were brought inshore in great quantities, and we have many specimens, some not so much as an inch in length, and those young eels were in precisely the same localities where the large eels were in greatest quantities. The young were sufficiently abundant to warrant the assertion that the supply was not diminishing but that there is a young family of eels coming up every year.

AFTERNOON SESSION.

PROFESSOR GOODE produced a paper on "Statistics of American Fisheries." In introducing the subject, he said: Professor Baird, in his report yesterday, treated of the importance of exact statistics for many purposes, and especially for use in the diplomatic relations of the government of the United States in treaties between Canada and this country. When the United States Commission was summoned to Halifax last summer to give evidence before the Arbitration Committee, which was composed of a commissioner from the United States, one from England, and one appointed by the Emperor of Austria, to decide the question of the claim of the Dominion of Canada for remuneration for the use of their fisheries, it was found that the United States had almost nothing in the shape of exact statistics to offer. The Canadian government, on the other hand, had very valuable reports, collected by government officials for many years, in which the statistics of fisheries were given in the fullest detail. In order to offset these statistics of the Canadian government, it was necessary to compile some sort of a counter-statement, giving the value of the United States fisheries; and this was done from matters in the records of the United States, from statistics furnished by various gentlemen, among whom was Mr. Blackford, and from replies to letters sent to

various fishermen, and from these datas there was filed a statement. The most important is our oyster-fishery. It is a disgrace that we have no statistics. The only means of ascertaining the annual trade in oysters is from a report to the French government by Lieutenant P. de Broca, of the French navy, who was sent here in 1869 to investigate oyster-culture in the United States, and it is supposed that there has been no diminution since. He made a complete report, and this report will be found in the report of the United States Commissioner.

In 1875 the total amount of sperm-oil from the American whale-fisheries was 1,000,951 gallons; of other whale-oil, 1,414,186 gallons: in all, 2,505,137 gallons. The amount of menhaden-oil for the same year was 2,681,487 gallons, an excess of 176,350 gallons. In 1874, the amount of menhaden-oil was 3,372,837 gallons, which was very much in excess of whale-oil for the same year. In 1876, 2,990,000 gallons of menhaden-oil were made, and in 1877, 2,426,000. For the year ending June 30, 1877, the production of whale-oil was 2,140,047 gallons, and for the year 1877, 2,151,765 gallons.

In the *Oil, Paint, and Drug Reporter* for January 14, 1874 (page 4), the following statement is made:

"It is asserted that while the amount of oil produced is equal to that derived from the whale-fisheries in this country, the menhaden interest is ahead of the whale; for though the menhaden-oil sells at a less price per gallon, for every barrel of oil made there is three-quarters of a ton of scrap, which readily commands $15 per ton at the factory."

The oyster-fishery is by far the most important of the fisheries of North America, its value being at least double that of all the other fisheries together. It is a national disgrace that there are no reliable statistics of this industry.

There has been no statistical inquiry into the subject since 1869, when M. P. de Broca, a lieutenant in the French navy, was sent by the government of France to this country to investigate the subject of oyster-culture. De Broca published an elaborate report, which is reprinted in the Report of the United States Commissioners of Fisheries, 1876. He estimates the commerce of New York in this direction at $5,000,000, and that of the whole country at $50,000,000, although these figures were not supposed to represent the total amount of products, since along the coast and the rivers there is a daily consumption which cannot be estimated.

The *Merchants' Magazine and Commercial Review* for 1859 estimated the trade in oysters in the principal cities as follows:

	Bushels.
Virginia (State)	1,050,000
Baltimore	3,500,000
Philadelphia	2,500,000
New York	6,950,000
Fair Haven	2,000,000
Other cities, such as Providence, Boston, &c.	4,000,000
Total	20,900,000

Calculating 200 oysters to a bushel, we here have the enormous amount of 4,000,000,000 individual oysters consumed.

