U.S. FISH COMMISSION
BEAUFORT, N.C.

UNITED STATES COMMISSION OF FISH AND FISHERIES
SPENCER F. BAIRD, COMMISSIONER

THE FISHERIES

AND

FISHERY INDUSTRIES

OF THE

UNITED STATES

PREPARED THROUGH THE CO-OPERATION OF THE COMMISSIONER OF FISHERIES AND THE SUPERINTENDENT OF THE TENTH CENSUS

BY

GEORGE BROWN GOODE
ASSISTANT SECRETARY OF THE SMITHSONIAN INSTITUTION
AND A STAFF OF ASSOCIATES

SECTION V

HISTORY AND METHODS OF THE FISHERIES

IN TWO VOLUMES, WITH AN ATLAS OF TWO HUNDRED AND FIFTY-FIVE PLATES

VOLUME I

WASHINGTON
GOVERNMENT PRINTING OFFICE
1887

ASSOCIATE AUTHORS.

JOEL A. ALLEN	Museum of Comparative Zoology, Cambridge.
TARLETON H. BEAN	U. S. National Museum, Washington.
JAMES TEMPLE BROWN	U. S. National Museum, Washington.
A. HOWARD CLARK	U. S. National Museum, Washington.
CAPTAIN JOSEPH W. COLLINS	Gloucester, Massachusetts.
R. EDWARD EARLL	U. S. Fish Commission, Washington.
HENRY W. ELLIOTT	*Cleveland, Ohio.*
ERNEST INGERSOLL	New Haven, Connecticut.
DAVID S. JORDAN	Indiana University, Bloomington, Indiana.
LUDWIG KUMLIEN	Milwaukee, Wisconsin.
MARSHALL MCDONALD	U. S. Fish Commission, Washington.
FREDERICK MATHER	N. Y. Fish Commission, Cold Spring, New York.
BARNET PHILLIPS	*Brooklyn, New York.*
RICHARD RATHBUN	U. S. National Museum, Washington.
JOHN A. RYDER	U. S. Fish Commission, Washington.
CHARLES W. SMILEY	U. S. Fish Commission, Washington.
SILAS STEARNS	*Pensacola, Florida.*
FREDERICK W. TRUE	U. S. National Museum, Washington.
WILLIAM A. WILCOX	Gloucester, Massachusetts.

LETTER OF TRANSMITTAL.

WASHINGTON, D. C., *July* 1, 1884.

SIR: I have the honor to submit herewith a report on the HISTORY AND METHODS OF THE PRINCIPAL FISHERIES OF THE UNITED STATES.

This report constitutes Section V of the Special Report on the Food Fishes and Fishery Industries of the United States, prepared through the co-operation of the Commission of Fish and Fisheries and the Superintendent of the Tenth Census. Section I, the Natural History of Useful Aquatic Animals; Section II, Geographical Review of the Fisheries and Fishing Communities; Section III, Fishing Grounds; and Section IV, Fishermen, have already been completed.

This section is intended to be printed in two volumes, with an atlas of two hundred and fifty-five plates of illustrations. In the first volume are discussed the fisheries for food-fishes and in the second volume the fisheries for marine mammals and reptiles, mollusks and other invertebrates.

The following-named census agents and assistants of the United States Fish Commission have taken part in the preparation of the present section: Dr. Tarleton H. Bean, Mr. James Templeman Brown, Mr. A. Howard Clark, Capt. Joseph W. Collins, Mr. R. Edward Earll, Mr. Henry W. Elliott, Mr. Charles H. Gilbert, Prof. G. Brown Goode, Mr. Ernest Ingersoll, Prof. David S. Jordan, Mr. Ludwig Kumlien, Col. Marshall McDonald, Mr. Newton P. Scudder, Mr. Silas Stearns, Mr. James G. Swan, Mr. Frederick W. True, and Mr. W. A. Wilcox. I regret to state that Mr. James Templeman Brown died before the completion of his report upon the apparatus and methods of the whale fishery; but the manuscript was in such condition that it could be made ready for the press by one of my assistants.

Yours, very respectfully,

G. BROWN GOODE.

Prof. SPENCER F. BAIRD,
Commissioner of Fish and Fisheries.

TABLE OF CONTENTS.

VOLUME I.

Page.

List of illustrations (see also Atlas of plates) XI

PART I.—THE HALIBUT FISHERIES:

1. The Fresh-Halibut Fishery. By G. BROWN GOODE and J. W. COLLINS 3–89
2. The Salt-Halibut Fishery. By N. P. SCUDDER 90–119

PART II.—THE COD, HADDOCK, AND HAKE FISHERIES:

1. The Bank Hand-Line Cod Fishery By G. BROWN GOODE and J. W. COLLINS 123–133
2. The Labrador and Gulf of St. Lawrence Cod Fisheries. By G. BROWN GOODE and J. W. COLLINS. 133–147
3. The Bank Trawl-Line Cod Fishery. By G. BROWN GOODE and J. W. COLLINS 147–187
4. The George's Bank Cod Fishery. By G. BROWN GOODE and J. W. COLLINS 187–198
5. The Cod Fishery of Alaska. By TARLETON H. BEAN 198–224
6. The Gill-Net Cod Fishery. By J. W. COLLINS 225–233
7. The Haddock Fishery of New England. By G. BROWN GOODE and J. W. COLLINS 234–241
8. The Hake Fishery. By G. BROWN GOODE and J. W. COLLINS 241–243

PART III.—THE MACKEREL FISHERY. By G. BROWN GOODE and J. W. COLLINS:

1. The Mackerel Purse-Seine Fishery 247–272
2. The Spring Southern Mackerel Fishery 273–275
3. The Mackerel Hook Fishery 275–294
4. The Mackerel Gill-Net Fishery 294–298
5. Early Methods of the Mackerel Fishery 298–300
6. Legislation for the Protection of Mackerel 301–304
7. Statistics of the Mackerel Fishery 304–313

PART IV.—THE SWORDFISH FISHERY. By G. BROWN GOODE 315–326

PART V.—THE MENHADEN FISHERY. By G. BROWN GOODE and A. HOWARD CLARK 327–415

PART VI.—THE HERRING FISHERY AND THE SARDINE INDUSTRY. By R. EDWARD EARLL:

1. The Herring Fishery of the United States 419–439
2. The Frozen-Herring Industry 439–458
3. The Pickled-Herring Trade with Magdalen Islands, Anticosti, Newfoundland, and Labrador 459–472
4. The Smoked-Herring Industry 473–488
5. The Sardine Industry 489–524

PART VII.—THE SHORE FISHERIES OF SOUTHERN DELAWARE. By J. W. COLLINS:

Page.

