

GREAT INTERNATIONAL FISHERIES EXHIBITION.

LONDON, 1883.

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UNITED STATES OF AMERICA.

K.

CATALOGUE

OF

FISHERY PRODUCTS, AND OF THE APPARATUS USED IN  
THEIR PREPARATION.

BY

A. HOWARD CLARK,

ASSISTANT IN THE DEPARTMENT OF ART AND INDUSTRY,  
UNITED STATES NATIONAL MUSEUM.

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## A.—INTRODUCTION.

### TOTAL VALUE OF PRODUCTS.

The products of the fisheries of the United States in 1880 were valued at \$43,046,053, and their value in 1882 was estimated to be 24 per cent. greater. This represents the first cost, or value to the fishermen, and if we estimate the products at the wholesale market prices the total amount would be about \$100,000,000. The New England States stand first in importance in the value of the products, next in order come the Southern States bordering on the Atlantic, the Middle States next, then the Pacific coast, the Great Lakes, and last of all the States bordering on the Gulf of Mexico.

### · VALUE OF PRINCIPAL FISHERIES.

The relative importance of the products of the principal fisheries of the country in 1880 was as follows: General fisheries, \$22,405,018; whale fishery, \$2,323,943; fur-seal fishery, \$2,289,813; menhaden fishery, \$2,116,787; oyster fishery, \$13,403,852; sponge fishery, \$200,750; and marine salt industry, \$305,890. An estimate by Mr. G. Brown Goode of the comparative value of the products of some of the fisheries included above under the head of the general fisheries, taken in the order of their importance, credits the cod fishery with \$4,000,000; the Pacific salmon fishery, \$3,300,000; mackerel fishery, \$1,501,000; inland lake and creek fishery, \$1,500,000; shad and alewife fisheries, \$1,500,000; herring and sardine fishery, \$1,130,000; clam and quahaug fishery, \$1,014,000; Great Lake whitefish fishery, \$900,000; lobster fishery, \$732,000; Great Lake general fishery, \$600,000; shore fishery of the Middle States, \$600,000; weir and trap fishery of New England, \$600,000; sea-otter fishery, \$600,000; halibut fishery, \$447,000; California shore fishery, \$370,000; crab fishery, \$328,000; winter haddock fishery, \$295,000; sturgeon fisheries, \$237,000; mullet fishery, \$225,000; shrimp and prawn fishery, \$209,000; eel fishery, \$190,000; abalone fishery, \$128,000; hake fishery, \$90,000; South Atlantic shore fishery, \$85,000; scallop fishery, \$50,000; New England shore fishery, \$50,000; red-snapper and grouper fishery, \$48,000; smelt fishery, \$48,000; turtle and terrapiu fishery, \$45,000; mussel fishery, \$37,000; flounder fishery, \$30,000; swordfish fishery, \$28,000; Eastern salmon fishery, \$22,000; seaweed industry, \$19,000; and the Irish moss industry, \$16,000.

## IMPORTS AND EXPORTS.

The United States annually imports nearly \$4,000,000 worth of fishery products, of which about one-fourth is brine-salted mackerel from the Dominion of Canada. The total imports for the ten years ended June 30, 1882, amounted to \$33,861,793, and included 109,737,420 pounds of fresh fish, valued at \$3,242,566, and 781,182 barrels of salt mackerel, at \$5,513,779, received almost entirely from the Dominion of Canada free of duty under the treaty of Washington. For the year ended June 30, 1882, the imports of foreign fishery products amounted to \$4,311,894, and included fresh fish, \$488,925; brine-salted herring, 112,197 barrels, \$641,414, received from Canada, Holland, and Germany; brine-salted mackerel, 58,443 barrels, \$397,328, from Canada; sardines and anchovies in oil, \$860,760, chiefly from France; \$1,661,569 worth of other fish, chiefly from Canada; and 546,127 gallons of whale and fish oils, worth \$261,898, chiefly from Canada and Newfoundland. Of the total imports \$2,676,712 worth were admitted free of duty, and the balance, \$1,635,182, paid duty.

The annual exports of domestic fishery products for the last ten years has averaged \$4,877,062, exclusive of about \$1,500,000 worth of fur-seal skins annually sent to Europe from Alaska, and about \$100,000 worth of miscellaneous products not separately enumerated in the official reports. The domestic exports for the year ended June 30, 1882, amounted to \$6,146,127, and included \$89,148 worth of fresh fish sent to Canada and Cuba; dried or smoked fish, \$635,155, chiefly to the West Indies; pickled fish, \$244,454, chiefly to the West Indies; other cured fish, consisting largely of canned salmon, \$3,218,581, more than two-thirds of which went to England; oysters, \$612,793, more than one-half of which went to England; sperm oil, \$551,212, over \$500,000 worth of which went to Great Britain; whale and fish oils, \$420,730, chiefly to Europe; whale-bone, \$325,333, chiefly to France and Germany; and spermaceti, \$48,721, to England and Germany.

The proportion of exports to the various countries of the world in 1882 was as follows: Africa, \$17,484; Argentine Republic, \$15,019; Australasia, \$340,437; Azores, Madeira, and Cape Verde Islands, \$3,308; Belgium, \$5,813; Brazil, \$8,254; British Columbia, \$16,671; British Guiana, \$7,410; British Honduras, \$12,460; Central American states, \$14,826; Chili, \$12,334; China and Hong Kong, \$237,342; Denmark, \$2,986; Dutch Guiana, \$61,962; England, \$3,054,126; France, \$271,119; French Guiana, \$31,029; Germany, \$255,400; Gibraltar, \$11,780; Hawaiian Islands, \$96,941; Ireland, \$15,000; Italy, \$104; Japan, \$5,823; Mexico, \$31,744; Netherlands, \$40,608; Newfoundland and Labrador, \$256; Nova Scotia, New Brunswick, and Prince Edward Island, \$35,993; Peru, \$3,775; Quebec, Ontario, Manitoba, and Northwest Territory, \$288,089; Russia, \$194; Scotland, \$322,953; Spain, \$1,275; United States of Colombia, \$47,408; Uruguay, \$7,169; Venezuela, \$14,457; British West Indies, \$87,046; Danish West Indies,



\$11,763; Dutch West Indies, \$10,246; French West Indies, \$25,076; Cuba, \$201,072; Hayti, \$440,612; Porto Rico, \$3,585; San Domingo, \$42,743; and other countries not enumerated, \$32,435.