The cod-fishery is the most valuable of the fisheries proper, the proceeds of the United States fishery in 1876 being estimated at $4,825,000. The number of pounds of fresh fish is put at 214,000,000 pounds, or hardly half the amount obtained from the menhaden fishery; 25,000,000 pounds are brought fresh to market, and the remainder is salted. About 200,000,000 pounds are estimated to be obtained from the off-

shore banks by regularly equipped vessels. The largest supply is, of course, obtained from the banks of Newfoundland. This is many times the most productive fishing-ground in the world, and has been frequented by English, French, and Dutch vessels for over three hundred years. The export of Newfoundland in 1876 represented about 390,000,000 pounds of fresh fish (1,300,000 quintals); the entire catch of the French fleet about 56,000,000 fresh fish (500,000 quintals); the entire catch of the Dominion fleet 250,000,000 pounds. In round numbers, the yield of codfish on the fishing-banks of North America in 1876 cannot have fallen far short of 1,000,000,000 pounds. The whole amount taken on the coast of Northern Europe does not probably exceed half that amount, while the catch from the North Pacific is probably not more than 5,000,000 pounds. The intrinsic value of the annual catch of codfish for the world, at five cents a pound for the green fish, is not less than $75,000,000, and their value is considerably increased by the process of curing.

Codfish are found on all soundings of less than two hundred fathoms in the North Atlantic. To the north they range far beyond the Arctic Circle, on the eastern side to Spitzbergen (lat. 78 deg. n.), and on the American coast to Davis Straits at the Riscoll Bank (67 deg. n.). Their southern limit on the European coast is near the Bay of Biscay (40 deg. n.), and on our own coast at the Winter Quarter Shoal, near the mouth of Chesapeake Bay (37 deg. n.).

About 1,500 vessels are employed in the cod-fishery of the United States.

Maine has about 540, principally from Castine, Boothbay, Portland, and Cape Porpoise.

Massachusetts has about 900 (according to the census of 1875), chiefly from Cape Ann, Cape Cod, and Boston.

Connecticut has about 60, mostly from Noank and New London.

There are also extensive boat-fisheries at Eastport (150 men), Southwest Harbor (150), Belfast (250), Castine (250), Boothbay (180), Portland (300), Cape Porpoise (80), Bristol and Matinicus (100), Cape Ann (350), Provincetown (260), Chatham (100), Hyannis (70), Nantucket (366), Edgartown (40), Nomans Land (50), New Bedford and Dartmouth (220), &c., &c. Probably 5,000 men are thus employed on the New England coast.

The most satisfactory account of the Columbia River salmon-fisheries was published in *Appleton's Journal*, May 20, 1876, by Mr. Barnet Phillips. He estimates the value of the products of the canneries at $2,500,000.

The mackerel-fishery is the fishery upon which the decision of the Halifax Commission hinged. It was claimed at the time of the session in July, 1877, that almost all the mackerel brought into the United States were taken in the waters of the Dominion of Canada, and the award was fixed accordingly at $15,000,000. It was proved conclusively before the commission that nine-tenths of the mackerel brought into our market were taken, not in the waters of Canada, but on our coast. It was really an unjust award, if it were desirable to pursue this subject fully. In regard to the distribution of the mackerel, that is another of the fishes which extend over the whole of the North Atlantic and the European coast, as well as our own. It extends farther south than the cod, but not so far north. It is found as far north as the Straits of Bellisle, and south at Cape Hatteras.

In regard to menhaden: This industry has grown almost beyond the knowledge of those who have even studied it

closely during the past four or five years. Five years ago there were four or five steamers employed; now there are sixty-six. There are some 1,500 men, and several millions of dollars employed in it. The amount of oil we obtain from the menhaden is greater than we derive from the whale. A large amount of what is called whale-oil is nothing but menhaden-oil. One house in New York offers more whale-oil than is actually brought into the United States. I am indebted to Mr. Milner for statistics in regard to the lake-fisheries.

The halibut-fishery has not been thoroughly investigated; and Lieutenant de Broca, spoken of before, has furnished us with valuable estimates.

The estimate given of the lobster-fishery is far below the truth.

As to the herring-fishery, this does not include nearly all the product of the American fisheries. It does not include the Newfoundland and Labrador herring brought by the vessels which go up there and employ the Newfoundland fishermen to catch them. These are in the Canadian reports, and to avoid duplicating them they have been included. There are probably thirty or forty trips made every year to the Magdalen Islands to bring back herring.

