

INDEX.

1. OBSERVATIONS ON THE AQUARIA AT CENTRAL STATION.

Page.		Page.
Alum used in filtering water.....		12
Boleosoma olmstedii.....		5
Chromatophagus parasiticus.....	6, 7	5
Construction, system of.....	2, 3	1, 2
Darters, spawning habits of.....	9-11	1-7
Filtering, methods of.....	8, 9	2
Fish infested with fungus.....	5, 6	5
Fish infested with parasites.....	6, 7	5
Fish transferred from fresh to salt water.....	5, 6	5
Fresh-water aquaria at Central Station.....	7-9	12
Gambusia patruelis, spawning in aquarium.....	12	4
Gasterosteus aculeatus.....	5	5
Habits of fishes in the aquaria.....	9-12	12
Hoffmann, R. S.....	4	9
		12
		5
		5
		1, 2
		1-7
		2
		5
		5
		12
		4
		5
		12
		9

2. FISHING VESSELS AND BOATS OF THE PACIFIC COAST.

Alaskan schooners.....	16	Goss, Sawyer & Packard.....	14
Aleutian bidarkas.....	27-30	Griffin, J. J.....	38
Barkentine Jane Falkenburg.....	34	Hall, Henry.....	41
Barkentine Tremont.....	34	Harvey, Rev. M.....	14
Bark Mary and Helen.....	15	Higgins & Gifford.....	18
Bean, Dr. T. H.....	30	Hume, George and Robert.....	38
Bidarka or kaiak of Alaska.....	24-26	Jacobs, Capt. Solomon.....	18
Bidarrah, dimensions of.....	33	Kaik of Point Barrow.....	30-31
Bidarrah or oomiak.....	31-34	Kaik or bidarka of Alaska.....	24-26
Brown, J. T., remarks on first steam whaler.....	14	List of Alaskan salmon vessels.....	36
Burling, William.....	29	Makah canoe.....	18-20
Canoes of Kadiak.....	26	Market fleet.....	40-44
Chinese fishing canoe.....	47	Oomiak or bidarrah.....	31-34
Chinese fishing craft.....	46-48	Oyster bateaux.....	44
Chinese fishing junks.....	46-47	Oyster scows.....	45
Chinese fishing skiffs.....	47-48	Oyster sloops.....	44
Cod vessels.....	34	Oyster vessels and boats.....	44-45
Cod and halibut fleets.....	34-35	Petroff, Ivan.....	25, 26, 28
Dimensions of Alaskan dugouts.....	23, 24	Propeller Haytian Republic.....	35
Dimensions of Aleutian bidarkas.....	20, 30	Salmon fleet of Alaska.....	35-36
Dimensions of Columbia River salmon boat.....	39	Salmon gill-net boat.....	38-39
Dimensions of fishing felucca.....	43, 44	Salmon seine boats and scows.....	40
Dimensions of modern steam whalers.....	18	Salmon vessels and boats.....	35-40
Dimensions of steam fishing schooners.....	38	San Francisco catboats.....	44
Dories and sharpies.....	45-46	Scammon, Charles M., remarks on the oomiak.....	31-32
Dugout canoes of Alaska.....	21-24	Schooner Hero.....	34
Dugout canoes of Washington.....	18-21	Schooner John Hancock.....	34
Elliott, Henry W.....	21, 22, 28, 33-34	Sealing boats.....	17-18
Engines of steam whalers.....	16	Sharpies and dories.....	45-46
First steam whaler.....	15	Skin boats.....	24-34
Fishing felucca.....	41-44	Steam bark Belvidere.....	15
Fur-seal and sea-otter vessels and boats.....	16-24	Steamer Jeannette.....	15

2. FISHING VESSELS AND BOATS OF THE PACIFIC COAST—Continued.

	Page.		Page.
Steamer Thrasher	15	Turner, L. M.	25, 26, 27
Steamers first used in seal fishery	14	The Mollie Adams	35
Steamers introduced into the whale fishery	14	Vessels of Puget Sound and of the Sacramento, Co- lumbia, and other rivers	36-37
Steam fishing schooners	37-38	Vessels of San Francisco and Puget Sound	16
Steam schooner George H. Chance	35	Whale fleet	13-16
Steam tug U. S. Grant	41	Whaler Vigilant	15
Steam whaler North Star	15	Whaler Wallaston	15
Swan, James G., notes on Makah canoes	19-20	Wilkes, Commander Charles	20, 25
Tanner, Z. T.	40		
Tanner, Z. T., remarks on Alaskan sailing vessels	17		

3. OBSERVATIONS ON FISHES AND FISH-CULTURE.

Adams, A. C.	49	Smith, H. M.	49, 15
Adams, C. B. S.	49	Sole	61
Atkins, C. G.	49, 54, 55	Species referred to, scientific names:	
Atlantic salmon	53-54	Archosargus probatocephalus	56, 57
Bean, Tarleton H.	49	Carassius auratus	50
Black bass	56	Clupea sapidissima	50, 51
Brook trout	55	Coregonus albula	56
Buck, H. H.	49	Coregonus clupeiiformis	55
California salmon	51-53	Cynoscion maculatum	57
Carp	50	Cynoscion regale	57
Clark, Frank N.	49, 55	Cyprinus carpio	50
Cod	58-59	Gadus morrhua	58-59
Common Pacific crab	61	Homarus americanus	61
Dana, Richard	49, 58	Idus melanotus	50
Douglass, Henry	49, 56	Micropterus salmoides	56
Edwards, Vinal N.	49, 57	Melanogrammus æglefinus	59
Ellis, J. Frank	61	Oncorhynchus chouicha	51-53
Flatfish	60	Perca flavescens	56
Gay, John	49	Pollachius virens	60
Gilbert, Charles H.	51	Pristis pectinatus	49
Golden ide	50	Pseudopleuronectes americanus	60
Goldfish	50	Salmo fario	55
Haddock	59	Salmo irideus	55
Hatching eggs in roily water	59	Salmo levenensis	55
Hessel, Rudolph	49, 50	Salmo salar	53-54
Hubbard, W. F.	49	Salmo salar, landlocked	54-55
Jacobs, Capt. Henry S.	59	Salvelinus fontinalis	55
Joyce, Capt. Isaac	59	Scomber scombrus	57
Lee, Prof. Leslie A.	61	Serranus atrarius	56
Lobster	61	Solea solea	61
Loch Leven trout	55	Stizostedion vitreum	56
Lynch, W. H.	59	Stenotomus chrysops	57
Mackerel	57	Tautoga onitis	57
Mather, Fred	49	Tinca tinca	50
Maxwell, John	49	Trachynotus sp.	57
Page, W. F.	49	Spotted weakfish	57
Pike perch	56	Squeteague	57
Platt, Robert	49, 56, 57	Stone, Livingston	49, 52, 53
Pollock	60	Tautog	57
Pompano	57	Tench	50
Rainbow trout	55	Vendace	56
Ravenel, W. de C.	49, 50	Von Behr trout	55
Sawfish	49	Whitefish	55
Schoodic salmon	54-55	Wilcox, W. A.	51
Scup	57	Williams, George B.	49
Sea bass	56	Wilson, Capt. Fred. W.	59
Shad	50-51	Woodcock, W. H.	51
Sheepshead	56-57	Worth, S. G.	49, 51, 59
Sheepshead eggs, description of	56-57	Yellow perch	5