One of the special products the exportation of which has been constantly increasing in the last few years is oysters. The export of oysters in 1875 was only \$170,277; in 1878 it was \$393,061; 1879, \$453,306; 1880, \$543,895; 1881, \$582,249; 1882, \$612,793; 1883, \$629,636.

#### THE CODFISH INDUSTRY.

The cod fishery is perhaps the most important of all the food-fish fisheries. The center of the industry is in New England, and the largest fishing port is Gloucester on Cape Ann. From this port and from Provincetown, on Cape Cod, and many other places along the coast, fleets of vessels are employed in fishing for cod and related species of the *Gadida*. The best fish, and, as a rule, from 25 to 30 per cent. of the total catch, are taken on George's Banks, about a hundred miles off the Massachusetts coast. The Grand Banks of Newfoundland, the Western Banks, and numerous fishing grounds near the New England coast, also furnish large quantities.

The haddock (*Melanogrammus aeglefinus*) is sold in great numbers as a fresh fish; 21,226,371 pounds being sold fresh in Boston and Gloucester wholesale markets in 1880. Codfish to the number of 23,796,570 pounds were sold fresh in Massachusetts markets in 1880, but a much larger quantity, 148,327,885 pounds, were prepared as dry-salted cod, producing 56,064,757 pounds dried.

The total quantity of cod, haddock, and other *Gadida* taken by New England fishermen in 1880 was 352,280,670 pounds fresh weight; of this amount 230,810,877 pounds were cod (*Gadus morrhua*), 37,553,965 pounds haddock (*Melanogrammus aeglefinus*), 32,460,479 pounds hake (*Phycis chuss* and *P. tenuis*), and 48,460,555 pounds were pollock (*Pollachius carbonarius*), cusk (*Brosmius brosme*), and minor species. More than three-fourths of the total catch of *Gadida* above given, or 265,210,123 pounds, was cured by dry-salting, producing about 101,116,098 pounds of cured fish. The weight of a large part of the cured product was further reduced before sale by stripping the fish of skins and bones and packing as boneless-fish.

There are two principal methods of preparing dry-salted fish, one the pickle-cured and the other the dry-cured. All fish for exportation, unless prepared as boneless, are dry-cured, while for home consumption, even though they are sent to remote parts of the country, they are pickle-cured. By the first method, the cod, after being split and cleaned, are allowed to remain in brine until they take up much salt, and are then quickly and slightly dried, sometimes only a few hours being allowed for the drying. A large proportion of the dry-salted fish is thus prepared, much of it being cut up as boneless, and it is found to keep well, except in the warmest weather. By the dry-cured method the

fish, after being split and salted, are kenched, and afterwards washed, drained, and dried until most of the moisture is removed.

#### THE MACKEREL INDUSTRY.

The mackerel industry is a New England enterprise, and most of the vessels of the mackerel fleet are owned in Massachusetts. The total catch of mackerel by United States fishermen in 1880 was 131,939,222 pounds, of which amount 117,500,000 pounds, equal to 343,808 barrels, were brine-salted, and the rest sold fresh or put up in cans. In 1881 the catch was even larger, reaching about 150,000,000 pounds. The production of the American fleet, although so large, is not sufficient to supply the home trade, and an additional quantity, amounting in 1880 to 112,468 barrels, or about 33,750,000 pounds fresh weight, was imported almost entirely from the Dominion of Canada. In 1881 the imports were 120,297 barrels, valued at \$614,826. In 1882 the imports were only 58,443 barrels, this small amount resulting from a scarcity of fish in Provincial waters. A small amount of pickled mackerel, ranging from a few hundred to three or four thousand barrels, is annually exported from the United States to the West Indies, and consists chiefly of low grades of fish received from Canada.

As seen above, most of the mackerel catch is brine-salted in barrels, a comparatively small amount being consumed in a fresh condition. There has grown up, however, within a few years, a rapidly increasing demand for canned fresh mackerel. These are put up either plain-boiled or broiled and seasoned with tomato or mustard sauce. The former method is the ordinary process of canning fresh fish. On reaching the cannery the fish are cleaned, the heads and tails removed, and are washed in strong brine, to give them a salty flavor. They are then sealed in cans and immersed in boiling water until thoroughly cooked. After being vented and cooled, the cans are painted, labeled, and packed in wooden cases. The principal sizes of cans are those holding 1 pound, cylindrical in form, and measuring  $4\frac{1}{2}$  inches in height by 3 inches in diameter, and 2-pound cans, of the same height, but an inch larger in diameter. There is a loss of about one-quarter in weight by dressing.

The second method of canning, by broiling, is practiced in two ways. By the first way the fish are treated the same as sardines. They are washed, dried, fried in oil, and put up in tins with vinegar and spices. By the second way, and the one in more general use, the fish are cleaned, the heads and tails removed, and then put for a few minutes in strong brine. They are then again washed, spread on wire trays, and steamed for several minutes in a tight box. The fish, still on the trays, are next put into an oven to be baked or broiled, and are then packed in tin boxes of oval shape, holding about 3 pounds each. A sauce of mustard or tomato, seasoned with spices, is added for flavoring. The next step is to seal the cans and subject them to a hot-water bath, after

which they are vented, cooled, and labeled "fresh-broiled mackerel." Most of the fresh mackerel canned are of small size, too small for barreling, and which were formerly thrown away.