1. The Squeteague or Trout Fishery 527–533
2. The Spot Fishery 533–538
3. The Rock and Perch Fishery 538–540
4. The Sturgeon Fishery of Delaware Bay 540–541

PART VIII.—THE SPANISH MACKEREL FISHERY. By R. EDWARD EARLL 543–552

PART IX.—THE MULLET FISHERY. By R. EDWARD EARLL 553–582

PART X.—THE RED-SNAPPER AND HAVANA MARKET FISHERIES. By SILAS STEARNS:

1. The Red-Snapper Fishery 585–592
2. The Havana Market Fishery of Key West, Florida 592–594

PART XI.—THE POUND-NET FISHERIES OF THE ATLANTIC STATES. By FREDERICK W. TRUE 595–610

PART XII.—THE RIVER FISHERIES OF THE ATLANTIC STATES:

1. The Rivers of Eastern Florida, Georgia, and South Carolina. By MARSHALL MCDONALD 613–625
2. The Rivers and Sounds of North Carolina. By MARSHALL MCDONALD 625–637
3. The Fisheries of Chesapeake Bay and its Tributaries. By MARSHALL MCDONALD 637–654
4. The Fisheries of the Delaware River. By MARSHALL MCDONALD 654–657
5. The Fisheries of the Hudson River. By MARSHALL MCDONALD 658–659
6. The Connecticut and Housatonic Rivers and Minor Tributaries of Long Island Sound. By MARSHALL MCDONALD 659–667
7. Rivers of Massachusetts and New Hampshire. By FREDERICK W. TRUE and W. A. WILCOX 667–673
8. The River Fisheries of Maine. By C. G. ATKINS 673–728

PART XIII.—THE SALMON FISHING AND CANNING INTERESTS OF THE PACIFIC COAST. By D. S. JORDAN and C. H. GILBERT 729–753

PART XIV.—THE FISHERIES OF THE GREAT LAKES. By LUDWIG KUMLIEN 755–769

Index 771–808

VOLUME II.

List of illustrations (see also Atlas of plates) xix

PART XV.—THE WHALE FISHERY:

1. History and Present Condition of the Fishery. By A. HOWARD CLARK 3–218
2. Whalemen, Vessels, Apparatus, and Methods of the Fishery. By JAMES TEMPLEMAN BROWN 218–293

PART XVI.—THE BLACKFISH AND PORPOISE FISHERIES. By A. HOWARD CLARK 295–310

PART XVII.—THE PACIFIC WALRUS FISHERY. By A. HOWARD CLARK 311–318

PART XVIII.—THE SEAL AND SEA-OTTER INDUSTRIES:

Page.

1. The Fur-Seal Industry of the Pribylov Islands, Alaska. By HENRY W. ELLIOTT 320–393
2. The Fur-Seal Industry of Cape Flattery, Washington Territory. By JAMES G. SWAN 393–400
3. The Antarctic Fur Seal and Sea-Elephant Industries. By A. HOWARD CLARK 400–467
4. The Sea-Lion Hunt. By HENRY W. ELLIOTT 467–474
5. The North Atlantic Seal Fishery. By A. HOWARD CLARK 474–483
6. The Sea-Otter Fishery. By HENRY W. ELLIOTT 483–491

PART XIX.—THE TURTLE AND TERRAPIN FISHERIES. By FREDERICK W. TRUE 493–504

PART XX.—THE OYSTER, SCALLOP, CLAM, MUSSEL, AND ABALONE INDUSTRIES. By ERNEST INGERSOLL:

1. The Oyster Industry 507–565
2. The Scallop Fishery 565–581
3. The Clam Fisheries 581–615
4. The Mussel Fishery 615–622
5. The Abalone Fishery 622–626

PART XXI.—THE CRAB, LOBSTER, CRAYFISH, ROCK-LOBSTER, SHRIMP, AND PRAWN FISHERIES. By RICHARD RATHBUN:

1. The Crab Fisheries 629–658
2. The Lobster Fishery 658–794
3. The Crayfish Fishery 794–797
4. The Rock-Lobster Fishery 798–799
5. *The Shrimp and Prawn Fisheries* 799–810

PART XXII.—THE LEECH INDUSTRY AND TREPANG FISHERY. By RICHARD RATHBUN 811–816

PART XXIII.—THE SPONGE FISHERY AND TRADE 817–841

Index 843–881

LIST OF PLATES TO SECTION V.

[Engraved by the Photo-Engraving Company of New York City.]

(Page references to Volumes I and II of text.)

THE FRESH HALIBUT FISHERY.

	Vol.	Page.
1. Halibut schooner under jib, foresail, and double-reefed mainsail; nests of dories on deck amidships; rigged for fall and winter fishing Drawing by Capt. J. W. Collins.	I,	7
2. Halibut schooner in summer rig, two topmasts up and all sails spread Drawing by Capt. J. W. Collins. (Engraved by Photo-Electrotype Company.)	I,	7
3. FIG. 1. Sectional plan of halibut schooner. (See page opposite plate for explanation)	I,	7
FIG. 2. Deck plan of halibut schooner. (See page opposite plate for explanation) Drawings by Capt. J. W. Collins.	I,	9
4. Sectional plan of well-smack employed in the fresh halibut fishery on George's Bank, 1836 to 1845. (See page opposite plate for explanation) Drawing by Capt. J. W. Collins.	I,	41
5. FIG. 1. *Bait chopper*	I,	12
FIG. 2. Bait slivering knife	I,	12
FIG. 3. Halibut killer and gob stick	I,	17
FIG. 4. Woolen hand nipper	I,	10
FIG. 5. Halibut gaff	I,	17
FIG. 6. Trawl buoy and black ball	I,	11
FIG. 7. Canvas skate for section of trawl	I,	11
FIG. 8. Dory scoop Drawings by Capt. J. W. Collins.	I,	10
6. FIG. 1. Hurdy-gurdy to haul trawls in deep water	I,	10, 11, 16
FIG. 2. Dory showing mode of attaching and using the hurdy-gurdy	I,	10, 11, 16
FIG. 3. Trawl roller attached to dory gunwale for hauling trawls in shoal water Drawings by Capt. J. W. Collins.	I,	10
7. Cutting bait and batting trawls on halibut schooner at anchor on the fishing grounds Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	12
8. Dories and crew on the way to haul the trawls; the schooner at anchor under riding sail Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	13-16
9. Halibut dory and crew hauling the trawl, gaffing and clubbing the halibut Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	16
10. *Dory and crew caught to leeward in a storm while hauling the trawl; trawl-buoy and line drifted astern of the vessel for their rescue* Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	16, 80
11. Halibut schooner at anchor on the Grand Bank in winter, riding out a gale Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	84
12. Halibut schooner "lying-to" in a gale on the Bank, under riding sail and double-reefed foresail. Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	77
13. Halibut schooner tripped by a heavy sea Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	71
14. Halibut schooner in winter, head-reaching under short sail Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	20