4. NOTES ON FISHES FROM THE LOWER POTOMAC RIVER.

	Page.		Page.
Alewife	64	Species referred to, scientific names—Continued.	
Baird, Spencer F	64, 67	Fundulus diaphanus	64, 65, 66
Barb	72	Fundulus heteroclitus	64, 65, 66, 67
Bean, Tarleton H	63, 67	Fundulus majalis	64, 65
Bluefish	71	Gambusia patruelis	64, 68, 69
Bull-minnow	65	Hydrargyra luciae	67
Croaker	72	Leiostomus xanthurus	72
Crocus	72	Lepomis gibbosus	71
Eel	69	Lucania parva	68
Ellwife	64	Menidia beryllina	64, 69, 70
Flounder	72	Menidia notata	69, 70
Garfish	69	Menticirrhus nebulosus	72
Grumbler	72	Micropogon undulatus	72
Harvest-fish	71	Paralichthys dentatus	64, 72
Jordan, Prof. D. S.	66, 68	Pomatomus saltatrix	71
Kingfish	72	Roccus lineatus	71
Mayfish	65	Scomberomorus maculatus	71
Menhaden	64	Stromateus alepidotus	71
Oldwife	64	Tylosurus marinus	69
Plaice	72	Zygonectes luciae	64, 67, 68
Pumpkin-seed	71	Spot	72
Rainwater-fish	68	Spanish mackerel	71
Robin-perch	71	Spotted weakfish	72
Rock	71	Spring minnow	65
Rockfish	71	Striped bass	71
Sheepshead	71, 72	Summer flounder	72
Sheepshead minnow	64	Sunfish	71
Short-minnow	64	Tailor	71
Silversides	69, 70	Toadfish	72
Species referred to, scientific names—		Tobacco-box	71
<i>Anguilla anguilla</i>	69	Top-minnow	69
<i>Archosargus probatocephalus</i>	71, 72	Trout	72
<i>Batrachus tau</i>	72	Uhler, P. L.	72
<i>Brevoortia tyrannus</i>	64	Variegated minnow	64
<i>Cynoscion maculatum</i>	72	Whiting	72
<i>Cyprinodon variegatus</i>	64		

5.—FISHERIES OF THE NEW ENGLAND STATES.

Alewives, use of, as bait	145	Market fishery, explanation of term	75
Artificial propagation, results of	146	Massachusetts, fisheries of	124-153
Bait fishery of Massachusetts	144, 145	Menhaden fishery of New England	90-91
Bait fishery of Maine	109	Menhaden fishery, value of	81
Canning industry of Maine	115-118	Menhaden industry of Connecticut	176
Cod, haddock, hake, etc., fishery of Maine	109	Menhaden industry of Maine	119
Cod, results of propagation of	140	Menhaden industry of Rhode Island	164
Common and scientific names of fishes, etc.	75-76	Menhaden, use of, as bait	145
Connecticut, fisheries of	165-170	Names of fishes, etc., common and scientific	75-76
Crustacean and reptilian fisheries, value of	81	Nationalities of New England fishermen	79
Fishing-grounds	149-153	New Hampshire, fisheries of	120-123
Fishing vessels of New England	79-81	Oyster and other molluscan fisheries, value of	81
Fish trades of Boston and Gloucester	147-149	Pound-net, weir, and trap fisheries, development of	82, 108
Frozen-herring trade of New England	91-93	Rhode Island, fisheries of	154-164
Game fish, scarcity in pound nets	145	Salmon fishery of Maine	110
General fisheries, value of	81	Sardine industry of Maine	115-118
General remarks and statistics	73-94	Shad fishery of Maine	110
Haddock fishery, explanation of term	75	Shore fisheries of Connecticut	171-175
Herring fishery of Maine	108-109	Shore fisheries of Maine	104-114
Herring, use of, as bait	145	Shore fisheries of Massachusetts	135-145
Horse-mackerel, utilization of	82	Shore fisheries of New Hampshire	123
Lobster-canning industry of Maine	118	Shore fisheries of Rhode Island	161-164
Lobster fishery of Maine	108	Shore fishery, explanation of term	75
Mackerel fishery, explanation of term	75	Shore industries of Connecticut	176
Maine, fisheries of	94-110	Shore industries of Maine	115-119
Mammalian fisheries, value of	81	Shore industries of Massachusetts	147

5. FISHERIES OF THE NEW ENGLAND STATES—Continued.

	Page.		Page.
Shore industries of Rhode Island.....	164	Tabular statements—Continued.	
Smelt fishery of Maine.....	109	27. Summary by customs districts of the vessel fish-	
Smoked-herring industry of Maine.....	118-119	eries of Maine in 1889.....	100
Soft-clam fishery of Maine.....	109	28. Showing by species and customs districts the yield	
Squid, use of, as bait.....	144-145	of the vessel fisheries of Maine in 1889.....	100-101
Squid, utilization of.....	82	29. Showing by customs districts the average tonnage,	
Tabular statements:		value, crew, and stock of vessels employed in the	
1. Number of persons employed in New England fish-		fisheries of Maine in 1889.....	102
eries in 1889.....	77	30. Showing by apparatus and species the yield of the	
2. Apparatus employed and capital invested in New		vessel fisheries of Maine in 1889, exclusive of the	
England fisheries in 1889.....	77	molluscan and crustacean fisheries.....	102
3. Showing, by species, the yield of fisheries of New		31. Number of vessels engaged in each fishery in	
England States in 1889.....	78, 79	Maine in 1889, together with their tonnage,	
4. Showing number and nationality of persons em-		value, and number of crew.....	103
ployed in New England vessel fisheries in 1889..	79	32. Showing by fishing-grounds and apparatus, the	
5. Showing by States and rigs the number and ton-		catch of the mackerel fleet of Maine in 1889.....	103
nage of vessels employed in New England fish-		33. Showing by fisheries and species the yield of the	
eries in 1889.....	81	vessel fisheries of Maine in 1889.....	104
6. Values of various coast fisheries of New England		34. Showing by counties the number of persons en-	
States in 1889.....	81	gaged in the shore fisheries of Maine in 1889....	106
7. Quantities, values, and percentages of fishery pro-		35. Showing by counties the apparatus employed in	
ducts taken in each kind of apparatus in New		the shore fisheries of Maine in 1889.....	106
England States in 1889.....	83	36. Showing by counties and species the yield of the	
8. Showing by States the actual and relative impor-		shore fisheries of Maine in 1889.....	107
tance of the vessel and shore fisheries of New		37. Showing by counties and apparatus the yield of	
England in 1889.....	84	the shore fisheries of Maine in 1889.....	111-113
9. Relative importance of each of the vessel fisheries		38. Relative quantity and value of yield in each prin-	
of the New England States in 1889.....	85	cipal form of apparatus of capture employed in	
10. Certain averages and percentages for vessels em-		the shore fisheries of Maine in 1889.....	113
ployed in New England fisheries in 1889.....	87	39. Showing by counties certain averages and per-	
11. Certain averages and percentages for the shore		centages of the shore fisheries of Maine in 1889..	114
fisheries of the New England States in 1889.....	87	40. Showing by counties the percentage of the value	
12. Showing for each of fifteen important species the		of each species to the total yield of the shore	
percentage of value in each New England State		fisheries of Maine in 1889.....	114
to the total value of the catch in New England..	88	41. Showing by counties the products of the canning	
13. Comparative table showing number of persons em-		industry of Maine in 1889.....	115-116
ployed in New England fisheries in 1880 and 1889..	89	42. Summary by counties of the canning industry of	
14. Comparative table showing number and value of		Maine in 1889.....	116
vessels, boats, etc., employed in New England		43. Classification of employes of sardine canneries in	
fisheries in 1880 and 1889.....	89	Washington and Hancock counties, Maine, in	
15. Comparative table showing values of fisheries of		1889, with statement of weekly and annual	
New England States in 1880 and 1889.....	90	wages.....	117
16. Extent of menhaden industry of New England		44. Number and value of supply boats employed in	
States in 1889.....	91	the sardine industry of Washington and Han-	
17. Extent of frozen-herring trade of New England		cock counties, Maine, in 1889.....	118
States in 1889.....	93	45. Extent of the lobster-canning industry of Maine	
18. Number and value of frozen herring landed in New		in 1889.....	118
England States by Canadian vessels in 1889....	93	46. Extent of the smoked-herring industry of Maine	
19. Persons employed in the fisheries of Maine.....	94	in 1889.....	118
20. Apparatus and capital employed in Maine fisheries.	94	47. Quantities of smoked herring prepared by fish-	
21. Products of Maine fisheries.....	95	ermen and sardine-canners of Maine in 1889.....	119
22. Showing by counties the number and nationality		48. Comparative table showing quantity of herring	
of men employed in vessel fisheries of Maine in		smoked in Maine in 1880, 1887, 1888, and 1889... 119	
1889.....	96	49. Extent of menhaden industry of Maine.....	119
23. Showing by counties the number and value of ves-		50. Persons employed in New Hampshire fisheries... 120	
sels and apparatus employed in vessel fisheries		51. Apparatus and capital in New Hampshire fish-	
of Maine in 1889.....	97	eries.....	120
24. Showing by counties the yield of vessel fisheries		52. Products of New Hampshire fisheries.....	120
of Maine in 1889.....	97-98	53. Number of vessels engaged in each fishery in New	
25. Showing by counties certain average figures for		Hampshire in 1889, with tonnage, value, and	
vessels employed in fisheries of Maine in 1889..	99	number of crew.....	121
26. Showing by counties the percentage of value of		54. Showing by fisheries and species the yield of the	
each species or product taken in the vessel fish-		vessel fisheries of New Hampshire in 1889.....	121
eries of Maine in 1889.....	99	55. Showing by species the yield of the vessel fish-	
		eries of New Hampshire in 1889.....	122