As to flounders: These are taken in fyke-nets in Narragansett Bay, in Connecticut, and in winter on the coast of Maine, and in summer in smacks on the shoals of Long Island Sound. * * * * * * * * * *

* * * In regard to the imperfection of the statistics furnished by the United States Census, I will only say that there is no reference whatever in the last industrial statistics to the menhaden-fishery, which we have seen amounts to almost $2,000,000 in yearly value; and if anybody who will

take any trouble to glance at the tables published by the United States heretofore, they will see that in every other particular it is as absolutely incorrect and imperfect as it can be. There was no effort made, as it appears, to cover the fisheries. As an example of the way the statistics of every kind have been jumbled together, I will state that the white-fish of the lakes and those of Long Island Sound, which are the menhaden, were all placed in one category. The herring of the sea and the herring of the lakes and the herring of the Chesapeake, which is the alewife, and the herring of the St. John, which is the menhaden, are all under one name; and so I might name a dozen instances of inaccuracies, in addition to the total inadequacy of the whole report.

I have the honor of submitting to the Association, a series of the estimated values of the Fisheries, with some details which may be of interest.

Estimates of Value of United States Fisheries, 1876.

GENERAL SUMMARY COMMISSION.

		POUNDS.
Oyster Fisheries	$50,000,000	
Cod Fisheries	4,825,540	214,322,000
Whale Fisheries	2,841,000	
Oregon Salmon Fisheries	2,500,000	30,000,000
Mackerel Fisheries	2,375,262	49,000,000
Menhaden Fisheries	1,657,790	462,000,000
Great Lake Fisheries (1872)	1,600,000	32,250,000
Shad and Alewife Fisheries (est)	1,550,000	30,000,000
Halibut Fisheries	1,546,240	22,000,000
Lobster Fisheries	1,000,000	
Herring Fisheries	507,977	28,000,000
Scup or Porgy Fisheries	504,400	7,760,000
Bluefish Fisheries	424,000	7,068,000
Swordfish Fisheries	165,000	1,500,000
Bonito Fisheries	143,000	2,200,000
Squeteague Fisheries	138,000	1,800,000
Flounder and Flat-fish Fisheries	109,620	1,827,000
Sea-Bass Fisheries	75,000	600,000
Southern Mullet Fisheries	75,000	1,000,000
Tautog Fisheries	71,000	616,000
Smelt Fisheries	50,000	400,000
Eel Fisheries	37,000	250,000
Striped Bass Fisheries	30,000	180,000
Spanish Mackerel & Pompano Fisheries	30,000	80,000
Sheepshead Fisheries	13,000	75,000
Salmon Fisheries	10,000	50,000
Other Fisheries, (est)	3,000,000	400,000,000
	$75,278,829	1,294,038,000

PRODUCTS OF MARINE FISHERIES—NORTHERN ATLANTIC STATES.