Brine-salted or pickled mackerel are generally packed in barrels holding 200 pounds of fish. In Maine and Massachusetts the barrels are by law required to be of certain kinds of wood and properly made, and the fish must be sorted into designated sizes and the packed barrels inspected and branded by a State officer. The legal sizes of mackerel in Massachusetts are numbers one, two, three, three-large, and four. The first grade are mackerel of the best quality, not mutilated, free from rust, taint, or damage, and measuring not less than 13 inches from the extremity of the head to the crotch or fork of the tail. The second grade are the next best quality, free from rust, taint, or damage, and measuring not less than 11 inches in length. Those that remain after the above selections, if free from taint or damage and measuring not less than 13 inches in length, are number three-large. The next inferior quality, free from taint or damage and not less than 10 inches in length, are number three, and all other mackerel free from taint or damage are called number four.

For convenience of sale much of the brine-salted mackerel are put up in half, quarter, eighth, and sixteenth barrels. Since the year 1879 a demand has sprung up for still smaller packages, and many are now packed in 5-pound, or even 3-pound, tin cans. Fish thus put up are chiefly number two mess mackerel, or those deprived of heads and tails. The process of canning is very simple, and requires no heat except for soldering. The fish are washed and scraped, to give them a neat appearance, and sometimes, if large, they are cut in pieces. The proper weight of fish is then put in the can, the cover soldered on, and through a small hole left in the side or cover enough strong brine is poured in to fill the can. The hole is then sealed up, and the cans, after being painted to prevent rusting, and neatly labeled, are packed in wooden cases.

#### THE MENHADEN INDUSTRY.

The menhaden (*Brevoortia tyrannus*), called also mossbunker, pogey, and by other names, is the most important fish on the American coast for the manufacture of oil and guano. It is also of value as bait for cod and mackerel. Large quantities were used for mackerel bait in former years, before the general introduction of the purse seine in that fishery. As a food-fish the menhaden is not valuable, though considerable numbers are eaten at a few places. An effort was made a few years ago to introduce menhaden canned in oil, under the names of "American sardines," American boneless sardines," and "shadines," but as the herring has proved a much better "sardine" this industry does not appear to have prospered. An extract of fish made from the juices of the flesh of menhaden was patented several years ago, but has not become popular. The menhaden abounds from Maine to North Carolina. Factories

for the manufacture of this fish into oil and guano are located all along the coast within those limits, though the largest factories are along the Rhode Island, Connecticut, and New York shores. Twenty-five years ago only a few millions of these fish were annually taken, but in 1878 the quantity captured reached the enormous number of 777,000,000. In 1880 the number taken was 570,424,377 fish, from which were produced 2,066,396 gallons of oil, worth \$733,424; 68,904 tons of guano, worth \$1,301,217; and \$61,669 worth of compost. The oil is used in currying leather, in rope-making, for lubricating, for adulterating linseed oil, as a paint oil, and is also largely exported to Europe for use in the manufacture of soap and for smearing sheep.

To illustrate the preparation of menhaden oil, a large model of a factory is exhibited, showing the cooking-tanks, the presses, oil-room, and the entire apparatus incident to the business.

#### THE SMOKED-FISH INDUSTRY.

In smoked fish the principal kinds are herring, haddock, and halibut, though sturgeon, salmon, smelts, and other species are frequently prepared by smoking. The smoked-herring business is carried on chiefly in Maine, where in 1880 the quantity of fresh herring thus prepared was 6,138,942 pounds, producing 370,615 boxes of smoked fish, worth \$99,973. Haddock smoked as "Finman haddies" were prepared in Maine in 1880 to the amount of 1,414,500 pounds cured fish worth \$78,175. Smoked halibut are prepared only in Massachusetts, where in 1880 5,094,700 pounds of fresh fish yielded 1,273,675 pounds of the cured article, worth \$101,894. In the fisheries of the Great Lakes nearly 2,000,000 pounds of smoked whitefish, sturgeon, and other fish are annually prepared, and on the Pacific coast some 200,000 pounds of salmon.

#### THE SALMON INDUSTRY.

The salmon fishery is carried on almost exclusively on the Pacific coast. In 1880 there were forty-five canneries in operation, which put up 655,274 cases, or 31,453,152 one-pound cans of salmon, worth \$3,255,365. The number of fish consumed by the canneries was 2,152,509, and their weight, fresh from the water, 43,379,542 pounds. About 2,000,000 pounds of salmon were consumed fresh in San Francisco; 200,000 pounds were smoked and 1,585,500 pounds salted in barrels. The total catch was 2,755,000 fish, weighing 51,862,000 pounds. The great abundance of salmon in the rivers of Alaska has led to the establishment of canneries in that Territory. The largest salmon on record as put up in a can is shown in the exhibit of the Cutting Packing Company. It was taken at the mouth of the Kusiloff River, Alaska, July 22, 1882, and weighed when fresh 86 pounds, and canned 65 pounds. Further details of the salmon industry of Alaska, as also information about the abundance of other fishes in that Territory, are given by Dr. Tarleton H.

Bean, in Section F, "Catalogue of the Collection of Fishes." In the year 1882 there were from thirty-five to forty canneries in operation on the Columbia River, ten on the Sacramento River, one each on the Eel and Rogue Rivers, and four on the Umpqua River.

The quantity canned in 1882 in United States canneries on the Pacific coast was about 1,000,000 cases, or 48,000,000 one-pound cans, equivalent to about 60,000,000 pounds of live fish. Of this enormous amount of fish one-half goes to Great Britain, where much is re-exported; the United States consumes about 300,000 cases; about 100,000 cases go to Australia; the balance to other countries.