5. FISHERIES OF THE NEW ENGLAND STATES—Continued.

Page.	Page.
<i>Tabular statements—Continued.</i>	
56. Showing by apparatus and species the yield of the vessel fisheries of New Hampshire in 1889, exclusive of the lobster fisheries.....	122
57. Showing by species the yield of the shore fisheries of New Hampshire in 1889.....	123
58. Showing by apparatus and species the yield of the shore fisheries of New Hampshire in 1889.....	123
59. Persons employed in Massachusetts fisheries.....	124
60. Apparatus and capital employed in Massachusetts fisheries.....	124
61. Products of Massachusetts fisheries.....	125
62. Showing by counties the number and nationality of men employed in the vessel fisheries of Massachusetts in 1889.....	127
63. Showing by counties the number and value of vessels and apparatus employed in the vessel fisheries of Massachusetts in 1889.....	127
64. Showing by counties and species the yield of the vessel fisheries of Massachusetts in 1889.....	128-129
65. Showing by counties certain average figures for the vessels employed in the fisheries of Massachusetts in 1889.....	129
66. Showing by counties the percentage of value of each species or product taken in the vessel fisheries of Massachusetts in 1889.....	130
67. Showing by species and customs districts the yield of the vessel fisheries of Massachusetts in 1889.....	130-131
68. Summary by customs districts of the vessel fisheries of Massachusetts in 1889.....	132
69. Showing by customs districts the average tonnage, value, crew, and stock of vessels employed in the fisheries of Massachusetts in 1889.....	132
70. Showing by apparatus and species the yield of the vessel fisheries of Massachusetts in 1889, exclusive of molluscan, crustacean, and mammalian fisheries.....	133
71. Number of vessels engaged in each fishery in Massachusetts in 1889, with tonnage, value, and number of crew.....	133
72. Showing by fisheries and species the yield of the vessel fisheries of Massachusetts in 1889.....	134
73. Showing by fishing-grounds the catch of the mackerel (by apparatus), the bank cod, the Grand and Western bank fresh halibut, and the Iceland halibut fleets of Massachusetts in 1889.....	135
74. Showing by counties the number of men employed in the shore fisheries of Massachusetts in 1889.....	137
75. Showing by counties the apparatus employed in the shore fisheries of Massachusetts in 1889.....	137
76. Showing by counties and species the yield of the shore fisheries of Massachusetts in 1889.....	137-138
77. Showing by counties and apparatus the yield of the shore fisheries of Massachusetts in 1889.....	139-142
78. Relative quantity and value of yield in each principal form of apparatus of capture employed in shore fisheries of Massachusetts in 1889.....	143
79. Showing by counties certain averages and percentages of shore fisheries of Massachusetts in 1889.....	143
80. Showing by counties the percentage of value of each species to the total yield of the shore fisheries of Massachusetts in 1889.....	145
<i>Tabular statements—Continued.</i>	
81. Showing by counties and apparatus the quantities of fish and squid taken in the shore fisheries of Massachusetts in 1889 and sold for bait.....	145
82. Showing by counties and species the quantities of fish and squid taken in the shore fisheries of Massachusetts in 1889 and sold for bait.....	145
83. Showing by apparatus and species the quantities of fish and squid taken in the shore fisheries of Massachusetts in 1889 and sold for bait.....	145
84. Extent of wholesale fish trades and related industries of Gloucester, Mass., in 1889.....	148
85. Extent of wholesale fish trades of Boston, Mass., in 1889.....	149
86. Showing by fishing-grounds the quantities of fish landed at Gloucester, Mass., in 1889, by New England fishing vessels.....	150
87. Showing by fishing-grounds the quantities of fresh ground-fish landed at Boston, Mass., in 1889, by New England fishing vessels.....	153
88. Showing by fishing-grounds and months the quantities of fresh and salt mackerel landed at Boston, Mass., in 1889, by New England fishing vessels.....	153
89. Persons employed in Rhode Island fisheries.....	154
90. Apparatus and capital employed in Rhode Island fisheries.....	154
91. Products of Rhode Island fisheries.....	155
92. Showing by counties the number and nationality of persons employed in the vessel fisheries of Rhode Island in 1889.....	156
93. Showing by counties the number, tonnage, value, and outfits of vessels employed in the vessel fisheries of Rhode Island in 1889.....	156
94. Showing by counties the yield of vessel fisheries of Rhode Island in 1889.....	156
95. Showing by counties certain average figures for vessels employed in the fisheries of Rhode Island in 1889.....	157
96. Summary by customs districts of the vessel fisheries of Rhode Island in 1889.....	157
97. Showing by species and customs districts the yield of vessel fisheries of Rhode Island in 1889.....	157
98. Showing by customs districts the average tonnage, value, crew, and stock of vessels employed in the fisheries of Rhode Island in 1889.....	158
99. Showing by apparatus and species the yield of the vessel fisheries of Rhode Island in 1889, exclusive of the molluscan and crustacean fisheries.....	158
100. Number of vessels engaged in each fishery in Rhode Island in 1889, with tonnage, value, and number of crew.....	159
101. Showing by fisheries and species the yield of the vessel fisheries of Rhode Island in 1889.....	159
102. Showing by counties the number of persons engaged in the shore fisheries of Rhode Island in 1889.....	160
103. Showing by counties the apparatus employed in the shore fisheries of Rhode Island in 1889.....	161
104. Showing by counties and species the yield of the shore fisheries of Rhode Island in 1889.....	161
105. Showing by counties and apparatus the yield of the shore fisheries of Rhode Island in 1889.....	162

5. FISHERIES OF THE NEW ENGLAND STATES—Continued.

	Page.		Page.
Tabular statements—Continued.		Tabular statements—Continued.	
106. Relative quantity and value of yield in each principal form of apparatus of capture employed in the shore fisheries of Rhode Island in 1889.....	163	121. Number of vessels engaged in each fishery in Connecticut in 1889, with tonnage, value, and number of crew.....	170
107. Showing by counties certain averages and percentages of the shore fisheries of Rhode Island in 1889.....	163	122. Showing by fisheries and species the yield of the vessel fisheries of Connecticut in 1889.....	171
108. Showing by counties the percentage of the value of each species to the total yield of the shore fisheries of Rhode Island in 1889.....	164	123. Showing by counties the number of persons engaged in the shore fisheries of Connecticut in 1889.....	172
109. Extent of menhaden industry of Rhode Island.....	164	124. Showing by counties the apparatus employed in the shore fisheries of Connecticut in 1889.....	172
110. Persons employed in Connecticut fisheries.....	165	125. Showing by counties and species the yield of the shore fisheries of Connecticut in 1889.....	172
111. Apparatus and capital employed in Connecticut.....	165	126. Showing by counties and apparatus the yield of the shore fisheries of Connecticut in 1889.....	173-174
112. Products of Connecticut fisheries.....	166	127. Relative quantity and value of yield in each principal form of apparatus of capture employed in the shore fisheries of Connecticut in 1889.....	174
113. Showing by counties the number and nationality of persons engaged in the vessel fisheries of Connecticut in 1889.....	167	128. Showing by counties certain averages and percentages of the shore fisheries of Connecticut in 1889.....	175
114. Showing by counties the number, value, and net tonnage of vessels and the quantity and value of apparatus of capture employed in the vessel fisheries of Connecticut in 1889.....	167	129. Showing by counties the percentage of value of each species to total yield of shore fisheries of Connecticut in 1889.....	175
115. Showing by counties the yield of the vessel fisheries of Connecticut in 1889.....	168	130. Extent of menhaden industry of Connecticut in 1889.....	176
116. Showing by counties certain average figures for vessels employed in the fisheries of Connecticut in 1889.....	168	Vessel fisheries, relative importance of.....	85
117. Summary by customs districts of the vessel fisheries of Connecticut in 1889.....	168	Vessel fisheries of Connecticut.....	166-171
118. Showing by species and customs districts the yield of the vessel fisheries of Connecticut in 1889.....	169	Vessel fisheries of Maine.....	95-104
119. Showing by customs districts the average tonnage, value, crew, and stock of vessels employed in the fisheries of Connecticut in 1889.....	169	Vessel fisheries of Massachusetts.....	126-135
120. Showing by apparatus and species the yield of the vessel fisheries of Connecticut in 1889, exclusive of molluscan, crustacean, and mammalian fisheries.....	170	Vessel fisheries of New Hampshire.....	121-122
		Vessel fisheries of Rhode Island.....	155-159
		Washington treaty, effects of abrogation.....	83, 108, 109
		Weights of products, explanation of system.....	74
		Whiting, utilization of.....	82