	INSHORE FISHERIES; Or Fisheries conducted from the Shore.							OFFSHORE FISHERIES; or Fisheries Conducted in large vessels, principally over 20 tons.							Aggregate of Weights.	Aggregate of Values.
	Pounds.	Price	Wholesale Value.	Price.	Retail Value.	Price.	Mean Value.	Pounds.	Price.	Wholesale Value.	Price.	Retail Value.	Price.	Mean Value.		
Flounders and Flatfish,	1,827,000	4	*$73,080	8	*$146,160	6	$109,620								1,827,000	$109,620
Halibut, (fresh)								12,339,000	4	$493,560	15	$1,850,850	9½	$1,172,205		1,172,205
" " New York								1,000,000	10	100,000	15	150,000	12½	125,000		125,000
" (cured) Glouc'r &c.								8,476,000	2	169,520		802,500		236,010		236,010
" fins, [fitches.								2,000,000	5¼	10,500	7½	15,000	6⅜	12,750		12,750
" nopes								10,000	2½	250	3	300	2¾	275	22,025,000	275
Cod (fresh) New York	5,000,000	5	250,000	8	400,000	6½	325,000									825,000
" " Glouc'r, Bos-	*20,000,000	3	600,000	5	1,000,000	4	800,000									800,000
" cured, [ton, &c.	28,480,000					1⅛	379,733	160,641,700						3,319,182	214,221,700	*3,698,915
" roes	80,000	1	800	2¼	1,600	1⅝	1,300	20,000	1	200	2¼	450	1⅝	325	100,000	1,625
Tomcod	100,000	3	3,000	8	8,000	5½	5,500								100,000	5,500
Cunner	250,000	3	7,500	5	12,500	4	10,000								250,000	10,000
Tautog	615,550	8	49,244	15	92,332	11½	70,788								615,550	70,788
Mackerel (fresh)	3,481,000	8	278,480	15	522,150	11½	400,315	2,615,000	8	209,200	15	392,250	11½	300,725	6,096,000	701,040
" cured								35,632,900							35,632,900	1,674,222
Spanish Mackerel	105,000	25	26,250	30	31,500	27½	28,875								105,000	28,875
Bonito	2,000,000	5	110,000	8	176,000	6⅛	143,000								2,000,000	143,000
Pompano	5,000	60	3,000	1.00	5,000	80	4,000								5,000	4,000
Swordfish	1,500,000	7	105,000	15	225,000	11	165,000								1,500,000	165,000
Butterfish, Whiting, and	50,000	4	2,000	8	4,000	6	3,000								50,000	3,000
Sea Robins[White Perch	90,000	2	1,800	3	2,700	2½	2,250								90,000	2,250
Squeteague	1,727,600	6	103,656	10	172,760	8	138,208								1,727,600	138,208
Kingfish	10,000	15	1,500	25	2,500	20	2,000								10,000	2,000
Spot and Croaker	75,000	5	3,750	10	7,500	7½	5,625								75,000	5,625
Sheepshead	75,000	15	11,250	20	15,000	17½	13,125								75,000	13,125
Scup	7,760,000	5	388,000	8	620,800	6½	504,400								7,760,000	504,400
Sea Bass	598,500	10	59,850	15	89,775	12½	74,812½								598,500	74,812
Striped Bass	123,200	15	18,480	20	24,640	17½	21,560								123,200	21,560
Bluefish	7,068,000	4	282,720	8	565,440	6	424,080								7,068,000	424,080
Smelt	400,000	10	40,000	15	60,000	12½	50,000								400,000	50,000
Menhaden	224,834,000							478,912,500							703,746,500	†1,657,790
Eels	250,000	12	30,000	18	45,000	15	37,500								250,000	37,500
Sturgeon	75,000	5	3,750	10	7,500	7½	5,625								75,000	5,625
Sea Shad	3,770,200	5	188,510	7½	282,765	6¼	235,637½								3,770,200	235,637
Salmon	40,100														40,100	8,020
Alewife	7,385,000	½	36,925	1	73,850	¾	55,387½								7,385,000	55,387
Herring	1,604,800	2	32,096	4	64,192	3	48,144	1,000,000							5,604,800	48,144
" (cured)															22,328,700	459,833
Ratio to mile of coast line. (1,112)	31,9579,950 287,392		$2,716,641		$4,658,864		$4,064,484								1,045,855,750	$13,020,921

N. B.—The Cured Cod has been restored to their green weight (three times as much).
The Salted Mackerel have been restored to their green weight (one-sixth additional).

*From Report Bureau of Statistics.
†From Official Reports.

PRODUCTS OF MARINE FISHERIES OF SOUTHERN MASSACHUSETTS AND RHODE ISLAND.

