the year 1823 purse-seines were used both at Seaconnet Point and also above Stone Bridge, about Common Fence Point, and at the latter place scup were caught in great quantities. That in 1845 or 1846 traps were first set at Seaconnet Point. That from the year 1845 scup began to diminish in numbers, especially above Stone Bridge, and a few years back purse-seining had been abandoned at this neighborhood on account of the scarcity.

In the opinion of Messrs. Rice, Barney, Steere and Thurber, the only witnesses who appeared on the part of the hook-and-line interest, this scarcity is attributable to the traps of all kinds. On the part of the trappers it is denied that the traps at Seaconnet Point (the only interest represented) have any effect on the number, but that it is owing to the impurities of the water, want of food, destruction by horse-mackerel and other fish, and that the scup are changing their grounds and seeking new homes; and in the opinion of some, that the passage of steamboats up and down the river frightens them off. These are not alluded to in the respondent's argument, nevertheless I believe it important for me to do so.

IMPURITIES OF THE WATER.

The two committees (as shown in the majority report of 1870 and that of the joint committee) that have preceded you, were satisfied that this was not the case.

Their opinion was based, I presume—at least that of the majority report—upon the report of the committee of the legislature in 1860, to investigate the subject of the effect of impurities from gas-works, &c., on the fish, &c., in our waters; upon the report of Professor Hill as to his analysis of the waters above Field's Point, and upon the opinion of many of the witnesses.

That putrid waters appear to be innocuous (J. C. Rep., p. 12) has been shown in various ways, but it is conclusively proved that fish will thrive and grow fat in waters which will affect them so as to render them unpalatable to man as food. The Hon. E. C. Clarke, of South Kingston, stated in his seat in the house, that he once caught fish in Robinsonville Pond, Attleborough, Massachusetts, that were handsome and very fat, but when opened, emitted so strong an effluvium of gas that they could not be eaten.[1] In the newspapers it was stated, that off New Bedford clams were dug for a chowder, and when the dish was set before the party it was so impregnated with gas flavor, produced from the clams, that no one could eat it.

The trappers attempt to establish their view by endeavoring to show that fish brought in wells to the Providence market will not live so long as formerly, and ascribe this to the increased impurity of the water. On the other side, it is in evidence that fish will not live in wells or smacks far down the river in warm weather, unless the vessels are frequently kept in motion, so as to change the water and the air. Besides, there is no question but what the current of the river at the Great Bridge has been weakened from what it was before the dam was put in, when the tide had free scope, and the water near where the State prison now stands was 6 to 8 feet deep.

Mr. Atwood, in his address, gives a sufficiently good reason why fish would not long live in this manner, especially if bottom fish, in the change from cold to warm water, and, he might have added, from salt to fresher water; yet if the change was a gradual one, he believes fish would live. He also thinks that the effect of impurity of water in driving away fish would arise more from the effect it produced on their food than from any direct influence.

WANT OF FOOD.

There is no evidence showing scarcity of food. It is shown that muscle-beds are constantly forming, dying out, and re-forming; and they do so in streams into which the waste water from the print-works in Apponaug is constantly thrown, and grow abundantly. Even this proof of the fact of the growth, however, establishes nothing beyond this, that where muscles grow and flourish, other food would be likely to be equally abundant. From the kind of teeth belonging to scup, it is doubtful whether they are able to feed upon muscles, except when young and their shells can be easily crushed. They probably feed upon the spawn of these and other shell, and of other fish, and animalcules and small shell-fish found with the sea-weeds, and upon the sea-weeds themselves.

[1] Mr. Clarke informs me that he visited this locality in February, 1872, and there learned that the same peculiarities still attach to the fish, so that they cannot be eaten.

It may be also assumed, that if food was plenty when scup were so abundant, the growing scarcity of the latter would allow of the greater increase of the former. And without some direct proof of such scarcity, and as we know that clams and other shell-fish are still found in abundance, in spite of the increased demand upon them, we believe there is no want of food.

HORSE-MACKEREL (BLUE-FISH).

These fish are known as a surface fish. Their teeth are formed not for grinding, but simply for cutting, and their food is taken in and swallowed whole. Their principal food is the menhaden, also known as a surface fish.

Scup are a bottom fish, except at the time of spawning and before the mackerel come in. Their armor of bristling fins renders them an uncomfortable morsel to swallow; their short, chubby form, in contradistinction to that of the long, slim blue-fish, enables them to turn more quickly than the latter, and to elude the attacks, if made, while their habitation in the eel-grass shelters them still more from the attacks of their enemies.

There is no doubt that blue-fish will capture a scup when the opportunity offers and it is hungry, for it will seize a bright piece of metal or a bit of rag; but I think he is equally sorry he has made the mistake, whether he finds he has taken a hook or the sharp fins of the scup. The blue-fish, as well as other fish, may take scup when small, and, from the evidence, I have no doubt do so; but these keep generally in shallow water and among the eel-grass.

ENEMIES OF SCUP.

I do not pretend that scup have no enemies and are not destroyed in vast numbers. It was for this reason the Creator provided them with such immense powers of reproduction.

The water-animals, like those on land, prey upon each other, and, in many cases, on their own species, the large destroying the small.

Nor do I maintain that they are not liable to disease or other destroying causes, independent of other direct enemies.

Otherwise, if thus undisturbed, they would increase in such numbers as to overbalance and upset the order established by nature's laws.

These fish are intended as an article of food for man, to be used at a season of the year when other fish are seeking cooler waters, and when the appetite has a distaste for the more solid food, and craves a lighter and more digestible diet, to conform to the state of inactivity induced by the hot weather.

Now, while admitting that scup and all other similar fish have numerous destroyers, and that their numbers are greatly decreased by them, we say that enough are provided for the use of man, provided they are taken at the time he needs them and in the ordinary mode. This time is when the warm weather continues, and the ordinary mode of hook and line has hitherto been able, until recently, to supply as large a quantity as can readily be consumed.

When, however, man resorts to these traps and catches them in large quantities, and at a time they are spawning, (as we expect to show,) the supply cannot meet the draught, and, it is contended, must gradually be diminished, until exterminated or the trap-fishing is no longer worth following, like the purse-seining at Stone Bridge.

The same assertion, now made by the trappers, was formerly used in

regard to salmon, shad, herring, to the wild fowl and the buffalo. It was thought nothing could affect the supply. The salmon are no longer found in our rivers, the shad are fast disappearing, and a very perceptible decrease as to the herring and the buffalo has taken place, showing that in time, unless the wanton destruction of the buffalo and the indiscriminate modes for taking shad and herring are prohibited, they will soon be among the things that were.

The Indian cared for the buffalo and regulated their destruction, with jealous care, killing only what was absolutely necessary for food, and in this way their numbers were kept up. But the white man destroyed them regardless of the consequences, and for no other purpose, apparently, than the mere love of destroying. The result is, that in some sections of the country they have entirely disappeared, and everywhere largely decreased.

The same cause and effect exist in regard to scup. In 1857 the trappers admitted to the committee that 60,000 barrels were taken in their traps, of which 45,000 were sold for food at 30 cents per barrel, and 15,000 for manure at 18 cents per barrel. But Mr. W. C. H. Whaley, at that time engaged in trapping, says that in 1856 150,000 were taken from Watch Hill and Seaconnet Point; in 1857 about 160,000; in 1858 about 115,000 barrels, and each season since the quantity has decreased. In the year 1869, as near as can be ascertained, only about 20,000 barrels were taken; in 1870 (9,000 to 10,000 up to May 16) about 12,000, and in 1871 about the same number, or perhaps a few more.

Is it to be supposed, in the face of the fact that these fish, in consequence of the foreign demand, are worth on the average $2 per barrel, (nearly seven times the price of 1857,) that the trappers do not catch all they can? Is it not self-evident that the reason they do not catch more is that they are not to be found, and that they have actually decreased in numbers to this extent?

HABITS OF SCUP.

In order to comprehend the questions involved in the inquiry in which you are now engaged, it will be necessary to consider the habits of other fish in relation to reproduction and how far the habits of scup coincide with them. To do this properly, we have to ascertain what are the habits of these other fish, and whether these habits are like those known of scup; that is to say, if we find that scup and other fish have certain known habits in common, we may conclude from the analogy between them that the former have certain other habits identically the same with those we know these other fish possess.

In making this examination, we must select those fish whose modes of spawning most nearly resemble the fish in question. For this reason we would consider those, for instance, that frequent our rivers and streams, such as the salmon, shad, herring, &c.

It is admitted that these fish enter our rivers in the early spring from the ocean, proceed to the place where they were born, to deposit their spawn, and having deposited it, that the herring break up the schools and disperse to their feeding-grounds.