	Vol.	Page.
15. Old-style halibut schooner, hand-line fishing from deck, 1840 to 1850 Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	29–43
16. Dressing halibut on deck of schooner for icing in the hold From photograph by T. W. Smillie.	I,	19
17. FIG. 1. Halibut cutting knife	I,	19
FIG. 2. Scraping knife to remove muscle and flesh from backbone after cutting	I,	19
FIG. 3. Squillgee for pushing ice in pen	I,	19
FIG. 4. Oak mallet for breaking ice	I,	19
FIG. 5. Oak broom for scrubbing halibut Drawings by Capt. J. W. Collins.	I,	19
18. General view of schooner discharging fare of fresh halibut at Gloucester, Mass. Drawing by Capt. J. W. Collins.	I,	21
19. Hoisting halibut from hold of schooner at Gloucester, Mass From photograph by T. W. Smillie.	I,	21
20. Weighing and selling halibut on deck of George's Bank hand-line cod schooner Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	22
21. Handling fresh halibut at Gloucester, Mass.; weighing, unheading, and packing in ice for shipment by rail Drawing by H. W. Elliott.	I,	22
22. Packing fresh halibut at Gloucester, Mass.; preparing ice with pick and grinding machine; nailing covers on the boxes; use of devil's claw Drawings by H. W. Elliott.	I,	22

THE BANK HAND-LINE AND TRAWL COD FISHERIES.

23. Old style Grand Bank cod schooner; crew at rails hand-line fishing Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	125, 126
24. Hand-line dory cod fishing on the Grand Bank Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	126
25. Deck plan of schooner Centennial, of Gloucester Drawing by Capt. J. W. Collins.	I,	149
26. Dory and crew setting cod trawls on the Bank Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	152, 176
27. Underrunning cod trawls; two methods of setting trawl for underrunning Drawing by Capt. J. W. Collins.	I,	177
28. Newfoundland fishermen catching squid for sale as cod bait to United States vessels Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	152, 184
29. Dory crew of cod fishermen catching birds for bait Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	152

(For illustration of cod schooners discharging cargoes see Section on Preparation of Fishery Products.)

THE GEORGE'S BANK COD FISHERY.

30. Gloucester schooner at anchor on George's Bank in winter; hand-line fishing for cod; rigged without topmasts for rough weather From painting by Paul E. Collins, Boston, Mass.	I,	190–193
31. Cod hand-line gear FIG. 1. Lead sinker with brass horse and swivels. FIG. 2. George's Bank gear with sling-ding, &c. FIG. 3. Hand-line gear for shoal water. Drawings by Capt. J. W. Collins.	I,	192
32. George's Bank crew hand-line fishing, gaffing fish over the rail, cutting out tongues Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	194
33. Dressing cod on deck of fishing schooner Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	156, 180, 195
34. Discharging fare of George's Bank cod at Gloucester wharf Drawing by H. W. Elliott, 1882.	I,	195
35. Splitting and washing George's Bank cod at Wonson's wharf, Gloucester, Mass Drawing by H. W. Elliott, 1882.	I,	195

THE COD FISHERY OF ALASKA.

36. Natives in boats fishing with hand-lines	I,	230

THE GILL-NET COD FISHERY.

	Vol.	Page.
37. Method of hanging cod gill-nets in Norway. (Explanation with plate)	I,	227, 228
From Bulletin U. S. Fish Commission Vol. I. Drawing by Capt. J. W. Collins.		
38. FIG. 1. Method of attaching glass floats to top of nets	I,	228
FIG. 2. Method of fastening sinkers to foot of nets. (Explanation on plate)	I,	228
From Bulletin U. S. Fish Commission, Vol. I. Drawing by Capt. J. W. Collins.		
39. Norwegian method of setting gill-nets at bottom. (Explanation on plate)	I,	228
From Bulletin U. S. Fish Commission, Vol. I. Drawing by Capt. J. W. Collins.		
40. Norwegian methods of setting nets to get position of fish. (Explanation on plate)	I,	228
From Bulletin U. S. Fish Commission, Vol. I. Drawing by Capt. J. W. Collins.		
41. Norwegian method of attaching stone anchors and buoy lines to end of gangs of nets. (Explanation on plate)	I,	228
From Bulletin U. S. Fish Commission, Vol. I. Drawing by Capt. J. W. Collins.		
42. *Way in which cod gill-nets are set at the bottom on the east coast of Newfoundland.* (Explanation on plate)	I,	230
From Bulletin U. S. Fish Commission, Vol. I. Drawing by Capt. J. W. Collins.		
43. The ordinary way in which cod gill-nets are set floating at Newfoundland. (Explanation on plate)	I,	230
From Bulletin U. S. Fish Commission, Vol. I. Drawing by Capt. J. W. Collins.		
44. Way in which cod gill-nets are set for underrunning in Ipswich Bay, Massachusetts. (Explanation on plate)	I,	232
From Bulletin U. S. Fish Commission, Vol. I. Drawing by Capt. J. W. Collins.		
45. Underrunning cod gill-nets in Ipswich Bay, Massachusetts	I,	232
Drawing by H. W. Elliott and Capt. J. W. Collins.		

THE INSHORE COD FISHERY.

46. Block Island boat and crew hand-lining for cod
Drawing by H. W. Elliott and Capt. J. W. Collins.

47. Pink stern schooner and boats hand-line fishing off Cape Ann, Massachusetts
From photograph by T. W. Smillie.

THE HADDOCK FISHERY.

48. Baiting trawls on deck of Gloucester haddock schooner Mystic, Captain McKinnon	I,	237
From photograph by T. W. Smillie.		
49. Baiting trawls at night in hold of haddock schooner	I,	237
Drawing by H. W. Elliott, 1882.		
50. Setting haddock trawls from schooner under sail; set at right angles to course of the vessel	I,	238
Drawing by H. W. Elliott and Capt. J. W. Collins.		

THE HAKE FISHERY.