	WEIRS In Operation, on an average, four months in the year.							*LINES AND NETS.*							*Totals.*	
	Pounds.	Price.	Wholesale Value.	Price.	Retail Value.	Price.	Mean Value.	Pounds.	Price.	Wholesale Value.	Price.	Retail Value.	Price.	Mean Value.	Aggregate of Weights.	Aggregate of Mean Values.
Flounders	1,028,200	4	$41,128	8	$82,256	6	$61,692	378,000	4	15,120	8	$30,240	6	$22,680	1,406,200	$84,372
Cod								4,339,000	5	216,950	8	347,120	6½	282,035	4,339,000	282,035
Tomcod								10,000	3	300	8	800	5½	550	10,000	550
Cunner								5,000	3	150	5	250	4	200	5,000	200
Tautog	266,850	8	21,352	15	39,997	11½	30,664	39,900	8	3,192	15	5,985	11½	4,588	306,750	35,252
Mackerel	1,131,000	8	90,480	15	169,650	11½	130,065	592,000	8	47,360	15	88,800	11½	68,080	1,723,000	198,145
Spanish Mackerel	1,000	25	250	30	300	27½	275								1,000	275
Bonito	2,100,000	5	105,000	8	168,000	6½	136,500								2,100,000	136,500
Pompano	500	60	300	1.00	500	80	400								500	400
Swordfish								1,000,000	7	70,000	15	15,000	11	42,500	1,000,000	42,500
Butterfish	15,000	4	600	8	1,200	6	900								15,000	900
Sea Robins	40,000	2	800	3	1,200	2½	1,000								40,000	1,000
Squeteague	1,640,000	6	98,400	10	164,000	8	131,200								1,640,000	131,200
Scuppaug	5,858,000	5	292,900	8	468,640	6½	380,770	1,577,000	5	78,850	8	126,160	6½	102,505	7,435,000	483,275
Sea Bass	203,000	10	20,300	15	30,450	12½	25,375	221,500	10	22,150	15	33,225	12½	27,687	424,500	53,062
Striped Bass	4,000	15	600	20	800	17½	700	25,000	15	3,750	20	5,000	17½	4,375	29,000	5,075
Bluefish	835,000	4	33,400	8	66,800	6	50,100	2,451,000	4	98,040	8	196,080	6	147,060	3,286,000	197,160
Smelts								50,000	10	5,000	15	7,500	12½	6,250	50,000	6,250
Menhaden	15,110,000	½	75,550		151,100	¾	113,325								15,110,000	113,325
Eels	50,000	12	6,000	18	9,000	15	7,500								50,000	7,500
Sturgeon	25,000	5	1,250	10	2,500	7½	1,875								25,000	1,875
Sea Shad	127,000	5	6,350	7½	9,525	6¼	7,937								127,000	7,937
Alewife	4,236,000	½	21,180	1	42,360	¾	31,770	955,000	½	4,775	1	9,550	¾	7,162	5,191,000	38,932
Herring	1,604,000	2	32,080	4	64,160	3	43,120								1,604,000	48,120
Totals,	34,274,350		$847,900		$1,472,438		$1,160,168	11,643,400		$565,637		$865,710		$715,672	45,917,750	$1,875,840
Ratio to mile of Coast (250).	137,097		$3,391		$5,889		$4,642	46,573		$2,262						
Ratio to No. of men engaged in Weir-tending, (436)	78,610		$1,944		$3,377		$2,661					$3,462		$2,862	183,671	$7,504

THE SECRETARY: You heard yesterday Professor Baird speak of the necessity which existed that some data should be found or furnished by which the number of fish caught in the United States could be determined. The United States Commissioner explained to you what the advantages would have been if, in our late dispute with the Dominion of Canada in regard to the fisheries, we had had some data which might have been relied upon. You have just listened to an exceedingly valuable paper, read by Professor Goode on the same subject. It would be then of very great service to the United States if some measure could be adopted by which statistics could be furnished. We have been very fortunate at this meeting in having received the assistance of a great many gentlemen who are largely interested in fish in its most practical sense. I mean the Fishmongers' Association. I have, therefore, the honor to offer the following resolution:

Resolved, That it is very desirable, in the interests of the trade and fisheries, that an accurate knowledge should be had of the consumption of fish in New York, and that in the absence of any authoritative provision for this purpose, the Fishmongers' Association be earnestly requested to take such steps as may assist in the publication of such an annual report of fish or marine products used for food as may pass through their hands.

The resolution was carried.

General discussion of topics being now in order, Mr. GENIO C. SCOTT said: I think it would be an improvement in the trout-fisheries of this country, particularly in the neighborhood of New York, if the Canadians were invited to send us their estuary-trout. They are similar to

those of Long Island, and I have been informed that they could be furnished here for twenty-five cents a pound. I think it would stop poaching if they could be furnished as cheap as that, and I do not think it is a profitable employment to cultivate trout, though it is very amusing. We all know black-bass are profitable, and it might be worth while to cultivate striped-bass. The best way to do that is to have a law passed by the Legislature to stop the bringing of them into New York for a time. There should be a law preventing the sale of striped-bass weighing less than a pound. These are the only two things which I know of by which the fisheries could be improved. I think from the little data I have that if the estuary-trout of Canada could be brought in here, and the striped-bass could be protected, there would be great improvement.

THE PRESIDENT requested Mr. Reeder, Fish Commissioner of Pennsylvania, to give the conclusion of the experience which he told of some years ago in regard to black-bass.