We assume as a fact which cannot be disputed by any evidence, and which is supported by much, that scup, having hibernated not a great distance from the coast, on the approach of spring awake from a dormant state, and approach the coast for the purpose of spawning. Some of them take up their ground at Block Island, others at other favorable localities; some come to Seaconnet Point, others in the neighborhood of

Sichuest Beach, and some formerly came up to Mount Hope Bay; all coming to the place of their birth. They come in schools, remain so for a time, and then break up and disperse themselves over the feeding-grounds. That while in these schools and frequenting the shore of Church's Cove, we say that the first run of scup are spawning, and when this is finished they break up. We come to this conclusion, because the first run of scup are caught within a week; during this time they are sluggish in their movements, seem almost unconscious of danger, eat nothing, and the anal passage appears to be sealed up; they are full of spawn and are spawning—so Captain Benjamin Tallman himself states

The Report of the Commissioners of River Fisheries of Massachusetts, of 1869, page 17, says: "All fishes that go to fresh water to breed, seek their proper birth-place, and they are there concentrated and crowded together, and are, moreover, very tame, so that it then becomes possible to capture them in vast quantities and in a limited space; and unless they be at that time protected, they are liable to extinction in the particular waters where such wholesale destruction goes on."

Mr. Atwood stated, with regard to mackerel, some facts that throw strong light upon this point. He says that these fish begin to appear the middle of May, a few at a time, then in abundance, which, I suppose, means in schools. They will not touch the bait on the hook at this time, and are taken by nets out in the bay. From about the 28th of May to the 4th of June they were depositing spawn, and by the last date had finished and left for feeding-grounds.

The habits of mackerel, thus stated, as to assembling, refusing bait, and breaking up, and the time they are together, agree so well with those of scup while at Church's Cove, that if unsupported by any other evidence, most inquirers would be satisfied that scup were spawning while there, and that their disappearance was owing to their having completed their mission and dispersed to feed in the vicinity.

On the other hand, the trappers at Seaconnet Point require us to believe that these fish come into Church's Cove by accident on their way from Watch Hill, where they first took the coast on their way eastward to Buzzard's Bay and Nantucket Shoals. To the committee of 1857 they stated that they were bound there for the purpose of spawning, but they have since modified this, and now allege simply that they are bound there.

The reason why this has been so pertinaciously persisted in is, that as these fish were thus leaving the waters of the State it was contended the people of the State could not be injured by the taking of them, and therefore traps at this locality ought not to be interfered with. Therefore, if this theory could be successfully controverted and overthrown, no real ground would remain why these traps should be treated differently from the others, or should be allowed to continue in operation.

I have always argued that this theory was untrue, principally upon the belief that the instincts of fish were unerring and certain guides; that if it was ever intended they should summer in Buzzard's Bay, these instincts would have carried them there in a direct course from their winter-quarters. And this belief has been confirmed by facts that came out at the former committee investigations. One of these was the statement made by Captain Joseph Church, that upwards of twelve years ago he bought a barrel of scup caught at Waquoit Pond, five or eight days before scup were caught at Seaconnet Point, where the traps were set. This was self-evident proof that the scup caught at Waquoit Pond did not reach there by the way of Seaconnet Point. Another was, that scup were caught in Long Island Sound, at Gardner's Island, and other

places, in great abundance, several years ago. Every one admits that they did not get there by the way of New York and Hell-gate, but came in around Montauk Point; so that with regard to these fish, the theory that scup moved always toward the *east* was not true, as they went *westward.*

This belief has, at the present investigation, been still more strengthened by the honest and straightforward testimony of Lorenzo Tallman, who says that the trappers' theory is based solely on the ground that scup are usually caught at Watch Hill before they are caught at Newport, and at Newport before being caught at Seaconnet.

And further, he says that last season scup came in, to a breadth of sixty miles, at or about one time, and that a vessel-load of scup from Nantucket was brought into Newport Harbor, and immediately after, another from Seaconnet, before any were caught by the traps off Newport, and that the theory is completely upset.

SPAWNING.

In connection with and in order to understand all the bearings, it is necessary to consider the manner of *spawning.*

In the book called "Fishing in American Waters," we find considerable general information, and I propose to cite a few passages from it, not only in relation to scup, but with regard to some other fishes that are the subjects of this inquiry:

"These fish replenish their species by laying eggs, which are vivified by the milt of the male, and then, after a time, the eggs hatch in the water. This process is common to all egg-laying fishes; but while eggs of the *Salmo* genus require from three to four months to hatch, those of the *Clupea* genus hatch in as many days. Seth Green hatched *shad* artificially on the Connecticut River in forty hours from the time the ova and milt fell into the hatching-boxes in the stream. (Page 41.)

"The striped bass is eminently domestic in its habits. * * The female deposits her eggs in fresh and brackish waters, but never in the sea. In November the bass shoal and congregate in brackish-water ponds, or back waters of tidal rivers, or in the bays and bayous of rivers which have an outlet to the sea, after which time it will not take bait until the following spring, after having spawned and returned to active waters. (Page 47.)

"Upon the breeding-times of different fishes, and their resorts at certain seasons in the year to hibernate, there are no fixed data. (Page 406.)

"Most white-meated fish spawn in the spring, yet the fish known as the *white-fish* spawns early in the autumn. All members of the genus *Salmo* spawn in autumn.

"*Shad.*—It winters in the ocean, dallies among the nets in the estuaries during spring, after which it lays its ova in the sand above the tide-waters, and returns to salt water to recuperate. (Page 324.)

"The porgee ('scup') is supposed to spawn on the weedy banks, with sea-bass and tautog, early in spring, when the last year's hatch leave for the estuaries, purveying to the head of tide-waters." (Page 110.)

According to the best information I have been able to obtain, I am led to the conclusion that scup frequent the mouths of, or in, rivers into which fresh water empties, or in fresh-water streams, at the time of spawning, and nowhere else, for the benefit they derive from the fresh or brackish water, especially since it is shown by the experiments of the Coast Survey that salt and fresh water or waters of different temperatures do not readily unite. The Gulf Stream is an example of water of

different temperatures, and it is reported by the Coast-Survey that in the Hudson River a counter-current of salt water is found underlying the outward current of brackish water. This view receives some strength from the fact that scup keep near the surface while in the schools, and, as we believe, in the act of spawning. But however large the part this may play in the process of spawning, we desire to present some other phases of equal or greater importance.

I am informed by a gentleman that he once witnessed trout, kept in an aquarium, in the act of spawning; the whole process occupied three days. At intervals the female would eject a stream of ova into the water, and immediately the male would emit a quantity of fluid. When an egg came in contact with a particle of this fluid, it would sink to the bottom, while those that did not, rose to the top; the former was said to be impregnated and the latter were not, and were consequently lost.

If the same process takes place with regard to scup, (and I have no reason to doubt it,) one of the conditions to a successful spawning is to select water most protected from the wind, most exposed to the sun, and out of the reach and action of the tide, where it shall be as quiet as possible. Seaconnet River presents, especially at Church's Cove, these conditions more perfectly than either of the other passages of the river. There is, comparatively, less current, on account of the obstruction made by Stone Bridge; the water is shallow, and the eddy or counter-current at Church's Cove creates comparatively still water and is protected from the northeast wind, while the other passages are open to this wind, and the water is deeper. Another condition seems to be that as the males are to the females about as one to four, it is necessary for the impregnation of the ova that these fish should concentrate as closely as possible. By this mode a larger number of the eggs would be vivified than if they were separate and isolated.

Undoubtedly, particularly if the waters are in more than ordinary motion, caused by the winds, a very large proportion of the spawn escapes this fluid, and it is then only useful as food for other fish in attendance upon them. The vivified ova sink to the bottom, among the crevices formed by the rocky bottom, where they remain until hatched. This is the real cause, it seems to me, why scup are found at this period at Church's Cove.

Great stress is laid by the trappers on the fact that the traps are set with their mouths so as to take the fish coming down the shore. They assert that the fish are skirting the shores until they come to the mouth of the river; they then strike across until they reach the shores at Church's Cove, when they turn southwardly, down stream, and on their course are taken in the act of leaving the State waters and going to the eastward. Let us see whether this is actually the case.

It is admitted that the traps at Seaconnet Point take nine-tenths of all the fish trapped between Newport and this locality.

If the fish were following the shores as asserted, it would seem probable that a larger proportion would be caught by the other traps on the Newport side of coast; as this is not the case, the inference to be drawn is that they did not reach Seaconnet Point from that direction.

Further, from the evidence that the fish were caught this season at Nantucket and Seaconnet Point, respectively, before they were caught at the traps off Newport, the conclusion is, that of the two directions, eastward and westward, they came from the latter, if either.

Now, in this latter case, *the mouths of the traps should have been set the other way, but they were not*, and as about the same quantity were taken last season as the one before, it is evident that they came neither

from the east nor west, but direct from their winter-quarters to their summer-homes, and if unmolested would have spawned in our waters.

The truth is that these fishermen have studied the habits of these fish so far only as they contribute to their pecuniary interests, as suggested by Captain Atwood, and upon their knowledge of these habits, these traps are set where the fish most do congregate, and in such a manner as to catch them.

They profess that because these traps do not completely close the mouth of the river, they do not obstruct the fish going up it. It is undoubtedly the case that these fish, like other animals, have their roads and pathways, and any obstruction placed in these roads would be as effectual to bar their progress as if the river were completely closed.