In the ordinary method of canning salmon the fish are beheaded, cleaned, and cut into pieces of suitable size to fill the cans within one-fourth of an inch of the top. The covers are then put on and soldered down. The air-tight filled cans are next passed to the boilers or vats, measuring about 5 feet long, 4 feet wide, and 4 feet deep, when they are steamed for an hour, then taken out and cooled. A small hole in the lid, hitherto soldered up, is now opened by applying a hot iron, the gases allowed to escape and the cans immediately made air-tight again. They are next boiled for two hours in a bath of water salted to raise the boiling point, and after cooling are labeled and packed in cases of four-dozen one-pound cans each.

#### THE SARDINE INDUSTRY.

The sardine industry is confined to the State of Maine. It is of recent origin, and until 1880 was carried on chiefly at Eastport. Experiments in this business were made as early as 1866, but it was not fairly inaugurated until 1875, since which time it has rapidly increased. According to the Tenth Census it gave employment in 1880 to 1,876 fishermen and factory hands. The production of the canneries in that year was 7,550,868 cans, valued at \$788,576. The fish were the common sea herring (*Clupea harengus*), the small ones being classed as sardines, and the large ones either as herring or sea trout. The sardines were canned in oil, spices, mustard, in tomato sauce, or put up in barrels and kegs as Russian sardines and anchovies. The quantity of each brand was as follows: Sardines in oil, 6,141,400 one-quarter pound and 142,000 one-half pound cans, worth \$571,303; sardines in spices, 579,850 one-half pound cans, \$86,978; sardines in mustard, 538,650 one-half pound cans, \$80,797; sardines in tomato sauce, 22,700 one-half pound cans, \$4,540; brook trout, or large herring, 24,000 two-pound cans, \$6,500; sea trout, or large herring, 50,584 three-pound cans, \$22,058; "broiled mackerel," 50,784 three-pound cans, \$16,400; Russian sardines, 8,165 barrels, \$28,578; and anchovies, 200 barrels, \$500.

While the canning of small herring as sardines is carried on only in Maine, the larger herring are also put up in Boston, Gloucester, and other places. The import of foreign sardines and anchovies might perhaps be supposed to decrease in proportion to the increase of the quan-

tity canned in this country, but so rapidly is the general trade in fish increasing that the imports are even greater than before. In 1875 the value of sardines and anchovies imported was \$526,179; in 1878, \$677,910; 1880, \$1,102,410; 1881, \$987,394; 1882, \$860,760; and, 1883, \$911,668.

#### THE SHAD AND ALEWIFE FISHERIES.

The fisheries for shad (*Clupea sapidissima*) and for alewives (*Clupea vernalis* and *C. astivalis*) yield annually nearly 20,000,000 pounds of the former and 40,000,000 pounds of the latter fish. Shad are taken chiefly in the rivers of Connecticut, New York, Delaware, Maryland, Virginia, and North Carolina. In 1880 the total catch of all the States on the Atlantic seaboard was 18,068,116 pounds, valued at \$1,004,462. They are eaten either fresh, salted, or smoked, though by far the greater part are marketed fresh. One-third the entire catch of alewives comes from the sounds and rivers of North Carolina. In 1880 the yield of that region was 15,520,000 pounds as compared with 43,194,651 pounds for the whole Atlantic seaboard. The Maryland alewife fisheries yielded 9,128,959 pounds, and those of Virginia 6,925,413 pounds, while Maine and Massachusetts rivers yielded each over 3,000,000 pounds. Alewives are very largely brine-salted in barrels. A large photograph in the exhibit represents a number of negro women cleaning and packing alewives at a fishery in North Carolina.

#### STURGEON AND CAVIARE.

Sturgeon (*Acipenser* sp.) are found in many of the rivers, but they are not sought for to any extent east of New York. The take of that fish in New York in 1880 was 144,000 pounds; in New Jersey 300,000 pounds; Pennsylvania, 150,000 pounds; Delaware, 570,000 pounds; Maryland, 144,000 pounds; Virginia, 411,000 pounds; North Carolina, 436,900 pounds; and other Southern States, 618,250 pounds. In North Carolina and Georgia 80,250 pounds of sturgeon roe were salted down as caviare. Sturgeon roe is prepared and put up in cans under the trade names "American caviare" and "Russian caviare" and has a large sale. A considerable quantity of sturgeon is canned and branded "Albany beef," a name said to be given to it from the fact that it was first brought into the market at the city of Albany, on the Hudson River, New York.

The sturgeon fisheries of the Great Lakes, especially Lakes Michigan, Huron, and Erie, are extensive, the quantity of that fish taken in 1880 amounting to 7,012,100 pounds. Of this amount 5,650,700 pounds were sold fresh, 1,253,180 pounds were smoked, and there were prepared 230,160 pounds of caviare, 3,909 pounds of isinglass, and 5,680 gallons of oil. The other fish taken in the Great Lakes in 1880 were 21,463,900 pounds of whitefish (*Coregonus* sp.), 6,804,600 pounds of trout, 15,356,300 pounds of herring, and 18,105,100 pounds of pike, bass, muskallonge, catfish, and numerous other species.

## COMMERCIAL FISHERIES OF THE MIDDLE STATES.

The products of the commercial fisheries of the Middle States include a great many kinds of fish, most of which are consumed fresh. In 1880 the total weight of all the fish taken in these States, which embrace New York, New Jersey, Pennsylvania, and Delaware, was 413,525,862 pounds, and included 318,588,700 pounds of menhaden, 23,223,100 pounds of shelled oysters, 11,063,500 pounds of squeteague (*Cynoscion regalis*), 6,710,800 pounds of bluefish (*Pomatomus saltatrix*), and many other species of fish and miscellaneous products. Of the whole product more than 70 per cent. was consumed as fertilizers, about 12 per cent. was fish sold fresh for food, and about 2,500,000 pounds of fish were salted; the balance included 41,508 pounds of terrapin, over 9,000,000 pounds of crabs, and about 10,000,000 pounds of shelled clams.