51. Fishermen's dories on the rocks at Folly Cove, Cape Ann, Massachusetts	I,	241
Drawing by H. W. Elliott.		
52. Fishermen in dory hauling trawl; a dogfish caught	I,	242
From photograph by T. W. Smillie.		
53. Overhauling trawls in fish-house at Rockport, Mass	I,	242
Drawing by H. W. Elliott.		

THE MACKEREL PURSE-SEINE FISHERY.

54. Mackerel schooner under full sail, bound out	I,	248
Drawing by H. W. Elliott and Capt. J. W. Collins.		
55. The cabin of mackerel schooner John D. Long of Gloucester, Mass	I,	247
Drawing by H. W. Elliott.		
56. Deck plan of mackerel schooner. (Explanation on plate)	I,	248
Drawing by Capt. J. W. Collins.		
57. Seine boat; purse davit and blocks; oar-rests; purse weight and purse blocks; bow fittings	I,	250
58. Seine boats in winter quarters at Gloucester, Mass	I,	250
From photograph by T. W. Smillie.		
59. FIG. 1. Diagram *showing the different sections of a purse-seine*	I,	252
FIG. 2. Diagram showing the form of a purse-seine when spread in the water	I,	252
Drawings by Capt. J. W. Collins.		

	Vol.	Page.
60. Mackerel schooner cruising in Massachusetts Bay; lookout at foretop on the watch for schools From photograph by T. W. Smillie.	I,	255
61. Lookouts aloft on schooner on the watch for mackerel Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	255
62. Mackerel seine-boat and crew "paying out the seine" Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	256
63. Mackerel seine-boat and crew pursing the seine Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	256
64. Mackerel schooner with crew at work bailing mackerel from the purse-seine Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	258
65. Mackerel schooner with pocket or spiller shipped at sea Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	265
66. Mackerel schooner just arrived from cruise; crew dressing and salting the fish From photograph by T. W. Smillie.	I,	267
67. Culling and packing mackerel at Portland, Me From photograph by T. W. Smillie.	I,	267

THE MACKEREL HOOK FISHERY.

68. Surf-fishing in boats for mackerel Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	275
69. Mackerel jigs and jig molds. (Explanation on plate)	I,	278
70. Jigging mackerel over the vessel's rail Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	284
71. Gaffing mackerel over the vessel's rail Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	279
72. FIG. 1. The old method of chopping mackerel bait	I,	279–283
FIG. 2. The modern mackerel bait-mill Drawings by H. W. Elliott and Capt. J. W. Collins.	I,	279–283
73. Throwing bait to toll mackerel alongside the vessel Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	284
74. Deck scene on mackerel hand-line schooner; jigging mackerel, slatting in the barrel, throwing toll-bait Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	284
75. Mackerel-packing on shipboard FIG. 1. Splitting, cleaning, and washing. FIG. 2. Pitching, salting, and plowing. Drawings by H. W. Elliott and Capt. J. W. Collins.	I,	287

THE MACKEREL GILL-NET FISHERY.

76. Mackerel drag-nets set at night off coast of Maine Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	294
77. Cape Cod mackerel drag-boat lying to at night From sketch by J. S. Ryder.	I,	294
78. Dory fishermen picking mackerel gill-nets From photograph by T. W. Smillie.	I,	294

THE MACKEREL FISHERY—EARLY METHODS.

79. Old style Chebacco boats drailing for mackerel Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	299
80. Angling with poles for mackerel from an old Noank, Conn., sloop Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	299

STATISTICS OF THE MACKEREL FISHERY.

81. Diagram showing the catch of mackerel by citizens of Massachusetts between the years 1804 and 1881, inclusive From Report U. S. Fish Commission, Part IX, 1881.	I,	312

THE SWORDFISH FISHERY.

	Vol.	Page.
82. Sword fishermen in position for action From Report U. S. Fish Commission, Part VIII, 1880.	I,	318
83. Methods of swordfish capture in the Mediterranean Sea From Report U. S. Fish Commission, Part VIII, 1880.	I,	318

THE MENHADEN FISHERY.

84. Map illustrating geographical distribution and periodical movements of the menhaden; also the locations of the fishing grounds and oil and guano factories in the year 1878. (No factories now in Maine; many in Chesapeake Bay) From Report U. S. Fish Commission, Part VI, 1878.	I,	331, 343
85. Menhaden steamer Joseph Church approaching oil and guano factory at Tiverton, R. I. From photograph by T. W. Smillie.	I,	334
86. Menhaden steamer William Floyd cruising for fish From sketch by Capt. B. F. Conklin.	I,	334
87. Lookouts at mast-head of menhaden steamer watching for schools of fish From sketch by J. S. Ryder.	I,	338
88. Fleet of menhaden steamers *en route* to fishing grounds on south side of Long Island, N. Y. From sketch by Capt. B. F. Conklin.	I,	338
89. Fleet of menhaden steamers on the fishing grounds; seining crews at work From sketch by Capt. B. F. Conklin.	I,	338
90. Crew of menhaden steamer surrounding a school with purse-seine From sketch by Capt. B. F. Conklin.	I,	337–339
91. Pursing the seine around a school of menhaden From sketch by Capt. B. F. Conklin.	I,	337–339
92. Menhaden crew at work; pursing of the seine nearly completed From sketch by H. W. Elliott, 1878.	I,	339
93. School of menhaden surrounded with purse-seine and fish striking the net From sketch by Capt. B. F. Conklin.	I,	339
94. Bailing menhaden from purse-seine into steamer's hold From sketch by J. S. Ryder.	I,	337, 340
95. Menhaden steamer bailing in the catch From sketch by Capt. B. F. Conklin.	I,	340
96. Haul-seine fishing for menhaden at Long Island, 1790 to 1850. Setting the seine From sketch by Capt. B. F. Conklin.	I,	341, 368, 371
97. Haul-seine fishing for menhaden at Long Island, 1790 to 1850. Hauling the seine on the beach by horse-power From sketch by Capt. B. F. Conklin.	I,	341, 368, 371
98. Haul-seine fishing for menhaden at Long Island, 1790 to 1850. Taking out the fish From sketch by Capt. B. F. Conklin.	I,	341, 368, 371
99. Menhaden purse and mate boats and two carry-away boats starting for the fishing grounds From sketch by Capt. B. F. Conklin.	I,	334, 368
100. Menhaden purse and mate boats FIG. 1. Going down to the fish. FIG. 2. Working to windward of the fish. From sketches by Capt. B. F. Conklin.	I,	334, 368
101. Purse and mate boats encircling a school of menhaden; carry-away boats in waiting From sketch by Capt. B. F. Conklin.	I,	334, 368
102. Menhaden boats and crew pursing the seine; the fish striking the net From sketch by Capt. B. F. Conklin.	I,	334, 368
103. Menhaden sloops cruising for fish. One of the sloops is for the crew to live on and to tow the seine-boats; the others to carry fish to the factory From sketch by Capt. B. F. Conklin.	I,	334, 368, 375, 376
104. Menhaden sloops and steamers in Gardiner's Bay, Long Island From sketch by Capt. B. F. Conklin.	I,	399
105. Menhaden carry-away sloops bailing in the catch From sketch by Capt. B. F. Conklin.	I,	376, 377
106. Menhaden fishermen signaling to shore-crews the approach of a school of fish	I,	367