6. THE FISHERIES OF LAKE ONTARIO.

Alewife.....	187-192	Fishes referred to, common names—Continued.	
Atlantic salmon.....	195-202	Chub.....	211, 212
Bait fishes.....	210-211	Cisco.....	206, 214
Calico bass.....	209	Ciscoette.....	207
Canadian import trade.....	183-185	Cusk, fresh-water.....	215
Cape Vincent customs district.....	184	Dace.....	211
Commercial fishes, notes on.....	185-209	Dogfish.....	211, 213
Deficient food, effect on alewives.....	191-192	Dory.....	215
Dominion of Canada, whitefish planted by.....	205	Drum, fresh-water.....	215
Fishes referred to, common names:		Fullfish.....	211
Alewife.....	187-192, 211, 214	Fresh-water cusk.....	215
Atlantic salmon.....	195-202, 214	drum.....	215
Bait fishes.....	210-211	Gaspereau.....	187
Black bass, large-mouthed.....	214	Gizzard.....	214
small-mouthed.....	215	Grass bass.....	209
Bloater.....	207	Herring, branch.....	214
Bloater whitefish.....	207	lake.....	206, 214
Blue pike.....	208	Horned dace.....	211, 214
Blunt-nosed minnow.....	211	Hornyhead.....	211
Branch herring.....	214	Hoy's whitefish.....	206, 207, 214
Bullhead.....	213	Johnny darter.....	211
Burbot.....	215	Lake herring.....	206, 214
Calico bass.....	209, 214	moon-eye.....	214
Carp, leather.....	213	trout.....	202-203, 214
Carp mullet.....	213	Lawyer.....	215

6. THE FISHERIES OF LAKE ONTARIO—Continued.

Page.	Page.
Fishes referred to, common names—Continued.	Fishes referred to, common names—Continued.
Leather carp..... 213	Yellow perch..... 215
Ling..... 215	pike..... 208
Little shad..... 187	Fishes referred to, scientific names:
Long-jaw..... 207, 214	Acipenser rubicundus..... 185, 213
Mad pike..... 209	Ambloplites rupestris..... 214
Manhaden..... 187	Ameiurus-vulgaris..... 213
Menhaden..... 187	nebulosus..... 213
Menominee whitefish..... 206, 207, 214	Amia calva..... 213
Minnows..... 210, 211	Aplodinotus grunniens..... 215
Mongrel whitefish..... 206, 207	Campostoma anomalum..... 210
Moon-eye..... 187, 206, 207, 214	Catostomus teres..... 210, 213
Mudfish..... 213	Clupea chrysochloris..... 214
Mud-minnow..... 211	pseudoharengus..... 187, 211, 214
Mud-shad..... 214	sapidissima..... 193, 214
Mullet..... 210, 213	Coregonus artedi..... 206, 207, 214
Muskellungo..... 214	clupeiformis..... 204, 214
Ontario whitefish..... 207	hoysi..... 206, 207, 214
Oswego bass..... 214	quadrilateralis..... 206, 214
Perch, yellow..... 215	tullibee..... 206
Pickereel..... 208, 214	Cyprinus carpio..... 213
Pike..... 214	Dorosoma cepedianum..... 214
blue..... 208	Esox lucius..... 184, 214
perches..... 208-209, 215	nobilior..... 214
sand..... 215	Etheostoma nigrum..... 211
wall-eyed..... 208, 215	Hiodon tergisus..... 214
yellow..... 208	Hybopsis kentuckiensis..... 211
Redfin..... 211	Lota maculosa..... 215
Roach..... 211	Micropterus dolomieu..... 215
Rock bass..... 214	salmoides..... 214
Rock sturgeon..... 185	Moxostoma anisurum..... 213
Round whitefish..... 206, 207, 214	Notropis heterodon..... 211
Salmon..... 195-202, 214	hudsonius..... 211
Salmon trout..... 202-203, 214	megalops..... 211
Sand pike..... 215	whipplei..... 211
Sauger..... 209, 215	Perca flavescens..... 215
Sawbelly..... 187	Pimephales notatus..... 211
Shad..... 187, 193-195, 211, 214	Pomoxis sparoides..... 209, 214
Sheepshead..... 215	Salmo salar..... 195, 214
Shiner..... 211	Salvelinus namaycush..... 202, 214
common..... 211	Semotilus atromaculatus..... 211, 214
Silver-fin..... 211	bullaris..... 211
Silver whitefish..... 207	Stizostedion canadense..... 209, 215
Siscowet..... 207	vitreum..... 208, 215
Skipjack..... 214	vitreum, var salmoneum..... 208
Spawn-eater..... 211	Umbra pygmaea..... 211
Stone-lugger..... 210	Fungous disease of alewives..... 191
Stone-roller..... 210	Genesee customs district..... 184
Strawberry bass..... 209, 214	How the fisheries of Lake Ontario may be improved..... 212-213
Sturgeon..... 185-187, 213	Lake Ontario, character of bottom..... 179
Sucker..... 211	depth..... 178, 179
Sucker, brook..... 213	elevation..... 178
common..... 210, 213	size..... 178
Tullibee..... 206, 207, 214	Lake trout..... 202-203
Wall-eyed pike..... 208, 215	Michigan fish commission, station of, at Detroit..... 206
Whitefish, bloater..... 207	sturgeon hatching by..... 187
common..... 204-206, 214	Mortality of alewives..... 190-192
Hoy's..... 206, 207, 214	New York fish commission, report quoted..... 193, 200
Memominee..... 206, 207, 214	salmon trout planted by..... 203
mongrel..... 206, 207, 214	shad planted by..... 193
Ontario..... 207	whitefish planted by..... 205, 212
round..... 206, 207, 214	Notes on accompanying plates..... 213-215
silver..... 207	important commercial fishes..... 185-209
Whitefishes, lesser..... 206-207	