## THE COMMERCIAL FISHERIES OF THE SOUTHERN STATES.

The rivers, bays, and adjacent ocean waters of the Southern States on the Atlantic seaboard abound in excellent food-fish, but the fisheries are but partially developed. In 1880 there were 297,539,167 pounds of fishery products taken in these States, which embrace Maryland, Virginia, North and South Carolina, Georgia, and Eastern Florida. Referring to Bulletin No. 293, Tenth Census, we find that fully two-fifths, or 124,231,240 pounds, of the entire product are oyster meats, an allowance of seven pounds being made for each bushel of oysters in the shell. Of the remainder, 92,194,800 pounds are menhaden (used for oil and guano), 32,184,372 pounds are alewives, and 10,878,942 pounds are shad. These are the only species taken in quantities exceeding 5,000,000 pounds. Five kinds, the mullet, crab, bluefish, perch, and striped bass, are taken in quantities exceeding 2,000,000 pounds, while the catch of nine others ranges between 1,000,000 and 2,000,000 pounds.

## THE OYSTER INDUSTRY.

The oyster industry in 1880 yielded 22,195,370 bushels, worth to the producers \$9,034,861, which value was increased by replanting or by packing in tin cans so that the marketable value was \$13,403,852. The proportion produced by the different States was as follows: For New Hampshire, 1,000 bushels; Massachusetts, 36,000 bushels; Rhode Island, 163,200 bushels; Connecticut, 336,450 bushels; New York, 1,043,300 bushels; New Jersey, 1,975,000 bushels; Delaware, 300,000 bushels; Maryland, 10,600,000 bushels; Virginia, 6,837,320 bushels; North Carolina, 170,000 bushels; South Carolina, 50,000 bushels; Georgia, 70,000 bushels; Florida, 78,600 bushels; Alabama, 104,500 bushels; Mississippi, 25,000 bushels; Louisiana, 295,000 bushels; Texas, 95,000 bushels; Washington Territory, 15,000 bushels.

Oysters are marketed either in the shell, shucked, or steamed and canned under the trade name of "Cove oysters." The methods of pre-

paring and packing oysters are fully described in Section D of this Bulletin, and need not be repeated here.

#### THE CLAM INDUSTRY.

The clam industry is of great importance, especially in the New England States. Two species are chiefly taken, the long clam (*Mya arenaria*), abundant north of Cape Cod, and the quabaug, or round clam (*Venus mercenaria*), south of Cape Cod. The former is extensively used both as food and as bait in the cod-fisheries. Another species, the sea-clam (*Macra solidissima*), is of importance in the Cape Cod region, being used as the other kinds for food or bait. In 1880 the total number of long clams taken in the United States was 164,195,200, equivalent to 835,974 bushels, and valued at \$330,523. Of the quabaug, or round clam, 326,245,800 were taken, equivalent to 1,087,486 bushels, worth \$657,747. Quite an extensive industry in canning clams is carried on in Maine, where in 1880 the quantity thus put up was 518,476 pounds of clam meat, equal to 51,847 bushels of clams in the shell, and valued at \$47,318. Other species of mollusca are classed as fishery products, and are discussed in the section devoted to Economic Mollusca.

#### THE LOBSTER INDUSTRY.

The lobster fishery is chiefly a New England industry. The total weight taken in 1880 was 20,128,000 pounds, worth \$732,000. Lobsters are marketed either whole or canned. In New England towns fresh-boiled lobsters are sold in the fish markets and peddled in the streets. The canning of lobsters in 1880 was confined to the coast of Maine, where there were 23 canneries open from April 1 to August 1. The quantity of live lobsters used by these canneries was 9,494,284 pounds. The number of one-pound cans put up was 1,542,696, of two-pound cans, 148,704, and of other brands 139,801 cans, having a total value of \$238,280. Seventeen canneries, located in Newfoundland, Nova Scotia, and other British provinces, were owned by Americans. The product of these canneries in 1880 was valued at \$246,000, and was all exported to Europe and other foreign countries without passing through the United States. Further details of this industry, as also of the business in shrimps, prawns, and other crustaceans are given by Mr. Rathbun in the section devoted to Economic Crustaceans, Worms, &c. In the same section the particulars of the American sponge industry are also given.

#### THE WHALE FISHERY.

In Section E, "The Whale Fishery and its Appliances," will be found a statistical statement of the products of that fishery. The industry is of small importance compared with thirty or forty years ago, and is now carried on in but few places. New Bedford and Provincetown in Massachusetts, and San Francisco on the Pacific coast, send out fleets



that annually bring home a large amount of oil and bone. Refineries for the preparation of the oil and the manufacture of candles are located at New Bedford and are about to be started at San Francisco.

Little use is made of crude sperm oil, though half the production of other kinds of whale oil is used in a crude state by cordage manufacturers. Sperm oil is refined by steaming, chilling, and pressing, and is sent into the markets as "spring make natural," "spring make bleached," "natural winter," "bleached winter," and "double bleached." One of the products of pressing the chilled oil is crude spermaceti, which is refined and either made into candles or used in the arts and medicine. Common whale oil refining yields, besides several grades of oil, a proportion of whale "foots," used by soap-makers and tanners, and whale soap, used largely for scouring woolsens.

Ambergris is a product of the whale fishery, being found in the intestines of the sperm whale. As only sickly whales yield this article, it has been considered a product of disease. When of good quality, it is worth its weight in gold. It is used in the manufacture of fine perfumes, having the property of closely and permanently uniting the ingredients. A common practice among sperm whalers is first to strip the blubber from the animal, then to open its bowels from the orifice of the anus and search for ambergris. It may be found in any part of the intestinal canal, but is more generally found within 6 feet of the vent. Some large pieces are occasionally secured. One of the most valuable finds of the last forty years was a lump weighing 136 pounds, taken by the crew of the bark *Adeline Gibbs*, of New Bedford, in 1878. "It was in one lump, except a piece of about three pounds. In shape it was oval; the middle part was the diameter of a flour barrel, and in length four inches short of the length of the barrel. The whole weighed, by the ship's scales, 142 pounds. When sold it weighed 136 pounds, and brought \$23,000."