It is a remarkable fact, taken in this connection, that while we are assured that acres and acres of scup are seen outside and away from the traps, and while it is the custom to unite two gangs, so that while one of them attends the traps, the other, with purse-seines, are out on the river looking for and catching menhaden, yet we never hear of their catching scup, which are so much more valuable, by these purse-seines.

To prove that the fish at Seaconnet Point are not connected with those above Stone Bridge, until after they have left the latter place, the trappers have set up another theory, which we shall attmept to show has no better foundation than the one last discussed. It is stated that some of the schools on their way eastward, from Watch Hill to Buzzard's Bay, lose their road and go up the west passage into Mount Hope Bay, toward Fall River; here they find they are off their course, and to regain it skirt along the southern shore of the bay until they reach Seaconnet River, then down along the eastern side of the river until they find the bridge, and the passage through which being too narrow, (although Captain Church admits that they have been seen going down, but not up,) they cross and go up on the west side to Common Fence Point. From the time they enter this river, until and up to Common Fence Point, they used to be caught in purse-seines, but from this place they disappear; it is held that they then go down the west passage, pass around Brenton's Reef and reach Seaconnet Point about a week after they allege they left Common Fence Point on their way eastward.

This entire theory is based on the *allegation* that scup used to be taken at Seaconnet Point about a week after they had disappeared at Common Fence Point; it is simply a bare allegation, and is unsupported by the least tittle of evidence. To believe this, one must accept as true that the scup, whom instinct has led them to, our shores, have suddenly lost it; that they must have passed quietly, unseen, and beneath the surface of the waters, when they had previously been on the surface, up through the west passage and through Mount Hope Bay, and did not appear in sight until they found they were on the wrong road, when they first appear on the surface, I suppose *to look round and see how the land lies;* they then keep near the surface, while skirting along the sides of the river, until they reach Common Fence Point, where they again disappear beneath the waters, and are not seen again until the sea is reached. It is not pretended that all the schools do this, for the others, better informed or led by a more experienced pilot, keep along the coast until they reach Seaconnet Point.

How this can be reconciled with the fact that the unlost schools are being taken as soon as they arrive at Seaconnet Point, several days or a week before the lost schools regain their proper course, coupled with the fact that the first run of scup do not continue more than a week at the most, I cannot conceive.

I shall attempt to account for the appearance of scup above Stone Bridge, and their gradual disappearance in another way.

I think there can be no doubt that formerly scup came up to Stone Bridge, by the way of Seaconnet Point, for the purpose of spawning, and did spawn there.

After the traps were set at Seaconnet Point, vast quantities were taken there, and many of the schools were broken up; and perhaps, if the idea prevalent among the trappers themselves is true, that each school had an old and experienced guide, they lost their leader, became thus disorganized, bewildered, and obstructed, and having lost their course spawned in that vicinity; while others, escaping the traps, reached their true spawning-ground, where they were taken, or deposited their spawn. But the reproduction there was not sufficient to fill up the deficiency at Stone Bridge caused by the purse-seining, so that the numbers gradually year after year diminished, until seining was abandoned in that vicinity. Only those would return who were born there, while the fish spawned at Seaconnet Point would deposit their spawn in that vicinity.

The statement of Mr. Lorenzo Tallman was that the fish at Stone Bridge remain there about a week; this would be about the time necessary after their appearance to complete the operation of spawning, and then, instead of going down the west passage, they disperse to their feeding-grounds. This to me appears the only reasonable way of accounting for their disappearance.

Allowing them a week there, and a week to reach Seaconnet Point, the season for this run, which does not, as is stated, continue much more than a week, must have taken, if this be true, a much longer time.

By comparing this assertion with the other facts admitted by the trappers, I am satisfied not only that the theory is unsound, and not supported by these facts, but that, on the other hand, it is completely controverted.

Why is it necessary, except for the purpose of sustaining a theory, under which alone can the continuance of the traps be justified, to assume that scup avoid during the summer the coast and our beautiful bay and river, when they are found in abundance on each side of us?

Mr. Scott, in his book, Fishing in American Waters, already quoted from, says of this fish, (page 109:)

"It is a greedy little shining sinner, which is both herbivorous and carnivorous, foraging on both fish and vegetable diets, and shoaling with the *omnium gatherum* of bottom fish, which make their *summer* habitation among the weedy banks called by their name all along the coast from Maine (?) to Georgia, from three to six miles from shore, purveying everywhere from their homes into all the estuaries and tidal back-sets for provender. The porgee is one of the most numerous of coast fishes, and as greedy as it is plenty. Dr. Brown, in his Anglers' Guide, states that the steamboat which runs daily to the porgee banks near Sandy Hook, in the summer, returns with many thousand porgees, beside the sea-bass and tautog averaging from six to ten thousand as their daily catch with the hand-line."

The trappers alleged that they were to be found in Buzzard's Bay and Vineyard Sound, &c. But I think Mr. Scott is in error when he says they are found on the coasts of Maine; I am inclined to believe they are not found on the other side of Cape Malabar.

Mr. Daniel Church says they are found the whole season off Charleston or Savannah; and the hook-and-line fishing in Hudson River and vicinity has at some seasons greatly interfered with him in the market.

Does it not seem contrary to reason and common sense to suppose that these fish would or could not remain in our waters from the spawning-season through, during the summer season, until they remove to their winter-quarters, if allowed to?

Can there be any question as to the purity of the water, at least from the coast-shore to a distance of three or six miles from the shore, or as to its suitableness as a habitation, as to depth, and character of the bottom? The Coast Survey charts represent our bottom and that of the Shoals and Buzzard's Bay to be the same, mostly of yellow, black and gray sand, with here and there clusters of rocks.

If, as now alleged, for the first time with any force, the scup are changing their grounds, and diminishing gradually from other causes, and will ultimately disappear, because there is a tradition that they had once before disappeared, about one hundred years ago, and without any known cause, I have merely to say that if this is to be the case, let us not hasten the evil day, by reducing their numbers every year while they do remain, through means of these traps. Let us preserve and protect them from all these modes of reckless destruction, at least while spawning. Perhaps by care they may be induced to remain with us entirely.

I do not believe, however, that when fish are about to leave a locality, they leave it gradually; when they go, all leave at once; I think this is in accordance with the experience in relation to the desertion of other fish.

CAPTAIN ATWOOD'S REMARKS.

I wish to say a few words respecting Captain Atwood's opinions and remarks.

I have a copy of the Yarmouth Register, May 27, 1870, which contains his speech before the Massachusetts senate, on the 19th of April, 1870, in relation to the fishery question then before that body. The language and tenor of his remarks are so nearly identical with what he said a few days since, before this committee, that I shall trespass on your time in citing a portion.

Speaking of the witnesses before the committee of which he was chairman, he says:

"Like the many fishermen I know, the witnesses were not well acquainted *with the habits of fish.* They study them no further than they contribute to their pecuniary interest; *at most* they possess only a local knowledge of the fish with which they come in contact. They prosecute the fisheries for their support, and do not make the habits of fish a special study."

AS TO CAUSES OR MODE OF DIMINISHING THE SUPPLY.

"One is to introduce the beam-trawl, which has not been used in our waters. * * This net being dragged over the bottom would destroy the young fish as it passed over them, and might tend to diminish their numbers."

I ask whether the use of traps to catch fish while in the act of spawning "*might not tend to the same result.*"

Again he says:

"If fish have diminished in any of the small arms of the sea, I should have no objection to the passage of a local act, provided it did not interfere with the rights of others."

If this is his opinion, he *would certainly be in favor of prohibiting the traps of Seaconnet Point.*

It will be recollected that his general remarks related entirely to sea-fishing, and to those fish that are caught in the sea, while in relation to scup or tautog, he says that he did not know anything about them.

From the statements of the trappers it would be presumed that Buzzard's Bay and Nantucket Shoals would swarm with scup, if they all arrive at the localities whither they allege they are bound. And it is therefore with some astonishment I find in the report of the Massachusetts senate committee on fisheries, and of which Mr. Atwood was chairman, made April 14, 1870, the following paragraph:

"Scup, tautog, sea-bass, striped bass, and other kinds of fish that are not used for bait, are caught by the weirs in our waters south of Cape Cod only in small quantities, and as a secondary and incidental matter; the amount of these kinds of fish caught by such weirs is too small to have any considerable effect upon the increase or diminution."

And in his remarks:

"All agreed that the scup, tautog, sea-bass, and striped bass had within a few years diminished in Buzzard's Bay, but failed to show that over-fishing was the cause of the diminution."

It is a little singular that Captain Atwood, unless he refers in his remarks *entirely* to sea-fishes, which seldom or never enter our rivers or streams, should be so blind to the fact that many fishes have been diminished by over-fishing, but I am inclined to think he includes these fishes also, for he says:

"If we wish to increase and stock our inland waters, it cannot be accomplished without protection. The building of dams across the streams, and throwing of deleterious substances into the waters, have diminished the fish. *But, in the great sea, man cannot pollulte its waters by anything he can do.*"

I am inclined to apply to him the same observation he makes with regard to the witnesses who appeared before his committee, just quoted, and believe he willfully shuts his eyes to every fact that tends to show that man can diminish any species of fish by over-fishing.