6. THE FISHERIES OF LAKE ONTARIO—Continued.

	Page.		Page.
Oath, form of, taken by importers.....	183	Persons referred to or quoted—Continued.	
Oswego customs district.....	184	Strowger, Charles H., on alewife.....	189, 192
Persons referred to or quoted:		ling.....	215
Ainsworth, W.....	194	Wilmot, S., on alewife.....	192
Baird, Prof. Spencer F., on salmon.....	198, 199	Wilson, John S., on salmon.....	197
shad.....	193	Physical characteristics of Lake Ontario.....	178-179
Bean, Dr. T. H., on alewife.....	188	Pike perches.....	208-209
Collins, Capt. J. W.....	177	Prefatory note.....	177-178
Dolley, Prof. Charles S., on alewife.....	192	Present and past condition of Lake Ontario fisheries.....	179-183
Douglass, Earl S., on salmon.....	198	Rochester Post-Express quoted.....	191, 192
Doyle, Edward P.....	203	Salmon trout.....	202-203
Edmunds, Dr. M. C., on salmon.....	198, 199, 200	Shad.....	193-195
Gilbert, Dr. Charles H.....	211	Statistics of Lake Ontario fisheries.....	179-183
Green, Seth, on alewife.....	188	Storms, effect of, on alewives.....	192
salmon.....	198, 200	Strawberry bass.....	209
shad fry planted by.....	193	Sturgeon.....	185-187
Green, Seth, jr., on alewife.....	188	Tabular statements:	
Henshall, Dr. J. A., on black bass.....	215	Capital invested.....	180
Horton, E. B., on salmon.....	198	Comparative statistics for 1880 and 1890.....	183
Ingersoll, B. E., on salmon.....	196, 201	Importations from Canada.....	184
salmon trout.....	203	Persons employed.....	180
lake trout.....	203	Products.....	181
Jordan, Prof. D. S., on Hoy's whitefish.....	207	Shad fry planted.....	193
Kirtland, Prof. J. P., on strawberry bass.....	209	Whitefish fry planted.....	205
Learned, Charles, on salmon.....	197	Wholesale prices of fish.....	182
McDonald, Hon. Marshall, on alewife.....	191	Tarif law, effects of.....	184
salmon.....	200, 202	Temperature of water, effect of, on alewives.....	192
Lake Ontario fisheries.....	213	United States Fish Commission, investigation by.....	177
Matheson, H. L.....	194	station of, at Put-in-Bay.....	206
Milner, J. W., on sturgeon.....	186	sturgeon hatching by.....	187
Nelson, W. E., on salmon.....	197	whitefish planted by.....	205
Norris, Thaddeus, on salmon.....	198	Whitefish, common.....	204-206
Ryder, Prof. John A., on sturgeon.....	186	Whitefishes, lesser.....	206-207

7. REPORT UPON THE FISHES OF IOWA.

Big Sioux River.....	246	Species enumerated—Continued.	
Boyer River.....	248	<i>Ameiurus nebulosus</i>	221, 225, 232, 238
Boynton, E. P.....	217	<i>nigricans</i>	221
Burnett, Prof. Percy B.....	217	<i>Amia calva</i>	221, 228, 232
Call, R. E.....	217	<i>Ammocetes branchialis</i>	225, 228, 231
Cedar River and tributaries.....	230-236	<i>Anguilla chryssypa</i>	222, 224, 229, 235
Clear Lake.....	237	<i>Aplodinotus grunniens</i>	222, 236, 246
Des Moines River and tributaries.....	222-225	<i>Camptostoma anomalum</i>	223, 225, 228, 233, 240, 242, 243, 244
Drainage of the Mississippi River.....	220-244	<i>Carpilodes velifer</i>	221, 223, 225, 228, 232, 238, 245, 246
Drainage of the Missouri River.....	245-248	<i>Catostomus nigricans</i>	223, 225, 228, 232, 238, 240, 242, 243
Gilbert, Prof. C. H.....	217	<i>teres</i>	221, 223, 225, 228, 232, 238, 240,
Iowa River.....	227-229	242, 243, 244, 246, 248	
Ives, C. J.....	217	<i>Chaenobryttus gulosus</i>	222, 229, 235
Jackson, W. T.....	217	<i>Chrosomus erythrogaster</i>	223, 225, 228, 233, 240, 242, 243
Jordan, Prof. David S.....	217	<i>Cliola vigilax</i>	221, 223, 226, 228, 233, 239, 244
Maquoketa River.....	240-241	<i>Clupea chrysochloris</i>	221
Mississippi River.....	220-222	<i>Cottus bairdi</i>	242, 243
Missouri River.....	245	<i>Conesus dissimilis</i>	229
Nutting, C. C.....	217	<i>Cycleptus elongatus</i>	221
Shaw, B. F.....	217, 219	<i>Dorosoma cepedianum</i>	221, 234, 239, 245, 246
Silver Lake.....	247	<i>Erimyzon sucetta</i>	232
Skunk River.....	225-226	<i>Etheostoma aspro</i>	225, 226, 229, 236, 239, 241, 242, 246
Soldier River.....	247	<i>caprodes</i>	224, 236
Species enumerated:		<i>cœruleum</i>	226, 236, 239, 243
<i>Acipenser rubicundus</i>	221	<i>evides</i>	236
<i>Ambloplites rupestris</i>	222, 224, 226, 235, 237, 239, 246	<i>fiabellaro</i>	225, 229, 236, 237, 239, 241, 242, 243
<i>Ameiurus melas</i>	221, 223, 225, 228, 232, 237, 238, 240, 242	<i>iowa</i>	225, 226, 229, 236
<i>natalis</i>	244, 247, 248	<i>jessie</i>	225, 226, 236
	232	<i>microporca</i>	236, 241

7. REPORT UPON THE FISHES OF IOWA—Continued.

	Page.
Species enumerated—Continued.	
<i>Etheostoma nigrum</i>	224, 226, 229, 236, 237, 239, 241, 242, 243, 244, 246, 248
<i>pellucidum clarum</i>	222, 224, 236, 239
<i>phoxocephalum</i>	222, 225, 236
<i>shumardi</i>	222
<i>zonale</i>	225, 226, 236, 241, 242, 246
<i>Fundulus zebrius</i>	224, 229, 235, 237, 246, 247
<i>Eucalia inconstans</i>	235, 241, 242, 243, 244
<i>Hiodon alosoides</i>	245, 246
<i>tergisus</i>	234
<i>Hybognathus nubila</i>	228, 233, 238, 242
<i>nuchalis</i>	221, 223, 225, 228, 233, 238, 240, 245, 246, 247
<i>nuchalis placita</i>	223
<i>Hybopsis dissimilis</i>	234, 239, 242
<i>gellidus</i>	245
<i>kentuckiensis</i>	224, 226, 229, 234, 239, 241, 242, 243, 244, 246
<i>storerianus</i>	221, 224, 229, 234, 239, 242
<i>Ictalurus furcatus</i>	221
<i>punctatus</i>	221, 223, 225, 228, 232, 238, 245, 246
<i>Ictiobus bubalus</i>	221
<i>cyprinella</i>	221, 225, 238
<i>sp.</i>	242
<i>urus</i>	221
<i>Labidesthes sicculus</i>	222, 224, 226, 235, 237, 239
<i>Lepisosteus osseus</i>	221, 223, 228, 232, 238
<i>platystomus</i>	221
<i>Lepomis cyanellus</i>	222, 224, 226, 229, 235, 239, 241, 242, 246, 247, 248
<i>gibbosus</i>	222, 235, 239
<i>holbrooki</i>	225, 235
<i>humilis</i>	222, 224, 226, 235, 246, 248
<i>macrochirus</i>	235
<i>megalotis</i>	222, 224, 229, 235, 241, 244, 247
<i>pallidus</i>	222, 224, 226, 229, 235, 237, 239, 241
<i>Leptops olivaris</i>	221, 232
<i>Lota lota maculosa</i>	222
<i>Lucius lucius</i>	222, 224, 226, 229, 235, 237, 239, 248
<i>masquinongy</i>	222, 226
<i>vermiculatus</i>	221, 224, 235
<i>Micropterus dolomieu</i>	222, 224, 226, 236, 237, 239, 241, 242
<i>salmoides</i>	222, 224, 226, 229, 236, 237, 239
<i>Minytrema melanops</i>	221, 225, 228
<i>Morone interrupta</i>	222
<i>Moxostoma anisurum</i>	223, 232
<i>aureolum</i>	225
<i>duquesnei</i>	221, 223, 225, 228, 232, 238, 240, 242, 244, 246
<i>sp.</i>	225
<i>Notemigonus chrysoleucus</i>	221, 224, 226, 234, 237, 239, 241, 246, 247