#### THE FISH-OIL INDUSTRY.

Cod-liver oil for medicinal and tanners' use is made chiefly in New England. Most of it is steam-refined, and the best medicinal oil is also cold pressed, being subjected to a low temperature in a refrigerator and then put in bags and submitted to powerful pressure to more thoroughly separate the foots or stearine.

Menhaden oil has been discussed under the menhaden industry. There is shown in the exhibit oils from many kinds of fish; most of them are used in the preparation of leathers. The oil of the candle-fish or *oulachon*, of the Pacific coast, is used by the Indians both for food and illumination. The oil of sun-fish is considered by some a good cure for rheumatism.

#### THE FUR INDUSTRY.

Fur-seal skins to the number of 150,000 to 170,000 are annually produced by the seal fisheries controlled by the United States. The greater

number are taken on the Pribylov Islands, in Alaska, and on the Commander Islands, leased from the Russian Government by the Alaska Commercial Company. Some fur seals are captured in the vicinity of Cape Flattery, at the entrance to Puget Sound, and others farther south along the California coast. Another fur-seal fishery is worked by Americans in the vicinity of Cape Horn, South America, and yields annually from 7,000 to 10,000 skins. Nearly all the seal skins are sent to Europe to be plucked and dyed, and many of them afterwards returned to be manufactured into cloaks, capes, hats, and other wearing apparel. At Albany, in the State of New York, there has been for many years a factory for dyeing these skins, but the number annually dyed is not large.

In 1880 some 6,000 skins of the sea-otter, worth \$600,000, were taken in Alaska. Other fur-bearing animals are captured in various parts of the United States. The common otter (*Lutra canadensis*) is found in the Lake Superior region, in many of the Western States, and in Florida, though the skins of Florida otter are but half the value of those from Lake Superior. The beaver (*Castor canadensis*) is taken in Utah, the Lake Superior region, and other places. Some excellent white and light-colored beaver skins from Alaska are shown in the exhibit. The musquash (*Fiber zibethicus*), mink (*Putorius vison*), and the fisher or pekan (*Mustela Pennanti*), are also taken for their fur.

In bird furs there is shown a cape or robe made by the Makah Indians of Washington Territory from the down of the loon (*Colymbus torquatus*), and a robe from California, made from the skins of the brown pelican (*Pelecanus fuscus*).

#### LEATHERS, IVORY, AND BONE.

The exhibit of leathers prepared from the skins of aquatic animals includes rough hides and manufactured articles from the sea-lion (*Eumetopias Stelleri*), from the banded seal (*Histiophoca fasciata*), and other species of seals, harpoon-lines from hide of walrus and seal, a large collection of objects made from the skin of the Florida alligator (*Alligator mississippiensis*), and some articles from skins of salmon, cusk, and other fishes.

In ivory and bone there are shown walrus and narwhal tusks, teeth of sperm whale, and alligator teeth, both in the crude and the manufactured conditions. Baleen, commonly called whalebone, is exhibited in all its varieties, both in rough slabs and prepared for use in numerous trades. Tortoise-shell, fish-scales, pearls, cameo, and other shells are shown in several varieties.

#### FISH GLUE AND GUANO.

An industry of recent origin and one which is rapidly growing is the preparation of glue from the skins of cusk, cod, and other fishes. It is confined to Cape Ann, in Massachusetts, where there are three fac-

ories in active operation. The material used in making the glue is the waste of the boneless-fish factories, which, until within eight or ten years, was thrown away as useless. The glue is found to be adapted to many uses, and is considered preferable to cattle glue in many trades. An excellent quality of guano is made from the cooked skins after the glue has been extracted. From fish-oil refuse there is also made a good guano. The best fish guano is made from the menhaden; several qualities of this guano, as also the apparatus used in its manufacture, are shown in the exhibit.

## B.—METHODS OF PREPARATION.

### I.—PREPARATION AND PRESERVATION OF MARINE PRODUCTS FOR FOOD.

#### 1. PRESERVATION DURING LIFE.

##### FISH CARS AND FLOATING CAGES.

###### LIVE-FISH CAR.

Full size; made of wood; boat-shape; sharp at both ends; flat bottom; holes in sides and bottom; top covered with hinged lid. Length 5 feet on top, 37 inches on bottom. Width on top, amidships, 22 inches. Depth, 14 inches. New Bedford, Mass., 1882. Gift of James Beetle. Towed astern of boats by fishermen of Southern New England, for the preservation of live tautog and bluefish.

###### FLOATING FISH CAR.

Model, scale  $1\frac{1}{4}$  inches to foot. A series of six wooden crates suspended in frame with floats on two sides. Length, 10 inches; width, 9 inches; depth, 3 inches. Newport, R. I., 1877. 29,538. Gift of J. M. K. Southwick. Used for preserving live fish at market.

###### FISH MARKETMAN'S CAR.

Model. Rectangular shape; sides and bottom made of slats; top, of boards, with openings. Length,  $6\frac{1}{4}$  inches; width,  $4\frac{1}{4}$  inches; depth,  $2\frac{3}{4}$  inches. Newport, R. I., 1877. 29,539. Gift of J. M. K. Southwick. Used by the fishermen of Southern New England for the preservation of live fish and lobsters.

###### NOANK LOBSTER CAR.

Model, scale,  $1\frac{1}{4}$  inches to foot. A crate made of slats of wood; in two compartments; top flat, bottom bulging. Length, 18 $\frac{1}{2}$  inches; width, 9 $\frac{1}{2}$  inches; depth, 6 inches. Noank, Conn., 1878. 29,297. Gift of Capt. H. C. Chester. Used at the fish wharves for the preservation of live lobsters and fish.

###### LIVE-CAR.

Model. A boat-shaped wooden box; sharp at each end. Made of slats set a short distance apart. Used by vessels to keep fish alive for market. Providence, R. I. 22,221. D. D. Almy.