That such is the case seems too well known and understood to need any illustration. Salmon have totally disappeared. The shad have in many rivers been completely, in others nearly, extirpated. Great apprehension exists that the same effect will be produced upon the white-fish of the lakes; and the report of the commissioners of river fisheries, made to the General Court of Massachusetts for the year ending January 1, 1869, shows that such is their belief. They say (page 17) that unless fish that go to fresh water to breed are "at that time protected, they are liable to extinction in the particular waters where such wholesale destruction goes on."

Mr. Atwood, in his report of 1870, already referred to, seems to rely greatly upon the report of the British commission of 1865, as showing the correctness of the conclusion drawn by his committee.

This report of the British commission is very closely and admirably criticised by M. Rimbaud, and his views seem to be fully believed and adopted by the commissioners of river fisheries of Massachusetts, in their report for the year ending January 1, 1870. And the joint special committee of Rhode Island, in their report, made May, 1870, have quoted largely from the Massachusetts report.

Before we refer more particularly to Rimbaud's facts and conclusions, let us see what Mr. Atwood's opinion is of this gentleman. He says in his remarks, that—

"There were persons who did not wholly agree with the British commissioners; one of the most prominent is J. B. Rimbaud, who has published a work on the fishes of the southern coast of France. Himself a fisherman, he says that *the migratory* species, that go *off to sea in schools* and return each season, cannot be diminished by over-fishing, but *local fishes* can be exterminated by constantly fishing for them, and such has been the case in the locality where he has been accustomed to fish. Of the two, I allow Rimbaud to be the best judge, as he has acquired his knowledge by practical experience in the fisheries, and the British commissioners had gained their information from others."

Without questioning the value and correctness of Mr. Rimbaud's statement, Mr. Atwood goes on, for the purpose of undervaluing and showing the inapplicability of his conclusions as to the division and habits of fish to those of Massachusetts waters, to state that the extent of the French fishing-grounds and the range of temperature are limited, and the character of the shores are different, when compared with our fishing-grounds. This is offered to prove that fish on the coast of France are more permanently *local* than ours.

"Tell me, sir, how many are there of our fishes that are not more or less migratory?" is his last question; and answers, "Senators will see that our fish and fisheries are not like those of Europe."

In attempting to answer this question I will refer him to Cuvier, to whom he referred me, who shows that from the form, mouth, bones, teeth, and fins, we can decide as to the habits and mode of life of a fish. He and his disciples have carried comparative anatomy to that perfection that they can come to this conclusion from a single one of these elements. It is not therefore from their investigation too much to say that all fish similar in construction and organization have similar habits; that if a certain tribe of fishes in one part of the world are wandering fishes, other species of the same tribe in another quarter have the same habits. To a certain extent the temperature may act upon them, and some may be to a certain degree migratory in colder climates, so far, for instance, that they may seek their winter quarters at some short distance from the coast, but do not, like the wandering fishes, go to the extreme south for a warmer climate, and, as the warm weather comes on, take their course back again.

The reason that underlies and sustains the belief that wandering fishes as a general thing cannot be diminished by fishing, however destructive, is that these fish cannot be taken in nets in quantities while they are in spawn; for, as an exception, herring, which are classed as a wandering fish, are taken in schools and while in spawn by nets in our waters, and we know that their numbers in many localities have greatly decreased.

It is immaterial, however, in our view, whether they are simply bottom, white, or wandering fishes. If they are taken in large quantities and while in spawn, fishing may and will diminish their numbers.

In this connection the Massachusetts commissioners of river fisheries say, (referring to the British commission and Rimbaud):

"And while we cannot say that either party to the discussion has *proved* anything, the points indicated are the following:

"That no amount or kind of fishing can diminish the 'schooling' or wandering fishes *of the high sea*, such as herring, *(Clupea elongata,)* mackerel, *(Scomber vernalis,)* menhaden, *(Alosa menhaden,)* cod, *(Morrhua americana,)* &c.

"That the local and bottom fishes which are peculiar to certain limited areas near the shore may be greatly reduced or even practically annihi-

lated, in certain places, by improper fishing, such as the tautog, *(Tautoga americana,)* the sea-perch, *(Ctenolabrus cæruleus,)* the flounder, *(Platessa plana,)* the striped bass, *(Labrax lineatus,)* and the scup, *(Sparus argyrops,)*" &c.

It would seem that the question whether they may be diminished by fishing depends upon their *localization* at the time of breeding.

Whether the breed is destroyed when in spawn by traps, or, as on the coast of Spain when hatched, by the *trawl beam*, the mode suggested by Atwood, the effect will be to effect a diminution.

And we cite from the commissioners' report, (page 20,) another paragraph taken from the report of the river fisheries:

"We see that in 1831 Malaga caught less than any except San Lucar, but in 1861, *she took more than the three put together.* Further, Malaga took fifty per cent. *more fish to each man* than did others. On the Malaga coast, fishing with the great trawl net *(aux bœufs)* has been *prohibited* since 1828, while in the three other departments it has been *allowed* and much practiced."

A single other fact, and I will leave this part of the case.

In the American Angler's Guide, page 178, in the article on tautog or black-fish, it is remarked:

"The black-fish abounds in the vicinity of Long Island, and is a stationary inhabitant of the salt water."

"He may be kept for a long time in ponds or cars, and fed and even fatted there. When the cold of winter benumbs him, he refuses to eat any more, and a membrane is observed to form over the vent and close it. He begins to regain appetite with the return of warmth in the spring." (Page 179.)

Now we know that tautog hibernate among the rocks near the coast and in our rivers, and it has been stated by Mr. L. Tallman or Mr. Daniel Church that, some years ago, after a very cold snap, not only many tautog were washed ashore frozen stiff, but afterward quantities were also found dead among the rocks off the coast.

If, during the winter, they do not feed as stated above, and this membrane closes them up, the conclusion must be that they remain in a state of torpor or sleep during the cold weather.

Now it happens that the scup, when first taken by the traps, are in a similar state of torpor; they neither eat nor have any passage; it is probably sealed up like the tautog, and nothing in the shape of food is to be found within them. Some say they are blind, and they seem hardly able or willing to move.

The inference then is that scup have also been hibernating within a short distance of the coast, in the same state as the tautog. This would account for the stray scup mentioned by Mr. Southwick as having been occasionally found in March. A warm day wakes him up, and he visits the shore for a day or so and then returns.

To my mind this is a more reasonable way for accounting for his presence than to assume that he has been left behind.

If these facts are as stated, it is to be presumed that scup are a local fish, and do not leave their localities any more than tautog, about the propriety of the classification of which as a local fish there is no question.

HEART-SEINES AND FYKE-NETS.

It does not seem necessary to discuss the effect of these modes of fishing. Nothing has been said in their favor, nor does any one appear to represent parties interested. The heart-seines are of the same character

as the traps proper, and more or less take the place of the traps after the spawning season of scup is over. Through the whole season they are gobbling up what fish may have escaped the traps; and "*all is fish*" that comes to these nets; nothing however small escapes from them. The testimony of Mr. Steere proves beyond a doubt the effect of fyke nets upon flat fish and upon others also, and that they are set during the colder months preceding and succeeding winter.

SEA-BASS AND TAUTOG.

In May, 1870, I happened to be at Wakefield, South Kingston, and saw several cart-loads of small striped-bass, about 8 inches long, which, I was told, were going to the manure heap. They had been taken near Point Judith in traps; and with the permission of the committee, I will read some observations made by a gentleman having considerable acquaintance with the subject, and as they fully coincide with my own belief, I adopt them as a part of my argument:

"DEAR SIR: The bass taken by the traps (especially at Point Judith) are of a size varying from 6 ounces to 1 pound each. They are taken, when taken at all, in immense numbers.

"It is a fact, well known among fishermen, that these fish, at this age and size, cannot be taken by hook and line, shore-seine, or in any other way than by these wholesale and destructive engines.

"During the trapping seasons, within six or eight years, immense quantities of these small bass have been sold in South Kingston and vicinity for *manure*.

"Were these 'small fry' allowed to grow to a size suitable for market, and until which time they could not be taken by any other method than by traps, &c., these same fish would average from five to twenty times their size *when so destroyed*.

"Aside from the destruction of the older bass, when in spawn, by traps, the above wanton waste is well worth consideration.

"*Tautog*.—This fish it is not pretended is a wanderer. As soon as they commence to move in spring they skirt the coast, following the rocky shores and bottom.

"Every fisherman knows the above to be a fact, and that in May they are caught along the shore rocks, and off shore, on the sunken ledges, in any quantity.

"The effect of trapping is to 'gobble up' almost the entire 'spring run' of this fish.

"It cannot be (I believe is not) denied that our Rhode Island waters, where they were formerly so abundant, are depleted of tautog; while we have only to go from five to fifteen or twenty miles west of Point Judith to find these fish in their season as abundant as ever.

"I account for this upon this theory that the tautog, during winter, becomes dormant or torpid.