	Page.
Species enumerated—Continued.	
<i>Notropis anogenus</i>	233
<i>ardens</i>	224, 226, 228, 234, 239, 240, 242, 244
<i>atherinoides</i>	229, 234, 246
<i>cayuga</i>	223, 226, 228, 233, 239, 240, 246
<i>deliciosus</i>	221, 223, 226, 228, 233, 239, 240, 242, 244, 246, 248
<i>dilectus</i>	221, 224, 226, 229, 234, 239, 240, 242, 243, 244, 245, 246
<i>gilberti</i>	221, 223, 226, 228, 233, 239, 240, 242, 247, 248
<i>heterodon</i>	223, 226, 228, 233, 240, 242, 247
<i>hudsonius</i>	237, 246
<i>jejunus</i>	221, 234, 242
<i>lutrensis</i>	223, 248
<i>megalops</i>	224, 226, 228, 233, 239, 240, 242, 243, 244, 246, 247, 248
<i>topeka</i>	223, 228, 233, 246, 248
<i>whipplei</i>	221, 223, 226, 228, 233, 239, 240, 242, 244, 246
<i>Noturus exilis</i>	223, 225
<i>flavus</i>	232, 245, 246
<i>gyrinus</i>	221, 223, 225, 228, 232, 246
<i>Perca flavescens</i>	222, 225, 229, 236, 237, 246, 247
<i>Percopsis guttatus</i>	246, 248
<i>Petromyzon concolor</i>	221, 223, 228, 231
<i>Phenacobius mirabilis</i>	224, 226, 229, 234, 248
<i>Phoxinus elongatus</i>	243
<i>Pimephales notatus</i>	221, 223, 226, 228, 233, 237, 238, 240, 242, 243, 244, 246, 247
<i>promelas</i>	223, 226, 233, 238, 240, 242, 243, 244, 247, 248
<i>Placopharynx carinatus</i>	223
<i>Platygobio gracilis</i>	245
<i>Polyodon spathula</i>	221, 228, 231, 245
<i>Pomoxis annularis</i>	222, 224, 229, 235, 239
<i>sparoides</i>	222, 226, 229, 235, 237, 239
<i>Rhinichthys atronasmus</i>	224, 234, 240, 242, 243, 244
<i>cataraetæ</i>	244
<i>Roccus chrysops</i>	222, 246, 247
<i>Salvelinus fontinalis</i>	221, 235
<i>Scaphirhynchus platyrhynchus</i>	221, 231, 245
<i>Semotilus atromaculatus</i>	221, 224, 226, 234, 241, 242, 243, 247, 248
<i>Stizostedion canadense</i>	222, 236, 246
<i>vitreum</i>	222, 229, 236, 237, 246
<i>Umbra limi</i>	229, 235
<i>Zygonectes dispar</i>	235
<i>notatus</i>	224, 226, 229, 235, 239
Turkey River	241-242
Upper Iowa River	241
Wapsipinicon River	238-239
Yellow River	243
White, Joseph	217

8. REPORT OF AN EXAMINATION OF THE RIVERS OF KENTUCKY.

Bayou de Chien	273-274	Clinton County, fishes of	267
Beaver Creek	255	Coon Creek	282
Big Barren River	254	Cumberland River	264-265
Big Creek	276	Cutshin Creek	277
Big Sandy River	281-284	Drake Creek	254
Blaine Creek	282	Gilbert, Charles H	249
Bull Creek	276	Goose Creek	275
Chambers, Charles O	249	Green River	255-256
Clear Creek	264	Hector Creek	275

8. REPORT OF AN EXAMINATION OF THE RIVERS OF KENTUCKY—Continued.

	Page.
Henshall, James A.....	249
Horse Creek.....	275
Introduction.....	249-250
Island Creek.....	282
John Creek.....	282
Jordan, David S.....	249
Kirsch, Philip H.....	249
Left Troublesome Creek.....	277
Levisa Fork.....	282
Licking River.....	285-286
Little Barren River.....	255
Little Rockcastle River.....	264
Little Sandy River.....	286
Lower Cumberland River.....	262-263
Lower Green River.....	252-254
Lower Tennessee River.....	268
Mayfield Creek.....	270-271
McDonald, Marshall.....	249
Middle Fork.....	276
Monical, Hiram W.....	249
North Fork.....	277
Obion River.....	272-273
Pitman Creek.....	256
Pond Creek.....	252
Powell River.....	269
Redbird Creek.....	275
Richland Creek.....	265
Right Fork of Beaver Creek.....	281
River basins, classification of.....	250
Robinson Creek.....	281
Rockcastle River.....	264
Rolling Fork of Salt River.....	250-251
Rough Creek.....	252
Shelby Creek.....	281
Smoky Fork.....	265
Species enumerated in lists:	
<i>Acipenser rubicundus</i>	262, 268
<i>Ambloplites rupestris</i>	258, 266, 268, 269, 280, 284, 286
<i>Ameiurus natalis</i>	256, 268, 270
<i>nebulosus</i>	256, 266, 270, 274
<i>Amia calva</i>	274
<i>Anguilla chrysypa</i>	261, 266, 274
<i>Aphredoderus sayanus</i>	253, 271, 273, 274
<i>Aplodinotus grunniens</i>	251, 254, 260, 263, 268, 273, 274
<i>Campostoma anomalum</i>	251, 253, 257, 261, 262, 266, 268, 269, 278, 283, 285, 286
<i>Chrosomus erythrogaster</i>	266, 268
<i>Carpiodes carpio</i>	251, 261
<i>difformis</i>	262, 272, 283, 286
<i>velifer</i>	268, 270, 272, 278, 283
<i>Catostomus nigricans</i>	251, 253, 257, 261, 262, 266, 268, 269, 270, 278, 283, 285
<i>teres</i>	266, 268, 270, 278
<i>Centrarchus macropterus</i>	271
<i>Chaenobryttus gulosus</i>	253, 271, 273, 274
<i>Chiola vigilax</i>	251, 262, 283, 286
<i>Clupea chrysochloris</i>	286
<i>Cottus bairdi</i>	260
<i>Cycleptus elongatus</i>	262
<i>Dorosoma cepedianum</i>	251, 253, 263, 268, 273, 274, 284, 286
<i>Erimyzon succetta oblongus</i>	261, 266, 270
<i>Ericymba buccata</i>	251, 266, 270, 284, 285, 286
<i>Etheostoma asprellus</i>	259
<i>aspro</i>	254, 259, 262, 263, 267, 268, 269, 271, 273, 274, 281, 284

	Page.
Species enumerated in lists—Continued.	
<i>Etheostoma blennioides</i>	251, 259, 267, 268, 280, 284, 286
<i>camurum</i>	260, 267
<i>caprodes</i>	251, 253, 259, 263, 267, 268, 269, 273, 274
<i>caeruleum</i>	251, 254, 260, 267, 281, 284, 286
<i>copelandi</i>	253, 259
<i>cumberlandicum</i>	268
<i>cymatotænia</i>	260
<i>evides</i>	260
<i>flabellare</i>	260, 281, 284, 286
<i>fusiforme</i>	262, 271, 274
<i>histris</i>	253
<i>macrocephalum</i>	259, 284
<i>maculatum</i>	267, 286
<i>microperca</i>	260
<i>nigrum</i>	253, 258, 262, 268, 271, 274, 280, 284, 286
<i>obeyense</i>	267
<i>ouachitæ</i>	254, 273
<i>phoxocephalum</i>	251, 254, 259, 262, 263, 267, 271, 284
<i>pellucidum</i>	251, 253, 259, 263, 267, 269, 280, 284, 286
<i>rufo-lineatum</i>	260
<i>sagitta</i>	268
<i>scierum</i>	260, 286
<i>simotærum</i>	260, 267, 280
<i>shumardi</i>	253, 263, 273
<i>spilotum</i>	280
<i>stigmæum</i>	260, 267
<i>susannæ</i>	268
<i>variatum</i>	280, 286
<i>virgatum</i>	260, 267
<i>zonale</i>	251, 260, 267, 281, 284, 286
<i>Fundulus catenatus</i>	258, 263, 266, 269
<i>Gambusia patruelis</i>	263, 273
<i>Hiodon alosoides</i>	251, 263
<i>selenops</i>	251, 258
<i>Hybognathus nuchalis</i>	253, 257, 262, 268, 270, 272, 274, 283, 286
<i>Hybopsis amblops</i>	251, 253, 258, 261, 266, 269, 270, 279, 284, 285
<i>dissimilis</i>	251
<i>hyostomus</i>	258, 284, 285
<i>kentuckiensis</i>	253, 258, 266, 269, 279, 284, 285
<i>storcerianus</i>	251, 253, 263, 268, 274, 286
<i>watauga</i>	258, 269, 279
<i>Ictalurus punctatus</i>	251, 253, 256, 262, 268, 270, 272, 274, 278, 285, 286
<i>Ictiobus bubalus</i>	256, 262, 269, 274
<i>Labidesthes sicculus</i>	253, 258, 261, 263, 268, 269, 271, 273, 274, 280, 284, 285, 286
<i>Lagochila lacera</i>	266
<i>Lepisosteus osseus</i>	256, 261, 262, 268, 269, 272, 278, 286
<i>platystomus</i>	261, 268, 274
<i>Leptops olivaris</i>	251, 256, 260
<i>Lepomis cyanellus</i>	253, 263, 266, 268, 271, 284, 285
<i>garmani</i>	266, 274
<i>heros</i>	274
<i>macrochirus</i>	261, 268, 273
<i>megalotis</i>	251, 253, 258, 261, 263, 266, 268, 269, 271, 273, 274, 280, 284, 285, 286
<i>pallidus</i>	253, 258, 261, 263, 266, 274, 284, 285, 286
<i>Lucius vermiculatus</i>	271, 273, 274, 285
<i>Micropterus dolomieu</i>	251, 253, 258, 261, 263, 266, 268, 269, 273, 274, 280, 284, 285, 286