## PHOTOGRAPHS OF LIVE-CARS.

View in rear of Fulton Fish Market, showing floating open-work wooden cages for preserving live fish for marketing. New York. Photos. 2119-20. U. S. Fish Commission.

## 2. PRESERVATION OF FRESH MEATS.

## REFRIGERATION.

## CHASE'S COLD-BLAST REFRIGERATOR (full size).

"This scientific system of refrigerating with ice, or ice and salt, or other freezing mixture, is the invention of Andrew J. Chase, of Boston, Mass. It has been in use now five years. The strong points of this system are claimed to lie in the fact that it is adapted to all purposes, as it gives any temperature from 24° below freezing to 42° above zero. The internal circulation of the air is very brisk and dry, a necessary condition for preserving perishable goods. Thus far this refrigerator has been used principally for heavy work, or upon a large scale. At this time there are about 2,000 cold-blast cars in use, transporting dressed beef from the West to all the principal cities and towns from Maine to New Orleans and Florida. Thirty-two large English steamships have been fitted for transporting fresh meats to Europe. These have a capacity ranging from 800 to 1,800 quarters of beef each. The leading hotels and markets of the States are also fitted with these important structures. Cold-blast preserving houses are getting very popular in all parts of the country. Boston has the largest one in the world, just finished. Fish-dealers are beginning to see that the old slop and slime method of packing in ice must very soon give place to the dry handling." Exhibited by A. J. Chase.

## CHASE'S MONITOR DISPLAY REFRIGERATOR.

"This refrigerator is used by those who wish to display small goods, such as print butter, chops, steaks, and fish. It is very economical in the use of ice, costing but a few cents to run it during the day. It is made in three sizes at present prices, \$15, \$20, and \$25. These may be used with ice and ice-water, or with salt and ice, according to the temperature required." Exhibited by A. J. Chase, Boston, Mass.

## MODEL OF REFRIGERATOR.

Philadelphia, Pa. Ridgway Refrigerator Company (limited).

## REFRIGERATOR OYSTER CAN.

Sheet-metal refrigerating can for oysters in bulk; flanged ends; wooden covers or guards. Capacity, 15 gallons. Baltimore, Md. A. Booth. "A sheet-metal can with flanged edges pro-

## REFRIGERATOR OYSTER CAN—Continued.

jecting from the ends of the can. In the center of the can, extending from top to bottom, is formed a rectangular ice-chamber, which is opened at the top and has four sides exposed within the body and to the contents of the can. The can proper is filled with oysters through an opening in the top, which is securely closed by means of a screw. The ice-chamber is closed by means of a wooden cover, of suitable dimensions to fit snugly within the flanged edges of the end of the can over the opening into the ice-chamber and upon and against the screw-cap and projecting a little beyond the ends of the flanges, and secured thereto so as to be easily removed. At the other or opposite end of the can is also firmly and securely fastened a similar wooden cover or guard. Those covers or guards also serve the purpose to protect the ends of the can from injury during transportation. After the can is filled with oysters, the ice-chamber with ice, and the covers securely fastened, the sides of the can are enveloped with a woolen covering to absorb moisture and to assist in producing evaporation, thereby more effectually excluding heat from the contents of the can."

## LOW'S PATENT ICE-CRUSHER.

Adapted for hand, steam, or water power. Adjustable cylinders move the cutting-knives so that ice may be crushed to any desired degree of fineness. Used at Gloucester and other fishing ports where fish are packed fresh for transportation inland. "It may not break up ice as rapidly as some other crushers, but no other machine has so complete command of its feed, enabling one machine to do the work for packing all kinds of fish. Adding more than two cylinders to a machine requires heavier balance-wheel and more power to run it. It is more likely to get broken, and cannot be so durable as the simpler form, fed with ice picked to the required size to feed readily and shoveled into the hopper, when one man turning can break it up as fast as another can shovel it in." Exhibited by Colonel David W. Low. Gloucester, Mass.

## DEVIL'S CLAW.

Iron; claw with semicircular shank hinged to bar which has step at end. Length,  $2\frac{1}{2}$  feet. Gloucester, Mass., 1878. 32,695. U. S. Fish Commission. Used by fish packers to press down the covers of fish boxes during the process of nailing.

## ICE-MALLET (large).

The head is a cylindrical block of lignum-vitæ, sawed off square at the ends, and slightly flattened at the side next the handle, which is of hard wood. Length of head  $6\frac{1}{2}$  inches,

## ICE MALLET (large)—Continued.

diameter 6 inches; handle, 25 inches long,  $1\frac{1}{2}$  inches thick. Gloucester, Mass., 1880. 39,191. U. S. Fish Commission. Used in vessel's hold for crushing ice for packing fresh fish.

## ICE-CUTTER.

A flat chisel-shaped piece of steel, with saw-like teeth on the lower edge. Hard-wood handle, with iron ferrule on lower end; length of handle,  $3\frac{1}{3}$  feet; blade, 5 inches; width of blade, 5 inches. Gloucester, Mass., 1876. 32,686. Gift of J. A. Voss. Used for chopping up ice for the purpose of packing fresh fish.

## ICE-HOOKS.

Iron; steel-pointed; two semicircular sharp pointed hooks of flat iron, with oval-shaped handle at t. p. These hooks are riveted together near the top. Gloucester, Mass., 1883. 32,674. U. S. Fish Commission. Used for lifting ice by hand or for hoisting it. In the latter case the tackle is hooked into one of the loop-shaped handles of the hooks.

## ICE-PICK.

A sharp-pointed steel prong, with socket, riveted to wooden handle. Length,  $4\frac{1}{4}$  feet. Gloucester, Mass., 1880. 56,892. Gift of David W. Low. Used in handling cakes of ice for packing fresh fish, &c.