"All fishermen of experience agree, that late in fall a membrane forms and covers the vent, and that after the closing of the vent they will not bite at bait even the most tempting; that in their torpid state they are, of course, helpless, and by instinct seek safety for themselves in still water; that the major part at least 'winter' in the bays, salt ponds, coves, creeks, and estuaries, connecting with the open sea.

"I believe that the numerous bays and harbors in Long Island Sound and our own bay are natural winter-quarters of these fish.

"In proof of this, tautog were always caught in spring several days earlier at Pomham Rocks than at the mouth of the bay or at Point Ju-

dith, while in autumn they are caught at Bonnet Point and Boston Neck Point (mouth of bay) several days after the supply fails at Point Judith.

"I believe that the traps capture in spring nearly the whole supply that remained in the bay during the winter previous, besides destroying the increase; that in consequence comparatively none are left to supply our waters, while, as I have said, west of Point Judith (trapping being not followed in the bays, &c., of Long Island Sound) those waters are abundantly supplied.

"*Facts.*—During the past and previous seasons, the fishermen who have supplied the market at Narragansett Pier with tautog could not earn their salt east of Point Judith, while by going from six to twenty miles west of Point Judith (as far as yet ascertained the farther the better) they could and have caught as many tautog as they wanted.

"If 'scup' were entirely out of the question, this state of things ought of itself, as it seems to me, to be enough to warrant the interference of the legislature.

"E. C. CLARKE.

"P. S.—If nature has appointed bounds beyond which, in the matter of increase, fish cannot pass, and has appointed and supplied for every species their natural enemies, which, governed by laws of appetite not to be controlled, are still in effective operation; and if their natural enemies and diseases, to which every species is subject, are of themselves sufficient to hold each species in check and within the proper limits, why, I ask, will not such wholesale destruction, in addition to natural causes and at the very moment, effectively destroy the parent fish and the whole prospective increase? Why, I say, will not all, together, diminish their numbers?

"If traps, in destroying scup and other fish, would but destroy their enemies, and annihilate the diseases to which fish fit for food are subject, then, and in that case, there might be some doubts in this question; as it is, there cannot be.

"Your point on the vent closing and non-feeding of tautog at certain seasons, and its application to scup, in proof that scup, like tautog, are not wanderers, is a new one, but, in my opinion, exceedingly good. I don't believe the Tallmans can shake it. Had I the time I would wish, I would say much more, but (meaning no flattery) I consider your argument a good and strong one.

"E. C. C."

With regard to the appearance of small scup in our bay and rivers last season, I am not prepared to give a decided opinion. I think that their appearance does not, nor will, affect any of the conclusions set forth, nor show that scup are going to be more plenty in our rivers than before.

I believe that they were spawned close on the coast, and afterward, in purveying for food, aspreviously stated by Mr. Scott, and for protection, came up into the bay, and remained there during the warm weather. Whether they were spawned in March, or in the previous fall, cannot be proved. From the fact that March was unusually warm, I am inclined to believe the former was the case.

One of the reasons why I believe scup are not going to be any more plenty is that they will follow the same road into the bay (up Seaconnet River) as their ancestors, and will be taken in the traps; for it has been stated that this last season the traps at one time appeared to be full of scup, and, upon drawing them, it was found that they were small

fish, and all escaped through the meshes except 5 barrels. This year they will be bigger, and cannot get through so easily.[1]

A few words as to the value of Mr. Southwick's testimony upon the points I have been discussing:

Mr. Southwick presents himself in the character of an expert, from having, as he says, closely investigated the question, in a practical point of view, ever since the beginning of this controversy. He himself has been interested in a trap for six years, but last season turned it into a heart-seine. I have simply to remark that, with all his practical investigation of the subject, he makes no allusion to one fact, that, in my opinion, is of very great importance, viz: That scup did not come from the westward this last season, as stated by Lorenzo Tallman. He gives an opinion, positive and direct, that the nets at Seaconnet Point were set so that they could not catch scup coming from any other direction than from the westward.

As the nets were set last season the same way as they always had been; as about the same quantity of scup were caught last season as the season before; and as these fish came on to the coast last season not from the westward, but, if from either direction, from the eastward, his opinion is completely contradicted by the facts themselves.

The theory that scup, when taken, were leaving the waters of the State, is a mere assertion founded on false premises, and is destroyed by the following facts:

Scup first appear in a state of semi-torpor, sluggish, unwilling apparently to move; with nothing in them; in a state of readiness to spawn and some of them spawning; will not bite at the hook; and the first run are seen about a week before they disappear.

Other egg-bearing fishes, when about to spawn, are in like condition at the place of spawning as to motion, eating, and appearance.

We are informed by Captain Atwood that mackerel take about a week to spawn, during which time they will not bite, and after this they disperse to their feeding-grounds.

From these circumstances we are led to believe that, when taken, scup are in the vicinity of or in the place where they intend to spawn.

This view is sustained by facts developed as to the direction from which they are alleged to arrive at this place. The trappers' statement, that they come from the west and southwest is supported solely on this, that they are usually caught at Watch Hill, and then at Newport, before they take them at Seaconnet Point. But this last season, as Mr. L. Tallman says, this theory has been knocked all to pieces, for the reason that, if they came from either, it was from the east. This fact does not stand alone, for Mr. Joseph Church has stated that some twelve years before, scup were caught in Waquoit Pond several days before they were caught at Seaconnet Point, and it cannot be doubted that they took an eastward course to get into Long Island Sound. Moreover, the fact that the traps last season, although set the same way as always, caught about as many fish as the season before, shows that the catching does not depend on the direction from which the fish come.

The opinion that scup are a migratory fish has nothing to support it, except their absence; while, on the contrary, when we consider the condition of scup when they first appear, and observe how closely it resem-

[1] As further evidence to sustain the view that all scup came the same road as the rest, it was stated that small scup were found in the traps last season in such quantities as almost, apparently, to fill them. When, however, the trap was lifted, most of them were small enough to pass through the meshes, and only about 5 barrels were taken.

bles that of the tautog, a fish admitted to be local, it must be conceded that the evidence is in favor of classing them as local fish also.

The opinion or theory that the scup found at Common Fence Point are lost fish trying to find their way back to the sea, is based solely on the fact that they disappear from that neighborhood after staying there about a week. This disappearance can be more rationally and satisfactorily accounted for upon the presumption that, having deposited their spawn there, they had dispersed to their feeding-grounds like the mackerel, and, as we think is proved, like the scup at Seaconnet Point.

The assertion that fish cannot be diminished by any kind of fishing is not warranted by the facts. The history of the salmon in our waters shows that they have been exterminated. The same is the case with shad in some of the rivers, and in many they are very much diminished. Herring have diminished also. Rimbaud and Bertholet, mentioned in the joint-committee report, testify to the same result in the waters with which they were acquainted. In our own waters the striped bass and many other fish have become scarcer. The fact that scup were found in abundance up to 1845 above Stone Bridge, and since that time have been gradually diminishing until purse-seining has been abandoned there, shows that something has operated to produce this state of things. And as traps were first set at Seaconnet Point in 1846, and there, only, until 1860; and as nine-tenths of the scup were and are taken at that place, it is a conclusion not to be avoided, that the traps are this obstruction, and have produced the effect complained of.

And who are those that appear to oppose this prohibition? Are they the poor fishermen, whose daily bread would be snatched from their mouths should this kind of fishing be stopped, and for whom the sympathy of the community and this legislature is demanded?

There are about two hundred and fifteen men engaged in these gangs, and their earnings vary, according to the best estimates obtainable, from $175 to $40 per season. But these men do not appear here. The men who are now represented by counsel before you and appear as witnesses are owners of nets and buyers of fish. These men have an interest far exceeding those of the actual takers of the fish.

Perhaps we can form some opinion of the amount of this interest by estimating the value of their profits. One of this firm of buyers states, he and his partners bought 4,500 barrels of fish from the traps, at the average price of $2 per barrel, this past season $9,000.

Each barrel averaging 150 pounds, gives 775,000 pounds, at 5 cents per pound		$38,750
Deduct original cost of 4,500 barrels, at $2	$9,000	
Transportation of 4,500 barrels, at $1	4,500	
		13,500
		25,250

For three weeks' fishing.

This is the real head of the opposition, which, under the cloak of desiring to preserve the rights of the fishermen, are fighting for these profist.

VALUE OF TRAP PROPERTY.

Mr. Lorenzo Tallman says:

That of the gangs in which he is interested (4) each has 450 fathoms of leader, weighing 300 pounds to 80 fathoms, worth from $1.05 to 25 cents per pound, or, as he suggests, an average of 65 cents.