8. REPORT OF AN EXAMINATION OF THE RIVERS OF KENTUCKY—Continued

	Page.		Page.
Species enumerated in lists—Continued.		Species enumerated in lists—Continued.	
<i>Micropterus salmoides</i>	253, 258, 261, 263, 266, 273, 274, 280 284, 285, 286	<i>Noturus eleutherus</i>	256 285
<i>Minytrema melanops</i>	257	<i>flavus</i>	253, 270, 274
<i>Moxostoma anisurum</i>	286	<i>gyrinus</i>	251, 253, 256, 270, 278, 283, 286
<i>breviceps</i>	286	<i>Opsopæodus bollmani</i>	272
<i>duquesnei</i>	251, 253, 256, 261, 262, 266, 268, 269, 270, 274, 278, 283, 285, 286	<i>emilice</i>	263, 271, 274
<i>velatum</i>	268	<i>Phenacobius uranops</i>	258, 266
<i>Notemigonus chrysoleucus</i>	271, 274	<i>Pimephales notatus</i>	251, 253, 257, 261, 262, 266, 268, 269, 270, 272, 274, 278, 283, 285, 286
<i>Notropis arge</i>	258, 279	<i>Pomoxis annularis</i>	258, 261, 271, 273, 274, 286
<i>ariommus</i>	251, 257, 278, 283	<i>sparoides</i>	273, 274
<i>atherinoides</i>	251, 253, 258, 261, 262, 266, 268, 272, 274, 279, 284, 285, 286	<i>Rhinichthys atronaso</i>	268
<i>coccogenis</i>	284	<i>Roccus chrysops</i>	263, 268
<i>deliciosus</i>	251, 257, 261, 266, 269, 272, 278, 283, 285, 286	<i>Semotilus atromaculatus</i>	251, 258, 266, 270, 280, 284
<i>dilectus</i>	257, 266, 269, 279, 283, 285	<i>Stizostedion canadense</i>	284, 286
<i>galacturus</i>	266	<i>vitreum</i>	260, 263, 268, 284, 286
<i>lejunus</i>	262, 272, 284, 286	<i>Zygonectes notatus</i>	251, 258, 261, 263, 271, 273, 274
<i>megalops</i>	251, 253, 257, 261, 262, 266, 268, 269, 272, 278, 283, 285	Straight Creek	265
<i>spectrunculus</i>	266, 279	Table of distribution of fishes	287-288
<i>telescopus</i>	258	Tradewater River	261-262
<i>umbratilis ardens</i>	257	Triplet Creek	285
<i>cycnocephalus</i>	251, 253, 261, 266, 268, 270, 272, 279	Troublesome Creek	277
<i>whipplei</i>	251, 253, 257, 262, 266, 268, 269, 274, 278, 283, 285, 286	Upper Cumberland River	263-267
		Upper Green River	254-260
		Upper Kentucky River	275-281
		Upper Tennessee River	269
		Whitley County, fishes collected by D. S. Jordan in	268

9. THE RIVERS OF CENTRAL FLORIDA TRIBUTARY TO THE GULF OF MEXICO, WITH LISTS OF FISHES INHABITING THEM.

Alligator Creek	296	Species enumerated in lists—Continued.	
Alligator River	293-294	<i>Fundulus seminolis</i>	297
Charlie Apopka	295	<i>Gerres gula</i>	294
Galliger Drain	298	<i>Gambusia patruelis</i>	294, 296, 298, 300, 301
Hillsboro River	298-299	<i>Heterandria ommata</i>	302
Joshua Creek	295	<i>Jordanella florida</i>	294, 296, 298, 300
Little Withlacoochee River	299	<i>Labidesthes sicculus</i>	294, 297, 298
Mill Creek	298	<i>Lepisosteus platystomus</i>	298
New River	301	<i>Lepomis holbrooki</i>	297, 298, 300
Oak Creek	296	<i>megalotis</i>	297, 298, 302
Peace River	295-297	<i>pallidus</i>	297, 298, 300, 302
Pemberton Creek	298	<i>punctatus</i>	294, 297, 302
Pond Creek	300	<i>Lucania goodei</i>	294, 296, 300
Rettger, Louis J.	293	<i>Micropterus salmoides</i>	297, 298
Sampson Creek	301	<i>Mollienesia latipinna</i>	296, 300
Santa Fé River	301-302	<i>Notemigonus chrysoleucus bosci</i>	294, 296
Species enumerated in lists:		<i>Notropis metallicus</i>	300
<i>Achirus fasciatus</i>	294, 297	<i>roseus</i>	294, 296, 298, 300, 301
<i>Ameiurus natalis</i>	298, 300, 301	<i>Noturus gyrinus</i>	301
<i>nebulosus</i>	296	<i>leptacanthus</i>	301
<i>Aphredoderus sayanus</i>	302	<i>Opsopæodus bollmani</i>	294, 296, 300
<i>Chanobryttus gulosus</i>	294, 297, 298, 300, 302	<i>Zygonectes chrysoleucus</i>	296, 300, 301
<i>Elassoma evergladei</i>	299, 300, 302	<i>notti</i>	301
<i>Erimyzon succetta</i>	296, 298, 300, 301	Streams examined, list of	283
<i>Etheostoma quiescens</i>	294, 297, 299, 300, 302	Withlacoochee River	299, 300
<i>Fundulus ocellaris</i>	300		

10. THE STREAMS AND FISHES OF CLINTON COUNTY, KENTUCKY.

	Page.		Page.
Albany Branch.....	290	Species enumerated in list—Continued.	
Clinton County, physical characteristics.....	289	<i>Hybopsis amblops</i>	291
Ill-will Creek.....	290	<i>kentuckiensis</i>	291
Indian Creek.....	289	<i>Ictalurus punctatus</i>	291
Northern water system, principal streams.....	289-290	<i>Ictiobus cyprinella</i>	291
Smith Creek.....	290	<i>Lepisosteus ossesus</i>	291
Southern water system, principal streams.....	290	<i>Lepomis megalotis</i>	291
Species enumerated in list:		<i>Notropis galacturus</i>	291
<i>Ambloplites rupestris</i>	291	<i>leuciodus</i>	291
<i>Ameiurus nebulosus</i>	291	<i>megalops</i>	291
<i>Anguilla chrysypa</i>	291	<i>telescopus</i>	291
<i>Camptostoma anomalum</i>	291	<i>umbratilis cyanocephalus</i>	291
<i>Catostomus nigricans</i>	291	<i>whipplei</i>	291
<i>teres</i>	291	<i>Pimephales notatus</i>	291
<i>Chrosomus erythrogaster</i>	291	<i>Polyodon spathula</i>	291
<i>Clupea chrysochloris</i>	291	<i>Rhinichthys atronasus</i>	291
<i>Etheostoma blennioides</i>	291	<i>Somotilus atromaculatus</i>	291
<i>caprodes</i>	291	<i>Stizostedion canadense</i>	292
<i>flabellare</i>	291	Spring Creek.....	290
<i>obeyense</i>	292	Willis Creek.....	290
<i>rufolineatum</i>	291	Wolf River.....	290
<i>Fundulus catenatus</i>	291		