MR. REEDER: I presume that you refer more particularly to the experience which I had in regard to the growth of bass. I am fully satisfied, so that I can say without hesitation, that black-bass spawn where food is abundant in early summer or late spring. At that time the next year they will weigh three-quarters of a pound to a pound, and be mature fish. I have been so often called upon before the Association to give my experience in regard to bass, that I do not feel as if I could say anything which would be entertaining or interesting; but there is one subject on which I think I can state some new facts. In 1871, before any commission was appointed by the State of Pennsylvania, Mr. Norris and myself purchased some salmon-eggs from Mr.

Wilmot. They were put in charge of Mr. Chrystie, who had a hatching-house in this state, near Poughkeepsie. After hatching the fish and bringing them on for the purpose of introducing the young into the river, they met with such an unfortunate detention in the city of New York that very few were put in alive. We repeated the experiment in 1872, when we succeeded in hatching about 10,000 of the *salmo salar*, and we introduced these into a tributary of the Delaware River. In 1873, Professor Baird put into our charge, I think, some 40,000 eggs, of which we hatched 27,000 young, and introduced these into another tributary of the Delaware River. The Fish Commission of Pennsylvania was formed that year, and I became a member. My connection with the introduction of salmon has been unofficial. After the introduction of the *salmo salar* in 1873, we introduced them in 1874. We then thought it unwise to experiment further, thinking it would be a failure. We abandoned that idea, and have been introducing the *salmo quinnet*, or California salmon, ever since. This year, however, there have been nine mature salmon caught in the Delaware River. One of them was quite a large fish, but had a very weak back, in consequence of the length of time it had been out of salt-water. I judged from the size of that salmon that when it was a fresh-run fish it would have weighed sixteen pounds. When caught it weighed ten and a half pounds, and was ready to deposit its spawn. After examining the fish, I was forced to come to the conclusion that the fish was not a California salmon, but a *salmo salar*. In order to have my judgment confirmed, I sent the fish to Professor Gill, of the Smithsonian Institute, and he pronounced it a *salmo salar*. This was the only fish that we subjected to a scientific examination. The other fish were

caught by the fishermen during the shad-fishing season in nets. One was caught in a shad-net below Philadelphia. Prior to that time a fisherman had caught a salmon weighing eleven pounds. As he saw it before it escaped, he said he thought that salmon was so much larger than the one that weighed eleven pounds that he thought it would have weighed at least twenty-five pounds. As we introduced no fish into the Bushkill until 1873, I am of the opinion that these fish were five-year-old salmon, and the product of the eggs hatched in 1872, and I have no doubt that the product of 1873, returning next year, will give us many more salmon in the Delaware River next year than this year, and I hope to have, among others, the pleasure of forwarding to Professor Baird the first California salmon. This is but a very small return, it is true, for the number of eggs introduced into the Delaware, but to my mind it is a solution of the problem. I know that one swallow does not make a summer, but where we see one swallow we can infer that more are coming. We know this, that the salmon that are introduced and have been introduced into the Delaware and its tributaries have been there as young fish, and returned there from the sea; that they came back full of ripe spawn ready to deposit and reproduce; and if that is not a solution of the question that salmon can be introduced as far south as the Delaware, I do not think that any theory can be discovered from a statement of facts.

MR. HALLOCK: The object of my getting up was to say that in view of the suggestions of Mr. Scott, and of the concurrence of all of us with his ideas of the desirability of introducing the estuary-fish, and estimating the growth of all fish, I wish to say that there has been started with-

in a week a large club of influential men, whose province it will be to take charge of the fishing interests of Harlem River, the Westchester creeks, and all the little tributaries around the city, and they hope that, by the coöperation of ourselves and other gentlemen here and elsewhere, that they will be able to make a better showing in a short time than at present.

MR. SCOTT: Bass-fishing this last fall has been better around New York than for thirty years. So all the boatmen say. I went down late in the season, and I found most beautiful bass. I took from fifteen down to five fish, and never found so good fishing before; and that reminded me, as we supposed that by the fishery of the menhaden we were depleting the water of the ocean, but instead of that, menhaden have been more numerous than ever. How can you account for that? Perhaps some gentleman will state why bass, after the streams have been fished and netted and hacked for so many years—why we found bass more numerous than ever.

THE PRESIDENT: I would like you to seek an explanation why the price of bass has risen from twelve to twenty cents a pound, as it is now.