1,682 pounds, at 65 cents		$1,093 30
400 pounds twine for each of 2 traps, 800 pounds; 200 pounds twine for each pound, 400 pounds—1,200 lbs., at $1.05		1,260 00
12 anchors, averaging 50 to 250 pounds, costing from $2 to $10, averaging $6		72 00
3 small boats		140 00
2 large boats		1,100 00
Purse and mate boat		140 00
1,800 fathoms of lines, at 15 to 21 cents per pound, estimated by Mr. Sisson		200 00
		4,005 30
From this I deduct entirely the 2 large boats and the purse and mate boat, because they admit that they are also used in the menhaden fishery; consequently if not used here, they would last the longer in that business		1,240 00
		2,765 30
Mr. Tallman then said, the usual course was that all the leader and one of the traps and pounds were used up at the close of each season.		
The leader is worth	$1,093 30	
One trap and one pound	630 00	
		1,723 30
		1,042 00
The other trap and pound being new at the commencement of the season, and lasting only *two* seasons, would *now* beworth one-half of its original cost, or	$315 00	
The anchors weighing 1,600, would be worth as old iron 2 cents, or one-half	36 00	
The three small boats, may be safely estimated at one-half that	70 00	
The lines lasting but two years would be worth only one-half	100 00	
		521 00
Whole value now of the trap		521 00
From this is to be deducted value of 2,282 pounds old twine, say 4 cents per pound		91 28
Actual loss of property if trapping was prohibited *now*		429 82
24 gangs, at $429.82		$10,315 68

Which represents the actual loss of property if the law is passed *now*.

EFFECT UPON THE MARKET.

It is not denied that but few of these fish taken in traps are consumed in the State, most all being transported to New York, Philadelphia, and other ports, by vessels employed for the sole purpose; that while our markets, during the trapping season, are supplied at reasonable prices, there is no supply for the remainder of the year.

Under this condition of things, the question naturally presents itself to

the other co-tenants and owners of the fish in the waters of the State, *not engaged in trap-fishing*, whether the manner in which the privileges heretofore allowed these fishermen have been managed, is for the interest of the State and the people at large; whether it is most beneficial that an immense amount of fish, taken *in about seventeen days—while in spawn*—and *in such quantities that the major part must be sent to foreign markets or used for manure*, and our own markets for the few weeks overstocked and at low prices, and at a time when such food is not so much desired as afterward, when none can be had, and the price of fish becomes exorbitant, or that our markets, relying upon other fish until about the first of June, shall be supplied for the rest of the summer and fall, five months at least, with these fish at reasonable prices.

On the one hand, while the trappers are reaping the harvest, or rather taking the crop when at its least value, a large number of men, fishermen by *trade*, some from *choice*, many from *necessity*, poor, disabled from other labor, relying for their daily food for themselves and families in a great measure upon fishing—besides those who fish for amusement, and to this end give employment to a large number of boatmen—are deprived of their just and lawful rights and privileges in consequence of this general destruction. The number of men engaged in this river-fishing was estimated at 800, as their daily avocation, ten or twelve years ago.

On the other hand, if these fish are allowed to come up the river as formerly, they will come to the market at *the right season* in abundance, and from the competition that will naturally arise the price will be kept low.

A larger number will be enabled to pursue fishing with the prospect of a fair remuneration for their labor. The poor man can be supplied with a wholesome and cheap food. The boatman will ply his boat for fares, cheerfully paid by persons in pursuit of health and pleasure, who will employ him with the certainty of finding good fishing. The regular fisherman can earn his $2 to $4 per day, and the State will be richer by at least $200,000 per annum more than what is received by trapping.

Those who are benefited by trapping are about 216 fishermen, who, taking the value of the fish caught last season at $40.000, 20,000 barrels, at $2 per barrel, receive two-thirds, or about $124 each on the average; next, the owners of the traps, of which there are about 24 according to Mr. Benjamin Tallman's statement, among whom is to be divided the one-third, or $13,333, giving $444 to each trap.

This sum of $444, according to the estimate already given as to the cost and depreciation of the twine, &c., if correct, is not sufficient to cover the loss, and these owners, if this is all the benefit derived by them from it, ought to be obliged to the legislature, if it will prohibit this fishing.

But the fact is, as has before been shown, that it is the buyers and shippers of these fish that derive the great gain, and it is for this reason they are so *particularly* anxious to have it continue.

The low price of scup would create a ready market and relieve the demand for other articles of food, as demand, in a great degree, regulates their prices. In a short time, the supply being the same, the seller would find it necessary to reduce his prices, and all food would be affected and brought within the means of those who are now restricted by their narrow incomes.

As a matter of political economy, it is for the welfare and general in-

terest of the State that the legislature should, by every legal and reasonable means, in those matters over which it has jurisdiction, provide for the community, so that it may obtain good and healthy food at the lowest possible prices.

The true theory of government, mindful of the welfare of the governed, is to direct and provide such laws and regulations as will effect the greatest good to the greatest number.

This appears to be one of the cases in which it should so act that, by prohibiting the trap-fishing, although, perhaps, to the detriment of a few who have embarked their property in an enterprise from which they have already received ample compensation, and have continued to invest regardless of the results of the movements to stop it, the legislaure will open to the whole community a free fishery, and afford employment to an infinitely larger number of men who are obliged now to seek other avocations for a livelihood, and occupy branches of industry that could be filled by others who are seeking employment without success, by reason of the pre-occupation. Further, from public policy no business should be encouraged by a State whereby a large amount of food is destroyed or carried beyond the reach of the community when such food is required for its support.

Upon such ground the use of grain, in times of scarcity or apprehended scarcity, for conversion into spirits, has, at various times, been prohibited.

RIGHTS UNDER THE CHARTER AND CONSTITUTION—JURISDICTION OF THE UNITED STATES.

One of the reasons upon which I find the remonstrants claim the right to trap fish without restriction is based upon constitutional grounds, and upon the rights originally granted under the charter of Charles II.

It is undoubtedly true that the United States, as contradistinguished from an individual State, have, by the powers conceded to it by the several States, exclusive control and civil jurisdiction over the tide-waters, but it is only in questions involving the rights of commerce, post-roads, and navigation; and all its powers over the tide-waters arise under and as incidental to the right to regulate commerce and navigation, and to make post-roads, but under no other authority nor for any other purpose.

"It is admitted * * that the States may by law regulate the use of fisheries and oyster-beds within their territorial limits, though upon the navigable waters, provided the free use of the waters for purposes of navigation and commercial intercourse be not interrupted." (Kent, Com., I, p. 439.)

Upon this construction Massachusetts has passed laws prohibiting seining in her bays and rivers, and regulating the taking of fish. Connecticut has exercised the same right.

Our own State has assumed the same in prohibiting and regulating the fisheries in parts of our bay, as at Wickford for instance, and also in Seekonk River and elsewhere, and particularly as respects oysters, and the right has never been questioned.

In respect to the jurisdiction over the waters on the coast, if I understand the common law, it is that the jurisdiction extends to a marine league, or three miles, from and beyond a line drawn from headland to headland. Beyond that is what is termed the high seas, and there the General Government has exclusive and unlimited jurisdiction over every question that could arise there.

In the case, The City of New York *v.* Melis, (11 Peters, 102,) it is stated as settled that—

"All those powers which relate to merely municipal legislation, or which may be properly called internal police, are not surrendered by the State or restrained, and consequently in relation to those the authority of a State is complete, unqualified, and exclusive."

In case Fuller *v.* Spear, (2 Shepley, 417,) Weston, Chief Justice, gave the opinion of the court, and stated:

"It is undoubtedly competent for the legislative power," (meaning State legislative power,) "as well in these as in other waters, to appropriate and regulate fisheries otherwise public."

It would appear from these authorities as well settled that the State has the exclusive and unlimited authority to regulate the fisheries within its waters.

Any claim to exercise the right of fishing founded upon the charter of Charles II is derived from the following words:

"But they and every, or any of them, shall have full and free power and liberty to continue and use the trade of fishing upon the said coast, in any of the seas thereunto adjoining, or any arms of the seas or salt-water rivers and creeks, where they have been accustomed to fish," &c.

After summing up and specifying the different kinds of grants, among which are "rivers, waters, fishing," the *habendum* is as follows:

"To have and to hold the same unto the said governor and company, and their successors," (which is now the State in respect to such questions,) "forever, upon trust, for the use and benefit of themselves and their associates, freemen of the said colony, their heirs and assigns, to be holden of us, our heirs and successors, as of the manor of East Greenwich, in our county of Kent, *in free and common soccage*, and not in *capite* nor by knight-service."

Soccage is an old English term, now obsolete, and is understood to be "a tenure of lands for certain inferior or husbandry services to be performed for the lord of the fee." Free soccage is defined, where the services are not only certain but honorable, and means the same as if written *free and common tenure or tenancy*; that is to say, that the governor and company, and associates, freemen of the colony, were all *free tenants in common* of the "*rivers, waters, and fishing.*"

The constitution of the State adopted November 5, 1842, contains in its seventeenth section of Article I this provision:

"The people shall continue to enjoy and freely exercise all the rights of fishing and the privileges of the shore to which they have been heretofore entitled under the charter and usages of this State. But no new right is intended to be granted, nor any existing right impaired, by this declaration."

By this provision, then, no new rights are granted nor existing ones impaired, and the people shall continue to enjoy and freely exercise all the rights of fishing, as under the charter and usages.