11. AN INVESTIGATION OF THE COAST WATERS OF SOUTH CAROLINA WITH REFERENCE TO OYSTER-CULTURE.

Albergottie Creek.....	314	Goat Island Creek.....	322
Archer Creek.....	312	Griffin, John.....	316, 317
Areas examined, table of.....	330	Harbor River.....	314
Ashepoo River.....	315	Introductory note.....	303-305
Ashley River.....	320	Jericho Creek.....	313-314
Bailey Creek.....	316-317	Jones Creek.....	327
Battery Creek.....	313-314	Kendall, W. C.....	303
Beaufort River.....	312-313	Kiaawah River.....	319
Benedict, James E.....	303	Leadenwah Creek.....	318
Blythe Creek.....	328	Light-house Creek.....	319-320
Bohicket Creek.....	317-318	Little Goat Island Creek.....	322
Breach Inlet.....	322	Mackay Creek.....	309-310
Broad Creek.....	309	Magwood Brothers.....	324
Brickyard Creek.....	314	May River.....	309
Broad River.....	311-312	McCloud Creek.....	318
Bull Bay.....	324-325	Meeting Reach.....	322-323
Bull Creek.....	309	Mendenhall, Dr. T. C.....	305
Bull River and tributaries.....	315	Merritt, Henry.....	320
Calibogue Sound.....	308-309	Morgan River.....	315
Charleston Harbor.....	321-322	Muddy Bay.....	325
Chechessee River.....	310-311	Natural enemies of the oyster.....	329
Children Creek.....	328	New River.....	307-308
Chowan Creek.....	313	North Edisto River.....	317
Clam Bank Creek.....	326	North Inlet.....	326
Coast region, characteristics of.....	304	Okeeteet River.....	311
Colleton River.....	311	Old Man Creek.....	327-328
Combahee River.....	315	Oyster Bay.....	325-326
Cook Creek.....	328	Oyster-bearing waters of South Carolina, characteristics	
Cooper River.....	308-321	of.....	306
Coosaw River.....	314	Parrott Creek.....	314
Crab Hall Creek.....	328	Platt, Lieut. Robert.....	303
Dale Creek.....	314	Pocotaligo River.....	312
Dawho River.....	317	Port Royal Sound.....	310
Dean, Dr. Bashford.....	303-305	Sawmill Creek.....	326
De Bordieu Creek.....	328	Schooner Creek.....	319-320
Deweese Creek.....	323-324	Skull Creek.....	310
Distribution of oysters on the coast.....	304	South Edisto River.....	316
Drake, Lieut. J. C.....	303	State laws inadequate.....	306
Folly River.....	319	Station Creek.....	314

11. AN INVESTIGATION OF THE COAST WATERS OF SOUTH CAROLINA WITH REFERENCE TO OYSTER-CULTURE—Continued.

	Page.		Page.
Steamboat Creek	317	Town Creek	326
Stono Inlet	319	Townsend River	318
Stono River	319	Wadmelaw River	318-319
St. Helena Sound	316	Wando River	321
Story River	314	Water area surveyed	304
St. Pierre Creek	316	Whale Branch	312
Sullivan Island Narrows	322	Winslow, Lieut. Francis	303
Swinton, Thomas	322	Winyaw Bay	325
Togodo Creek	318	Wright River	307

12. OBSERVATIONS ON THE HATCHING OF THE YELLOW PERCH.

Date of spawning	331	Fry released	333
Description of spawn	332	Parent fish obtained	331
General directions for hatching	334	Parent fish, small cost of	331
Egg production, table of	333	Temperature of water during hatching	331, 333

13. BIOLOGY OF THE OYSTER-GROUNDS OF SOUTH CAROLINA.

Analyses of South Carolina oyster-bed waters	353, 357, 361	Oyster food, component organisms	346
Animal element of oyster food	347	Oyster ledges and flats	335-338
Battle, John D	335, 339, 345	Oysters detached from raccoon ledges	339
Colson, C. Bunting	343, 352, 355	Oyster spat, absence in deep water	340-344
Composition of water at different depths	343-344	Phosphate-dredging, effect upon oyster water	354
Density of water preventing oyster fry from settling	340-341	Pine pollen	348
Diatoms	347-348	Plant element of oyster food	347-348
Enemies of the oyster	352	Platt, Robert	340, 355
Food of South Carolina oyster	345-350	Ryder, John A	338, 342, 346, 351
General character of the bottom and its life	345	Silt suspension	341-343
General summary of report	355	Spawning season	352
Messmates and enemies; spawning season	351-352	Swimming embryo, fixation of	341
Oyster cluster and its origin	337-338	Time of feeding of the oyster	350
Oyster crab, relation to its host	351-352	Verrill, A. E	351
Oyster food, amount occurring in South Carolina waters, as determined by analysis	348-349	Works and authors consulted in preparing report	356

14. THE PRESENT METHODS OF OYSTER-CULTURE IN FRANCE.

Advantages for oyster-culture in the United States	363	Leroux, M	371, 375
Barbey, M., minister of marine of France	364	Martin, M	371, 375
Bouchon-Brandelely, M., inspector-general of fisheries of France	364, 374	Mushroom (collector)	370
Bouquet (collector)	370	Natural oyster banks and dredging	367
Camion (collector)	370	Oyster-culture and its branches	368-381
Clairet: Special processes, such as "greening" or pre- paring for transportation	378-380	Oyster in France	365-367
Coating collectors with cement (chaulage)	371	Placing and management of collectors	371-372
Collectors for oyster fry	368-374	Planche (collector)	370
Costo, M	364	Portuguese oyster	381
Dasté, M	369, 371, 375, 377	Production in closed ponds	372-374
De Bon, M	364, 368	Production, or the raising of seed oysters, and kinds of collectors	368-374
Détroquage and transportation	372-374	Reservation by Government of oyster-bearing tracts	374
De Saint-Sauveur, Mme	372, 373	Spat-collectors	368-374
Élevage, or the growing of oysters for market	374-377	Species and characteristics of the oyster in France	365-366
Flat and Portuguese oysters, compared	366	Tiles	368-370
Gabarét (collector)	360	Waters of oyster-grounds of French coast, table of den- sities	384
General conclusions of report	382-384	Works relating to French oyster-culture, list of	385-388
Introduction to report	363-364		

15. A CONTRIBUTION TO OUR KNOWLEDGE OF THE MORPHOLOGY OF LAMELLIBRANCHIATE MOLLUSKS.

	Page.		Page.
Adductor and retractor muscles.....	391-393	Gill of <i>Yoldia</i> , structure.....	415-418
Andrews, E. A.....	389	Gills.....	411-414
Branchial chambers, conclusions from a comparison of.....	426-427	Gills of <i>Arca pexata</i>	419-420
Brooks, W. K.....	389	Gills of <i>Solenomya</i>	418-419
Byssus.....	395-396	Intestine.....	402
Changes in structure brought about by the degeneration		Liver.....	403-404
of the foot.....	425	Mantle.....	396-397
Crystalline style.....	402-403	McDonald, Marshall.....	389
Detailed structure of the gills.....	414-422	Mouth.....	400
Digestive tract.....	400-403	Muscle system of <i>Mytilus</i>	425-426
Excretory organ.....	409-411	Nervous system.....	411
Explanation of plates.....	430-436	Œsophagus.....	401
Foot.....	393-395	Palps.....	400-401
General conclusions in regard to the gills.....	424	Papers cited, list of.....	429
General considerations.....	425-428	Pelseneer, Paul.....	389
Generative mass.....	404-406	Phylogeny of the gills.....	427-428
Gill of <i>Ostrea virginiana</i>	422-423	Shell.....	390-391
Gill of <i>Pecten irradians</i>	420-422	Siphonal region of the mantle.....	397-400
Gill of <i>Venus mercenaria</i>	422	Stomach.....	402
Gill of <i>Yoldia</i>	414-418	Vascular system.....	406-409
Gill of <i>Yoldia</i> , contractions.....	414-415	Wilson, H. V.....	389
Gill of <i>Yoldia</i> collection of food.....	415		