	Vol.	Page.
107. Crew of menhaden schooner, in old style seine-boat, throwing the purse-seine	I,	336, 338
108. Carry-away boat with haul of menhaden on the way to oil factory From sketch by Capt. B. F. Conklin.	I,	373
109. Menhaden steamer discharging its catch at oil and guano factory, Tiverton, R. I. From photograph by T. W. Smillie.	I,	337
110. Gang of Portuguese in hold of menhaden steamer filling the hoisting tubs From photograph by T. W. Smillie.	I,	337
111. Fish pens on top floor of menhaden factory; the fish are led through a trough to the cooking tanks From photograph by T. W. Smillie.	I,	337
112. Menhaden steamer discharging its catch at oil and guano factory. Incline railway to carry fish to cooking tanks From sketch by Capt. B. F. Conklin.	I,	337
113. Menhaden floating factory. An old vessel fitted as an oil factory and moved from place to place near the fishing grounds Drawing by H. L. Todd.	I,	345, 378
114. Slivering menhaden for bait From Report U. S. Fish Commission, Part V, 1877.		
115. Menhaden oil and guano factory at Milford, Conn.; steamers unloading fish at the wharf; incline railway to carry fish to cooking tanks on upper floor of factory; oil tanks and storage sheds in foreground; platform for drying scrap in rear of factory, connected with building by elevated railway From a photograph.	I,	342

(Interiors of oil factories will be illustrated in Section on Preparation of Fishery Products.)

THE HERRING FISHERY AND SARDINE INDUSTRY.

116. Herring schooner bound for Wood Island, Maine; outfit of salt and barrels on deck From photograph by T. W. Smillie.	I,	426
117. Herring pinkey bound for the fishing grounds; nets hanging over bowsprit and stern; net dories on deck From photograph by T. W. Smillie.	I,	426
118. Torching at night for spurling or small herring in Ipswich Bay, Massachusetts From sketch by J. S. Ryder.	I,	428
119. Torching herring at night near Eastport, Me. From photograph by T. W. Smillie.	I,	429
120. Fishermen mending herring gill-nets at House Island, Casco Bay From photograph by T. W. Smillie.	I,	430
121. Irish fishermen of Boston picking their herring nets in Gloucester Harbor. The typical "Irish market boat" From photograph by T. W. Smillie.	I,	430
122. Cape Ann herring fishermen landing their gill-nets after a night's fishing From photograph by T. W. Smillie.	I,	430
123. Fishermen in quoddy boat hauling herring gill-nets Drawing by H. W. Elliott and Capt. J. W. Collins.	I,	430

THE SMOKED HERRING INDUSTRY.

124. Boat landing; fish houses; herring smoke-house; fisherman's dwelling and farm From photograph by T. W. Smillie.	I,	476
125. Old style herring smoke-house (without roof ventilators) at Lubec, Me From photograph by T. W. Smillie.	I,	476
126. Herring "horse" loaded with smoked fish on sticks From photograph by T. W. Smillie.	I,	478
127. Herring smoke-house at Eastport, Me.; smoke ventilators on roof; sticks of herring inside From photograph by T. W. Smillie.	I,	480

THE SARDINE INDUSTRY.

128. Shore herring weir near Eastport, Me.; the common form of brush weir From photograph by T. W. Smillie.	I,	501
129. Bar herring weir near Eastport, Me.; escape of fish prevented by receding tide From photograph by T. W. Smillie.	I,	500

	Vol.	Page.
130. Channel herring weir near Eastport, Me.; controls channel between islands From photograph by T. W. Smillie.	I,	501
131. Section of ballasted weir near Eastport, Me.; for rocky bottom From photograph by T. W. Smillie.	I,	502
132. Fishing a herring weir at low tide, near Eastport, Me From photograph by T. W. Smillie.	I,	503
133. General view of sardine cannery at Eastport, Me From photograph by T. W. Smillie.	I,	508
134. View of sardine cannery at low tide, showing the employés at work From photograph by T. W. Smillie.	I,	508
135. Herring boat landing fish at a sardine cannery, Eastport, Me From photograph by T. W. Smillie.	I,	509
136. Sardine steamer for collecting herring and towing weir boats From photograph by T. W. Smillie.	I,	510
137. Children at sardine cannery cutting off the heads and tails and cleaning small herring for canning From photograph by T. W. Smillie.	I,	510
138. Washing, draining, and flaking herring at sardine cannery, Eastport, Me From photograph by T. W. Smillie.	I,	512
139. Spreading herring on flakes for drying in the sun or in an oven From photograph by T. W. Smillie.	I,	511
140. Herring drying on flakes in the sun; landing, cleaning, washing, &c., at sardine cannery, Eastport, Me From photograph by T. W. Smillie.	I,	513
141. Fish-drying frames on roof at sardine cannery, Eastport, Me From photograph by T. W. Smillie.	I,	512
142. Frying room in sardine cannery, Eastport, Me.; herring frying in pans of oil From photograph by T. W. Smillie.	I,	514
143. Packing room at sardine cannery, Eastport, Me.; packing herring-sardines in tin boxes From photograph by T. W. Smillie.	I,	515
144. Soldering room at sardine cannery, Eastport, Me.; solderers sealing the cans From photograph by T. W. Smillie.	I,	516
145. Bathing room at sardine cannery, Eastport, Me.; bathing vats at the left; men at right venting cans From photograph by T. W. Smillie.	I,	517
146. Making sardine cans at Eastport, Me From photograph by T. W. Smillie.	I,	518

THE SPANISH MACKEREL FISHERY.