As to the manner of exercising these rights, we presume it is the unquestionable right of the State to determine that no one has a right to fish in such a manner as will be detrimental to others; that each citizen has the same and an equal right (though it may remain unexercised) as another, but no more nor no less. Whoever takes fish must have some consideration for the rights of others; at least, if having been allowed to take more than his share, and no objection had been made to it for many years, yet when objection is made, and such objection is reasonable and based upon sufficient grounds, he ought to cease the offensive mode.

This is the state of things at present. And upon the petitioners coming in and asking, for the reason shown, that the legislature shall stop a mode of fishing by which they are enabled to take not only more

than their reasonable share, but to the detriment and injury of the other tenants in common, the remonstrants set up a right to continue, upon the ground that they have, by continual uses, acquired a prescriptive right thereby, and of which they ought not to be deprived.

However this might be between individuals, it is well settled that no right of this kind can be set up as against the State, nor against individuals if objection is made within the time limited by law.

To illustrate: Suppose a town owns a piece of land to be used in common by the inhabitants for the pasturage of cows. For some reason but few avail themselves of the privilege, who continue to use it for a number of years exclusively, and without any interference on the part of the others.

In time, finding the pasturage is more than is necessary for their cattle, these few conceive the field could be made more profitable, and conclude to turn the grass into hay, and in this manner they have not only enough for their own cows, but can send a large amount to market.

This course continues, but by and by some of the others wish also to avail themselves of their right, and undertake to turn their cows into the field. Upon this the old occupiers object, and say they have so long used the land for raising hay that no new occupiers can come in, or at least if they do they must wait until the crop is first gathered.

To do this would deprive them of most of the season, and the pasturage would be merely nominal or nothing.

Under a privilege to catch fish under the charter, to be exercised and enjoyed equally and reasonably with the remainder of the people, certain persons, not satisfied with the ordinary hook-and-line method, introduce purse-seines in or about 1822, continue this until 1846, when, finding another method by which they can take them in larger quantities than with seines, they introduce the trap-seines. This is so effectual that, it would appear by the statements of reliable persons, they have caught, *apparently*, every scup of any size that was formerly in the bay. And the petitioners, after remaining quiet for several years, after it was evident to them that scup were decreasing in numbers yearly, and that this decrease, in their opinion, was entirely owing to the trap-fishing, when they now come and ask for legislative action to stop the extermination, they are met by the trappers' assertion that they have a right to go on and continue, for the reason that they have acquired the right under the charter and constitution.

If this be sound doctrine, every one else, under the present state of the fish, is deprived of the rights granted him under the charter; *for the privilege of fishing where no fish are to be found, is equivalent to no right to catch fish.*

The right of fishing, when in common, must be construed to be confined within reasonable bounds; and what bounds and what is reasonable must and can only be determined by the legislature.

This fishing, as carried on, is a monopoly. There are twenty-eight traps or places for setting traps, and these have been in the hands of the same parties for nearly, if not quite, twenty-five years. It is so arranged among these parties, that it is practically impossible for any other to gain admission into this close-borough system. Let others attempt to occupy their ground, and from whom would we hear, or, if not hear, how soon would we understand the different view they would take of the doctrine they now set up?

It would no longer be the free power and liberty of fishing. The ground they would then assume would be, that they had acquired, by

long usage, a prescriptive right to occupy these places to the exclusion of all others.

It will be borne in mind that the committee who were appointed to make the investigation which was reported at the January session, 1857, and which report I have read to you, were appointed upon the petition, as we are informed by Mr. Childs, who was himself a member of that committee on the part of the senate, of persons engaged in tautog-fishing at and about Newport.

In their report they say that "no evidence was offered to the committee that these kinds of fishing in other parts of the bay were injured by the trap or seine-fishing in Seaconnet River;" and that they were satisfied that these fisheries "should not be interfered with or restrained, unless it seriously interfered with the fishery in the other waters of the State, or some other very important reason."

This opinion comprehends by implication also this, that if the fisheries in the other waters of the State were seriously interfered with by the trap-fisheries, then these last should themselves be interfered with and restrained; but there was no evidence of this nature brought before them.

Nearly fifteen years have passed away since this investigation was made, and now complaint is made by those interested in the fishery throughout the whole bay. Their opinion is clear and positive, that the trap fishery has not only seriously affected the scup-fishing, but has destroyed it; and whether it can be revived and restored to the state it was when the former committee was sitting, depends, in their opinion, upon the recommendation of this committee.

In concluding this presentation of the various questions that have arisen under and are necessarily connected with the inquiry referred to you by the legislature, I am sensible that I have not exhausted the subject, and that much more might *pertinently* be said to strengthen and support the position assumed by the petitioners; but rather than exhaust your patience, I will rely upon your own recollection of the various statements of those you have examined, with confidence that where I may have omitted to state correctly or to mention all the evidence bearing upon the points I have attempted to maintain, or upon others, you will not fail to give them their proper weight.

In the course of the investigation as to the cause of the scarcity, it is evident that not only does such scarcity prevail, but that the same is the case with the other fish caught in these traps, viz, sea-bass and tautog; and the conclusion is forced upon us that if, as the remonstrants contend, this scarcity is caused by the scup changing its former haunts for new ones; that the sea-bass and tautog are doing the same; and that our waters are to be deserted, or if this is not so, then that the scarcity is caused by the traps and heart-seines.

All the witnesses not interested in traps, I believe, without exception, some who have been engaged in the business, and some who are engaged in seining, are strongly of the opinion that trapping causes the scarcity, and that it ought to be prohibited.

And this leads me to observe that the efforts of the remonstrants have been entirely directed to prevent any interference with the Seaconnet traps, and, as it appears to me, they are ready to throw over all the outsiders if they can gain their object.

Should the committee think proper to report in favor of the petitioners, and to recommend the passage of an act prohibiting or regulating trap and other seine-fishing, I would urge that they be not excepted from such provisions.

There is no question but what these trap-fishings have been important

and valuable, but, in my judgment, they are destructive and to the detriment of bay fishing just in proportion to their value.

It has been suggested outside that the traps might be allowed to take fish three days out of a week.

In answer to this, I would simply say that if one of my theories is true, viz, that the same schools remain in the same locality, then these fish could *all* be taken just as well in three days as in a week, and the privilege would be as injurious as if they continued as formerly.

If the committee is satisfied that the breaking up of the traps at Seaconnet Point in 1862, and the comparative abundance of scup the same season in the bay, have any relation or connection with each other, I would respectfully say that this is sufficient ground to predicate a just claim on the part of hook-and-line fishermen and others, that the experiment shall be tried again.

These trappers have enjoyed the privilege of catching fish freely and uninterruptedly for nearly or quite twenty-six years. We now ask that, upon the evidence and opinion as to their injurious effect on other fishings, the opposing interest may be allowed a reasonable time to prove, by a full and unobstructed trial, whether the traps are the chief cause of this scarcity. From the probable fact that scup live about three years, that length of time ought to be taken. If at the end of that period our waters do not satisfactorily show, an abundance of scup, I for one will cheerfully abandon all further opposition to the employment of any and all kinds of traps.

That the experiment should be fairly made, it is essential that all the waters should be protected, otherwise no one will be satisfied or convinced by any trial that may be made.

ABSTRACT OF AN ADDRESS BY CAPTAIN NATHANIEL E. ATWOOD, IN OPPOSITION TO LEGISLATION.

Before the senate committee of Rhode Island legislature, January session, 1872.

We find upon examination that changes take place in a series of years in the great category of fishes, for which we can assign no reason. In Massachusetts Bay and along the coast of our State the kinds of fish are not the same to day that they were in the days of our boyhood. Those that were most abundant then have suffered great diminution, and sometimes have totally disappeared, perhaps never to return; while other varieties have perhaps, after gradually diminishing more and more for a series of years, increased again and become as abundant as before. Other species have come among us that were utterly unknown in our youthful years.

It is very important that in studying the science of fisheries, we should make ourselves familiar with the habits of migration of fish, the peculiarities of their food, and their times of depositing their spawn. This last is very difficult to ascertain with regard to many species. The statements of fishermen concerning it are not to be relied upon; for, as a class, they notice the fish which they take only in so far as their own pecuniary interest is concerned.

One of the most important among the fishes of our New England coast is the common mackerel. It is well known that mackerel are a migratory fish and are only with us a part of the season. At the pres-

ent time of the year they are absent from our waters. North of Cape Cod, as, for instance, in the southern portion of Barnstable Bay, we find them beginning to appear about the beginning of May, at first a few straggling specimens, and then in a few days a vast abundance. They cannot be taken by hook-fishermen, but by means of a long string of nets, made about eighteen feet deep, which hang vertically in the water and drift with the tide. Considerable quanties are thus taken in the night-time.