MR. SCOTT: I am led to conclude that bass for the market are taken in bays, and have decreased. I was speaking in regard to what were immediately about New York—fishes taken with the rod and reel. I suppose Mr. Blackford could tell how the waters of the East are depleted, and that they are obliged to charge more for bass, because they supply a great share of them. One thing, moreover, we know, in connection with bass-fishing near New York, that on the south side of Long Island the fishing was better last fall than

at Basque Island and Cutty Hunk. I was speaking of the fish that come in from the sea and we take in the Kill von Kull and the outlet of Newark Bay.

THE PRESIDENT asked Mr. Haley and Mr. Lamphier to tell about the number of bass in the market, &c.

MR. DUDLEY HALEY: It is a fact that there are not as many bass through the market as there were twenty years ago. Then we used to catch as many bass as we wanted. Now there are very few. The same thing occurs with cod-fishing. Some seasons there are no sea-bass, other seasons any quantity of them. I am sure that I cannot explain why it is.

THE PRESIDENT: Has there been a gradual diminution of the supply of bass?

MR. HALEY: No, sir. Some seasons they are scarcer than others.

THE PRESIDENT: How do you account for the rise in price?

MR. HALEY: Scarcity and more demand than there was twenty years age. I do not know but that they are more popular. I think so.

MR. BLACKFORD offered the following resolution, which was agreed to:

Resolved, That the thanks of this Association are due to Professors Milner and Goode for their exceedingly interesting papers on subjects of the highest importance to the Association, and that in affording the opportunity of acquiring information, these gentlemen are fulfilling not only roles of useful members of the A. F. C. A., but of public instructors.

MR. ANNING asked for information in regard to putting the eggs of trout in soft or hard water, and said that in

his experience that eggs put in soft-water will not stand as much as those placed in hard water.

MR. GREEN: My opinion on the subject is from one of our men who has charge of the hatching in Greene county. He took a great many eggs in that county last fall, and took a great many from our state. The eggs from Greene county were all from soft-water. The water the spawn was taken from was soft-water. His experience showed that the eggs taken from the fish in the soft-water were very much thinner than those taken from the hard-water—that is, from the lime-water, and I am of the opinion that they will not bear transportation as well. The soft-water fish will not bear the transportation that the hard-water fish will. When you come to ship the eggs, the advantage would be very much in favor of the hard-water trout. By hard-water, I mean any water impregnated with lime.

MR. PAGE described an establishment for hatching the *salmo fontinalis* at Rangely Lake, Maine. Trout had been taken with the fly during the spawning-season; also, that a large number of the blue-black trout and their eggs had been distributed through Maine. The fact is of great interest, as it is the first establishment of a permanent hatching-house for the purpose of propagating that species of the *salmo fontinalis*, or of that variety which, I believe, is now admitted to be the largest known in the world. The nine-and-a-half-pound trout from the Rangely Lake was sent to the Smithsonian Institute. If it reached Professor Baird, I think it will be on record as the second largest trout known. The largest was that of ten pounds, taken in 1867 in the same water.

MR. MATHER: Mr. Page stated that the trout had been

taken with the fly during the spawning-season. I would say that I have taken the grayling with the fly, and taken the spawn from the fish immediately after, and also that there is to be an effort this spring to take grayling spawn.

MR. BLACKFORD suggested certain changes in the organization of the sections whose duty it was to report on special subjects.

The following gentlemen were appointed for 1878–'79:

SECTION 1.	Mr. S. Green, Mr. S. Wilmot.	*Methods in Fish-Culture, etc.*
SECTION 2.	Mr. C. B. Evarts, Mr. L. Stone, Mr. T. B. Ferguson,	*Fishery Laws and Fish-Ways.*
SECTION 3.	Mr. J. W. Milner, Mr. F. Mather, Mr. C. H. Hallock,	*Natural History, etc.*
SECTION 4.	Mr. E. G. Blackford, Mr. B. Phillips,	*Fisheries.*

MR. MILNER offered the following resolution:

Resolved, That this Association tender their thanks to the officers and members of the Fulton Market Fishmongers' Association for the use of their rooms. At the same time the American Fish Cultural Association are desirous of expressing the pleasure they feel at having had associated with them so many gentlemen directly representing, in a commercial sense, the fishing interests of New York, and that they are quite sanguine in the belief that the impression of such a practical working element must advance the interests of the Association.

THE PRESIDENT: I would like to say a word or two to