147. Methods of setting Spanish mackerel gill-nets FIG. 1. "Straight set." FIG. 2. Circle set. FIG. 3. Crooked set. FIG. 4. "Hook set." FIG. 5. "T set." FIG. 6. "Square set." FIG. 7. "Triangle set." FIG. 8. "Harpoon set." From Report U. S. Fish Commission, Part VIII, 1880.	I,	546
148. Chesapeake Bay Spanish mackerel pound-net From Report U. S. Fish Commission, Part VIII, 1880.	I,	548

THE MULLET FISHERY.

149. Camp of mullet fishermen, North Carolina From a photograph.	I,	562

THE POUND-NET FISHERIES OF THE ATLANTIC STATES.

150. Diagram of pound-net at Bald Head, Maine. (By Capt. J. W. Collins)	I,	598
151. Diagram of pound-net at Small Point, Maine. (By Capt. J. W. Collins)	I,	598

	Vol.	Page.
194. Whalemen's harpoons	II,	250
FIG. 1. Improved harpoon or toggle-iron now in general use.		
FIGS. 2, 3. First form of toggle-iron made by Lewis Temple.		
FIG. 4. One-flued harpoon with hinged toggle.		
FIG. 5. One-flued harpoon.		
FIG. 6. Two-flued harpoon.		
FIG. 7. Toggle-iron invented by Provincetown whaleman; not in use.		
195. English harpoons	II,	250
FIG. 1. Old-style hand-harpoon; now little used.		
FIG. 2. Hand-harpoon in general use about 1857.		
FIG. 3. Hand-harpoon now in general use on Scotch whalers.		
Drawings by Capt. William Adams, Dundee, Scotland.		
196. FIG. 1. English harpoon-gun and gun-harpoon now in use on Scotch whalers	II,	252
FIG. 2. An early form of English whaling-gun	II,	252
FIGS. 3, 4, 5. Mason and Cunningham mounting boat-gun; a recent invention. (Explanation with plate)	II,	252
197. FIG. 1. Pierce and Cunningham darting-gun; a combined harpoon and lance used largely by Arctic whalemen. (Explanation with plate)	II,	254
FIG. 2. Cunningham and Cogan gun; length, 33 inches; weight, 27 pounds; used by Arctic steam whalers with bomb lance	II,	253
FIG. 3. Brand muzzle-loading whaling-gun and bomb lance	II,	253, 254, 255
198. FIGS. 1, 2, 3, 4. Pierce bomb-lance. (Explanation on page opposite plate)	II,	254, 267
FIG. 5. Pierce and Eggers breech-loading gun. (Explanation on page opposite plate)	II,	253, 267
199. Whaling rocket. (Explanation on page opposite plate)	II,	254
200. Boat fastened to whale by harpoon and line; killing the whale with bomb lance	II,	262, 267
From painting by J. S. Ryder.		
201. Natives harpooning the beluga, or white whale, at Cook's Inlet, Alaska	II,	61
Drawing by H. W. Elliott, 1883.		
202. Aleuts planting glass, obsidian, and jade darts in a school of humpback whales at Akoon Island, Bering Sea	II,	61, 62
Drawing by H. W. Elliott, 1883.		
203. Makah Indians whaling at entrance to Fuca Straits	II,	62
Drawing by H. W. Elliott, 1883.		
204. Cutting in the bowhead and sperm whales. (Explanation on page opposite plate)	II,	277, 286
Drawings by Capt. C. M. Scammon and Capt. W. M. Barnes.		
205. FIG. 1. Boat spade to stop running whale	II,	264
FIG. 2. Narrow cutting spade or thin boat spade	II,	281
FIG. 3. Flat or round shank spade	II,	281
FIG. 4. Cutting spade for scarfing blubber	II,	281
FIG. 5. Cutting spade for leaning up	II,	281
FIG. 6. Half-round spade	II,	281
206. Cutting blocks and tackle. (Explanation on page opposite plate)	II,	277–281
207. A ship on the northwest coast of America cutting in her last right whale	II,	277
Drawing by H. W. Elliott from a French lithograph designed by B. Russell, of New Bedford.		
208. "Bailing in the case" of a sperm whale	II,	277
Drawing by H. W. Elliott from a French lithograph designed by B. Russell, of New Bedford.		
209. FIG. 1. Blubber mincing-knife.		
FIG. 2. Boarding-knife.		
FIG. 3. Monkey-belt.		
FIG. 4. Wooden toggle.		
FIG. 5. Chain-strap.		
FIG. 6. Throat-chain.		
FIG. 7. Fin toggle.		
FIG. 8. Head-strap.		
FIG. 9. Blubber-hook.		
210. Whale-ships at New Bedford wharf; ship hove down for repairs; oil-casks	II,	289, 290
From photograph by U. S. Fish Commission.		

THE BLACKFISH AND PORPOISE FISHERY.

211. Capture of a school of blackfish in Cape Cod Bay	II,	295, 307
Drawing by H. W. Elliott from a sketch by J. S. Ryder.		

	Vol.	Page.
212. Indian porpoise hunters of Passamaquoddy Bay. *Canoe, rifle, and lance for capture of porpoise.* From photograph by T. W. Smillie.	II,	308
213. Passamaquoddy Bay Indians lancing and securing a porpoise. From photograph by T. W. Smillie.	II,	308

THE PACIFIC WALRUS FISHERY.

214. Innuits of Saint Lawrence Island, Alaska, surprising and harpooning a herd of walruses. Drawing by H. W. Elliott.	II,	313
215. The walrus "coup." Eskimo lancing the exhausted walrus, Saint Lawrence Island, Bering Sea. Mahlemut dresses, bidarka, baidar, &c., of Alaska. *Drawing by H. W. Elliott.*	II,	313
216. Innuits of Saint Lawrence Island, Alaska, hoisting a walrus. Drawing by H. W. Elliott.	II,	313

THE FUR-SEAL INDUSTRY OF ALASKA.