In 1855 a resolution was passed by the Massachusetts legislature authorizing the governor to appoint three commissioners to inquire into the practicability of the artificial breeding of fish. I was expecting to be appointed on that commission, and, as I had a great desire to know at precisely what time the mackerel deposited their spawn, I devoted considerable attention to the subject. While fishing for these mackerel, I found that about the 20th of May, and from that time to the 3d or 4th of June, they were spawning. As we took the fish into the boat the spawn was running freely from them. In a few days after that time they repaired to the feeding-ground, fed voraciously, and soon commenced to be fat. In a few days after this school had disappeared I received my commission, and thirty days after the height of their spawning-season I found immense schools of little mackerel in our bay. I caught some specimens and put them in alcohol, as I had before put the mature eggs, marking the date. Twenty-five days after that I went again into the bay, and found that they had grown to be some two inches in length, showing that it required not nearly so much time for the growth and development of this fish as for many other species. I took specimens to Professor Agassiz, who was very much delighted at the discoveries I had made.

Besides the large full-grown mackerel, there is the smaller kind, that come in later in the season. Dr. Mitchell and other writers have considered that these are two species, calling them "spring mackerel" and "flock mackerel;" but I am convinced that they are simply different ages of the same species. When the second school, or Dr. Mitchell's flock mackerel, arrive they are of very different sizes, and in the Boston market are designated as "full grown," "second size," "tinkers and blinks." The line of demarkation is so prominently drawn between these several sizes that people do not differ much in the designations given to them in the markets of different towns. Now, these mackerel that I watched for fifty-five days after they were spawned until they had grown to be three inches in length, before they left us in the fall had grown large enough to be rated as number "four," under the Massachusetts inspection laws. Those that come the next season are the "blinks," and, as we believe, were from the spawn of the preceding year. The next size, or the "tinkers," we believe were the "blinks" of the year before, and so on.

The question is asked, Where do mackerel stay in the winter? I do not think they stop in the Gulf stream, but somewhere short of that, probably in water deep enough to afford a congenial temperature.

During some seasons this fish is very much more plentiful than in others. In 1831 there were inspected, in Massachusetts, 383,559 barrels. From that time they began to diminish in numbers, and from 1839 to 1844. the number of barrels inspected did not exceed 75,000 and a few hundred per year. They continued to decrease for ten years, when the yearly catch was only 50,000 barrels. They then increased again, and in 1869 there were 234,000 barrels caught, the largest quantity previous to that time since 1831. In 1870 there were caught and inspected

318,000 barrels, being 83,000 barrels more than in any previous year for twenty years. This last year there was a falling off of 50,000 barrels.

I pass now to speak of our menhaden. In my early manhood I looked with surprise upon the vast quantity of these fish that visited our coast annually and then went away. At that time they seemed of no use, except that the fishermen used them occasionally for bait. But since they have become valuable for their oil and as a fertilizer, the question has been discussed with much interest whether they will be exterminated in consequence of the great extent to which this fishery is prosecuted. The Maine legislature some few years ago passed a law prohibiting the seining of them, and, after it had been in force a single year, the same parties who had signed the petition for the law were very desirous of having it repealed. I was called before a committee of that legislature, and gave it as my opinion that the efforts of man would have but little tendency to exterminate this species of fish, the number caught being but very trifling compared with the immense quantities that were produced in the waters. The legislature did not repeal the law, but they authorized the county commissioners along the coast to grant permits—for the sum of twenty dollars each—allowing parties to fish for the menhaden in the prohibited localities. The fishing has gone on since that time, and, so far from the menhaden being exterminated, I am informed that they were very abundant last year.

When do menhaden spawn? The mass of them, as is well known, pass off the coast in the latter part of the autumn. They keep passing out; and, in our Provincetown Harbor, where the land crooks round so as to detain them, we catch them a month later than that. When we look at the last of the menhaden we find that the ovaries begin to swell, and that the eggs begin to grow. When they get off the coast of Virginia, immense quantities of them spawn. The mass of the menhaden go away so far south that they do not get to our coast in the fall, but are off the capes of Delaware, above and below. I believe that the last ones that come out deposit their spawn soon after their departure, so that their young return to our harbor very soon afterward, for we find often one or two hundred there about that time. But when the year comes around again, we find the full-grown menhaden coming in in vast abundance.

Again, take the sea-herring. When the Georges fishermen went to the Georges Banks, there were great schools of them there, but they have long since disappeared, and now fishermen cannot get enough to bait their hooks with. They come up about the islands of Boston Harbor, and to another locality off Scituate, where they are, in the fall, in immense quantities depositing spawn. A fisherman who put out six nets had them all carried to the bottom the first night. They were filled with such vast numbers of fishes that he could raise only two of them, and from these he obtained enough fish for the rest of the season. This shows to how great an extent these fish change their localities.

Now, this depletion of fish at certain points is not caused by overfishing. We know that it has not resulted from the setting of any weirs, traps, or pounds, because none of these have been used in these localities.

In the days of my boyhood, my neighbors often spoke of a fish called "the drummer," which is the same variety that you call the squeteague, which were so plentiful that they could be taken by the boat-load. But in 1816, when I first went into a fishing-boat, they had disappeared, and I did not see a single specimen for many years. Since that time, however, they have commenced returning in considerable numbers, and we

shall probably have them back again as you are having them upon your coasts.

In Provincetown Harbor, from a very early period until the horse-mackerel made its appearance, the fish called "whiting" was immensely abundant. Since the horse-mackerel has appeared, they have been gradually driven out, and now a specimen is hardly ever seen. The horse-mackerel has driven out a great many other kinds of fish, for it is the avowed enemy of every species it can master. These fish first appeared south of Cape Cod about the year 1832. I was thirty years old before I saw a specimen. Finally they found their way into our harbor, and completely destroyed the mackerel fishery for a time, and even now render it nearly unprofitable.

If over-fishing were possible, it seems to me that we should see some of its results where great changes have taken place in the modes of our fisheries of cod and haddock in Massachusetts Bay. What is called "trawl-fishing" was first introduced about 1850, and it resulted in the taking of a vast number of fish of these varieties. In consequence of the competition in the business, the Swampscott people petitioned the legislature for a law prohibiting trawl-fishing, on the ground that it would exterminate the haddock. At that time I proved before the legislature that haddock was much more abundant than it had been at any previous time, and that I was selling them at 37½ cents per hundred pounds. That fishery has been going on ever since, and the amount taken was greater this last winter than for many years past. A fisherman in a dory fifteen feet long has often brought in as much as 1,800 pounds in a single day. There are eighty boats fishing out of the harbor, and 83,000 pounds have been caught in one day. This increase has taken place in spite of the constant practice of the new mode of fishing, by which twice as many are taken in the same time as formerly.

Perhaps the committee will ask if I do know of any fish that has diminished while I have been fishing. I would say that I do. I allude to the halibut. When I was twenty-five or thirty years old I was engaged in fishing along the Nantucket shore, and at that time halibut were much more plentiful than now. Whether the diminution is owing to over-fishing or not I am unable to say.

In regard to the effect produced in the way of driving out fishes by emptying impurities into the water, I am inclined to believe that as respects ocean waters it would be very trifling; in rivers, I think the effect would be considerable. At New Bedford there are works that throw deleterious substances into the water, but the driving away of the fish there was, in my opinion, effected by the destroying of the bait upon which they fed. I presume that fish that had never been in impure water, if they should rush into it suddenly would be much more effected by it than by a gradual fouling of the water. Fish need to be acclimated by degrees to any change of temperature in the water, and it is only by degrees that they can learn to live in impure water. In rivers where there are saw-mills, the sawdust from which is thrown into the water, when the water becomes so charged with it that the gills of fishes are clogged, they must of necessity be driven away. When the Massachusetts fishery commissioners were appointed, I was applied to to investigate the condition of the river fisheries. It was surprising to me that fish would come in from the broad ocean and pass up these narrow rivers filled with mud and with every possible obstruction, year after year, for the purpose of depositing their spawn. Yet they will invariably return annually to the same stream in spite of all the deleterious substances thrown into it.

The idea presented in the report of Professor Huxley to the British Parliament that man cannot destroy a race of fishes by over-catching has been scouted by a distinguished naturalist, who says that certain species of fish have been destroyed and caught out. But this was on the southern coast of France, where there is only a very small area of fishing-ground. And this naturalist himself says that these wandering fishes which go off in schools and return cannot be diminished by man's catching. We have an immense area of fishing-ground on our coast, which is flat and everywhere running off shoal. Look, for instance at the great chain of banks from the Nantucket shoals to the banks of Newfoundland. France, on the Mediterranean, has no such fishing-ground as that.

When I was a boy, great quantities of Spanish mackerel came into Provincetown Harbor. They afterward began to diminish in numbers, and I have not seen a specimen now for twenty years. They went away before the blue-fish came, and before a weir, trap, pound or anything of the kind was set in New England waters. I think the great enemy of the fish of our waters is the blue-fish. They are ready to eat almost every fish that they can take. We know that they drive almost everything.

It is my candid opinion that man cannot destroy a race of fishes. They go off from our coasts only to return again and bring us innumerable blessings. The fisheries of our coast are of immense value. They afford a vast amount of wholesome food to the people, as well as employment to a great number of men. Our fisheries are a nursery for seamen, and by accustoming those who engage in them to the hardships of the sea, they train them for service in our navies in time of war, as well as upon the decks of our merchantmen.

I hope that the fish peculiar to your waters will continue to be abundant, and that if the scup leave you some other variety equally valuable will come in and supply its place.