217. Map of Saint Paul's Island, Pribylov Group. Surveyed and drawn, April, 1873, to July, 1874, by Henry W. Elliott.	II,	322
218. Map of Saint George Island, Pribylov Group. Surveyed and drawn, April, 1873, to July, 1874, by H. W. Elliott.	II,	322
219. Profiles of the east coast of Saint Paul's Island. Drawing by H. W. Elliott.	II,	322, 336
220. Ordinary attire of men on the killing ground and of women and young children in the village. Drawing by H. W. Elliott.	II,	320
221. The north shore of Saint Paul's Island, looking W.SW. from the summit of Hutchinson's Hill. Drawing by H. W. Elliott.	II,	336
222. The North Rookery, looking west to Starry Aiel, Saint George Island, village of Saint George. Drawing by H. W. Elliott.	II,	348
223. Natives selecting a "drive." View over hauling grounds of "holluschickie" or bachelor seals at English Bay, looking west from Tolstoi sand-dunes. Drawing by H. W. Elliott.	II,	363
224. Natives driving the "holluschickie." The drove passing over the lagoon flats to the killing grounds, *under the village hill*, Saint Paul's Island. Drawing by H. W. Elliott.	II,	363
225. The killing gang at work. Method of slaughtering fur-seals on the grounds near the village, Saint Paul's Island. Drawing by H. W. Elliott.	II,	365
226. Preparing fur-seal-skins for shipment. FIG. 1, Interior of salt-house, Saint Paul's Island; natives salting and assorting the pelts. FIG. 2, The flensed carcase of a fur-seal and the skin as taken therefrom. FIG. 3, A bundle of skins ready for shipment.	II,	369

THE ANTARCTIC SEA-ELEPHANT FISHERY.

227. Sketch map of Herd's Island, Antarctic Ocean. Lat. 53° 10′ S., Long. 73° 30′ E.	II,	419
228. Working sea-elephants at northeast point, Herd's Island. Drawing by H. W. Elliott after Capt. H. C. Chester.	II,	419, 435
229. Stripping sea-elephant blubber and rolling it in barrels to try-works; southwest beach, Herd's Island. Drawing by H. W. Elliott after Capt. H. C. Chester.	II,	419, 435

THE SEA-LION HUNT ON PRIBYLOV ISLANDS, ALASKA.

230. Natives capturing the sea-lion; springing the alarm. *Drawing by H. W. Elliott, 1873.*	II,	468
231. Shooting the old males; spearing the surround; the drive. Drawing by H. W. Elliott, 1872.	II	468, 469, 471
232. Natives corraling sea-lions at the Barrabora, under Cross Hill, northeast point Saint Paul's Island. Drawing by H. W. Elliott.	II,	469
233. Oil-pouches of sea-lion stomach; seal meat frame; bidarrah covered with sea-lion skins; sealer's houses. Drawing by H. W. Elliott.	II,	471, 473

	Vol.	Page.
194. Whalemen's harpoons	II,	250
FIG. 1. Improved harpoon or toggle-iron now in general use.		
FIGS. 2, 3. First form of toggle-iron made by Lewis Temple.		
FIG. 4. One-fluted harpoon with hinged toggle.		
FIG. 5. One-fluted harpoon.		
FIG. 6. Two-fluted harpoon.		
FIG. 7. Toggle-iron invented by Provincetown whaleman; not in use.		
195. English harpoons	II,	250
FIG. 1. Old-style hand-harpoon; now little used.		
FIG. 2. Hand-harpoon in general use about 1857.		
FIG. 3. Hand-harpoon now in general use on Scotch whalers.		
Drawings by Capt. William Adams, Dundee, Scotland.		
196. FIG. 1. English harpoon-gun and gun-harpoon now in use on Scotch whalers	II,	252
FIG. 2. An early form of English whaling-gun	II,	252
FIGS. 3, 4, 5. Mason and Cunningham mounting boat-gun; a recent invention. (Explanation with plate)	II,	252
197. FIG. 1. Pierce and Cunningham darting-gun; a combined harpoon and lance used largely by Arctic whalemen. (Explanation with plate)	II,	254
FIG. 2. Cunningham and Cogan gun; length, 33 inches; weight, 27 pounds; used by Arctic steam whalers with bomb lance	II,	253
FIG. 3. Brand muzzle-loading whaling-gun and bomb lance	II,	253, 254, 255
198. FIGS. 1, 2, 3, 4. Pierce bomb-lance. (Explanation on page opposite plate)	II,	254, 267
FIG. 5. Pierce and Eggers breech-loading gun. (Explanation on page opposite plate)	II,	253, 267
199. Whaling rocket. (Explanation on page opposite plate)	II,	254
200. Boat fastened to whale by harpoon and line; killing the whale with bomb lance	II,	262, 267
From painting by J. S. Ryder.		
201. Natives harpooning the beluga, or white whale, at Cook's Inlet, Alaska	II,	61
Drawing by H. W. Elliott, 1883.		
202. Aleuts planting glass, obsidian, and jade darts in a school of humpback whales at Akoon Island, Bering Sea	II,	61, 62
Drawing by H. W. Elliott, 1883.		
203. Makah Indians whaling at entrance to Fuca Straits	II,	62
Drawing by H. W. Elliott, 1883.		
204. Cutting in the bowhead and sperm whales. (Explanation on page opposite plate)	II,	277, 286
Drawings by Capt. C. M. Scammon and Capt. W. M. Barnes.		
205. FIG. 1. Boat spade to stop running whale	II,	264
FIG. 2. Narrow cutting spade or thin boat spade	II,	281
FIG. 3. Flat or round shank spade	II,	281
FIG. 4. Cutting spade for scarfing blubber	II,	281
FIG. 5. Cutting spade for leaning up	II,	281
FIG. 6. Half-round spade	II,	281
206. Cutting blocks and tackle. (Explanation on page opposite plate)	II,	277–281
207. A ship on the northwest coast of America cutting in her last right whale	II,	277
Drawing by H. W. Elliott from a French lithograph designed by B. Russell, of New Bedford.		
208. "Bailing in the case" of a sperm whale	II,	277
Drawing by H. W. Elliott from a French lithograph designed by B. Russell, of New Bedford.		
209. FIG. 1. Blubber mincing-knife.		
FIG. 2. Boarding-knife.		
FIG. 3. Monkey-belt.		
FIG. 4. Wooden toggle.		
FIG. 5. Chain-strap.		
FIG. 6. Throat-chain.		
FIG. 7. Fin toggle.		
FIG. 8. Head-strap.		
FIG. 9. Blubber-hook.		
210. Whale-ships at New Bedford wharf; ship hove down for repairs; oil-casks	II,	289, 290
From photograph by U. S. Fish Commission.		

THE BLACKFISH AND PORPOISE FISHERY.

211. Capture of a school of blackfish in Cape Cod Bay	II,	295, 307
Drawing by H. W. Elliott from a sketch by J. S. Ryder.		

	Vol.	Page.
212. Indian porpoise hunters of Passamaquoddy Bay. Canoe, rifle, and lance for capture of porpoise. From photograph by T. W. Smillie.	II,	306
213. Passamaquoddy Bay Indians lancing and securing a porpoise. From photograph by T. W. Smillie.	II,	308

THE PACIFIC WALRUS FISHERY.

214. Innuits of Saint Lawrence Island, Alaska, surprising and harpooning a herd of walruses. Drawing by H. W. Elliott.	II,	313
215. The walrus "coup." Eskimo lancing the exhausted walrus, Saint Lawrence Island, Bering Sea. Mahlemut dresses, bidarka, baidar, &c., of Alaska. *Drawing by H. W. Elliott.*	II,	313
216. Innuits of Saint Lawrence Island, Alaska, hoisting a walrus. Drawing by H. W. Elliott.	II,	313

THE FUR-SEAL INDUSTRY OF ALASKA.

217. Map of Saint Paul's Island, Pribylov Group. Surveyed and drawn, April, 1873, to July, 1874, by Henry W. Elliott.	II,	322
218. Map of Saint George Island, Pribylov Group. Surveyed and drawn, April, 1873, to July, 1874, by H. W. Elliott.	II,	322
219. Profiles of the east coast of Saint Paul's Island. *Drawing by H. W. Elliott.*	II,	322, 336
220. Ordinary attire of men on the killing ground and of women and young children in the village. Drawing by H. W. Elliott.	II,	320
221. The north shore of Saint Paul's Island, looking W.SW. from the summit of Hutchinson's Hill. *Drawing by H. W. Elliott.*	II,	336
222. The North Rookery, looking west to Starry Ateel, Saint George Island, village of Saint George. Drawing by H. W. Elliott.	II,	348
223. Natives selecting a "drive." View over hauling grounds of "holluschickie" or bachelor seals at English Bay, looking west from Tolstoi sand-dunes. Drawing by H. W. Elliott.	II,	363
224. Natives driving the "holluschickie." The drove passing over the lagoon flats to the killing grounds, under the village hill, Saint Paul's Island. Drawing by H. W. Elliott.	II,	363
225. The killing gang at work. Method of slaughtering fur-seals on the grounds near the village, Saint Paul's Island. Drawing by H. W. Elliott.	II,	365
226. Preparing fur-seal-skins for shipment. FIG. 1. Interior of salt-house, Saint Paul's Island: natives salting and assorting the pelts. FIG. 2. *The flensed carcass of a fur-seal and the skin as taken therefrom.* FIG. 3. A bundle of skins ready for shipment.	II,	369

THE ANTARCTIC SEA-ELEPHANT FISHERY.

227. Sketch map of Heard's Island, Antarctic Ocean. Lat. 53° 10′ S., Long. 73° 30′ E.	II,	419
228. Working sea-elephants at northeast point, Heard's Island. Drawing by H. W. Elliott after Capt. H. C. Chester.	II,	419, 435
229. Stripping sea-elephant blubber and rolling it in barrels to try-works; southwest beach, Heard's Island. Drawing by H. W. Elliott after Capt. H. C. Chester.	II,	419, 435

THE SEA-LION HUNT ON PRIBYLOV ISLANDS, ALASKA.

230. Natives capturing the sea-lion; springing the alarm. Drawing by H. W. Elliott, 1873.	II,	468
231. Shooting the old males; spearing the surround; the drive. Drawing by H. W. Elliott, 1873.	II	468, 469, 471
232. Natives corraling sea-lions at the Barrabora, under Cross Hill, northeast point Saint Paul's Island. Drawing by H. W. Elliott.	II,	469
233. Oil-pouches of sea-lion stomach; seal meat frame; bidarrah covered with sea-lion skins; *sealer's houses*. Drawing by H. W. Elliott.	II,	471, 473

THE SEA-OTTER FISHERY OF ALASKA.

	Vol.	Page.
234. Aleuts sea-otter hunting south of Saanak Island; the bidarkies waiting for the otter to rise again Drawing by H. W. Elliott.	II,	490

THE TURTLE FISHERY.

235. Diving for loggerhead turtle; Morehead City, N. C. Drawing by H. W. Elliott, 1883.	II,	495

THE OYSTER INDUSTRY.

236. Oyster dredging steamer at work in Long Island Sound	II,	523, 535
237. Chesapeake Bay oyster dredges From specimens in U. S. National Museum.	II,	523
238. Oyster tongs and nippers	II,	551
239. FIG. 1. Inclosed dock for oyster vessels at Perth Amboy, N. J	II,	546
FIG. 2. "The Creek" at Keyport, N. J., with oyster boats, skiffs, and scows Drawings by Ernest Ingersoll.	II,	546
240. A Lake's Bay shipping-house and "platform" for freshening oysters, Smith's Landing, Lake's Bay, New Jersey Drawing by Ernest Ingersoll.	II,	546
241. Oyster-barges at foot of West Tenth street, North River, New York City Drawing by Ernest Ingersoll.	II,	555
242. Opening or shucking oysters in Baltimore packing-house From a photograph.	II,	560
243. Baltimore oyster-shucking trough. Oyster knives of diverse patterns, used in New England, New York, and the Chesapeake region	II,	559

THE CLAM INDUSTRY.

244. Clam-diggers' boats and shucking-houses at Essex, Mass From photograph by T. W. Smillie.	II,	585
245. Opening or shucking clams at Essex, Mass From photograph by T. W. Smillie.	II,	585

THE CRAB FISHERY.

246. Negroes trawling for crabs on the Virginia and North Carolina coasts Drawing by H. W. Elliott.	II,	633

THE LOBSTER FISHERY.

247. Dory fishermen hauling lobster pots off Cape Ann, Massachusetts From photograph by T. W. Smillie.	II,	666, 677, 773
248. Lobster fishing-boats of Bristol, Me Drawing by H. W. Elliott and Capt. J. W. Collins.	II,	669, 677, 759
249. Lobster Cove at Lanesville, Cape Ann, Massachusetts, showing fishermen's boat-houses and gear. From photograph by T. W. Smillie.	II,	666, 773
250. Summer village of lobster fishermen at No Man's Land, Massachusetts Drawing by H. W. Elliott, 1882.	II,	781
251. Lobster fishermen's gear at No Man's Land, Massachussetts. (Explanation on plate) Drawing by H. W. Elliott.	II,	665, 672, 781
252. Lobster-boiling apparatus at Portland, Me From photograph by T. W. Smillie.	II,	684

THE FLORIDA SPONGE INDUSTRY.

253. Sponges as landed by the fishermen at Key West, Fla., and ready for sale From a photograph.	II,	826
254. Sponge-loft at Key West, Fla From a photograph.	II,	828
255. Sorting, trimming, and baling sponges at Key West, Fla	II,	828