## OYSTER CANS.

Quart tin cans for transportation of raw oysters to the interior of the country. In these cans raw oysters are placed, and the covers having been soldered on, they are packed in boxes of ice. R. H. Edmunds, Baltimore, Md. 39,313.

## OYSTER-PACKING.

[For list of appliances for opening and packing fresh oysters, see Section D, "Catalogue of Economic Mollusca."]

## SERIES OF PHOTOGRAPHS, 30 BY 40 INCHES AND 8 BY 10 INCHES, ILLUSTRATING THE FRESH-FISH INDUSTRY.

## ICE-GRINDER.

Machine for grinding ice for packing fresh fish. Sandusky, Ohio, 1882. Photo. 2197. U. S. Fish Commission.

## FROZEN FISH.

Pans of frozen whitefish (*Coregonus* sp.) from refrigerator. Detroit, Mich., 1882. Photos. 2203, 2203a. U. S. Fish Commission.

## FISH-PACKING HOUSE.

Interior of Josepell & Co.'s fish-packing house. Detroit, Mich., 1882. Photos. 2207-8. U. S. Fish Commission.

## FISH-PACKING HOUSE.

Interior of Davis's fish-packing house. Detroit, Mich., 1882. Photo. 2206. U. S. Fish Commission.

## UNLOADING FRESH FISH.

Deck of haddock vessel, schooner Belle A. Keys, of Boston, unloading haddock at Commercial wharf. Boston, Mass., 1882. Photo. 1804. U. S. Fish Commission.

## CLEANING FISH.

View of deck of fish-market boat at Commercial wharf. Crew cleaning fresh cunners (*Tautogolabrus adspersus*). Boston, Mass., 1882. Photo. 1802. U. S. Fish Commission.

## WEIGHING AND DRESSING COD.

View at Cape Ann Fish Company's wharf, with men weighing and dressing fresh cod. Gloucester, Mass., 1882. Photo. 1953. U. S. Fish Commission.

## ICING FRESH COD.

View at Cape Ann Fish Company's wharf, with men packing in ice and weighing boxes of fresh cod. Gloucester, Mass., 1882. Photo. 1954. U. S. Fish Commission.

## DRESSING HALIBUT.

Men dressing fresh halibut on deck of schooner Willie M. Stevens, preparatory to icing in the vessel's hold. Gloucester, Mass., 1882. Photo. 1974. U. S. Fish Commission.

## FRESH HALIBUT INDUSTRY.

Landing fresh halibut from schooner Willie M. Stevens, of Gloucester, at Stockbridge & Co.'s wharf. Gloucester, Mass., 1882. Photo. 1973. U. S. Fish Commission.

## FRESH HALIBUT INDUSTRY.

Weighing and packing fresh halibut in ice at Stockbridge & Co.'s wharf. Gloucester, Mass., 1882. Photo. 1972. U. S. Fish Commission.

## ICE INDUSTRY.

View of ice-houses of Fernwood Lake Ice Company, showing lake in foreground and machinery for hoisting in ice. West Gloucester, Mass., 1882. Photo. 1957. Front view of same building, showing wagons loading and loaded. Photo. 1956. United



## ICE INDUSTRY—Continued.

States Fish Commission. This building is 213 feet wide, 230 feet long, 34 feet high in stud, and 72 feet high to ridge pole. Its capacity is 34,000 tons of ice. Built in 1876-77. Nineteenths of the ice is used in the fisheries of Gloucester either by vessels or in packing fish on shore. Another ice company in Gloucester shares in furnishing the supply, which amounts annually to about 25,000 tons.

## ICE-WAGON.

Unloading ice from wagon for vessel at Commercial Wharf. Boston, Mass., 1882. Photo. 1808. U. S. Fish Commission. Vessels that preserve their catch fresh take from 5 to 45 tons of ice on a trip; the quantity depending on the size of the vessel and length of the trip.

## 3. PRESERVATION BY DRYING.

## APPLIANCES FOR PREPARING AND PACKING SUN-DRIED FISH.

## CODFISH-FLAKE.

Model. Old-style brush flake used on Cape Cod for drying fish; consists of a wooden frame or long table of slats covered with brush-wood. Provincetown, Mass. 39,433. Collected by Capt. N. E. Atwood.

## CODFISH-FLAKE.

Model. New style flake; consists of a wooden frame or long table of slats, the top being movable on a horizontal axis, thus making it possible to expose the fish placed upon it to the direct rays of the sun during the whole day, or to keep them in the shade, as may be most desirable. Provincetown, Mass. 39,434. Collected by Capt. N. E. Atwood.

## FISH HAND-BARROW.

Oak; two handles 6 feet long, with five cross-bars, each 21 inches long, 2½ inches wide, 1½ inches thick. Gloucester, Mass., 1883. 57,828. U. S. Fish Commission. Used for carrying fish.

## BOX-NAILING TABLE.

Full size, heavy wooden table, with appliances for holding the covers in place while being nailed on tops of boxes. Used in boneless-fish factories, and especially adapted for 40-pound boxes. Gloucester, Mass. U. S. Fish Commission.

## BONELESS-FISH COMPRESSOR.

A patent hoe-shaped instrument with lever. Used for crowding boneless-fish into the boxes. Gloucester, Mass. U. S. Fish Commission.

## CUTTING-BOARD FOR BONELESS FISH.

Pine wood; 3 feet long,  $25\frac{1}{2}$  inches wide,  $1\frac{3}{4}$  inches thick. New Gloucester, Mass., 1883. 25,855. U. S. Fish Commission. Used in making boneless fish. The fish-skinner places a fish upon a plank like this and, after stripping off the skin, cuts out the bones and divides the fish into sections to suit the trade.

## OLD CUTTING-BOARD FOR BONELESS FISH.

White pine. Three feet long,  $21\frac{1}{2}$  inches wide, 2 inches thick. Gloucester, Mass., 1883. 57,858. U. S. Fish Commission. Used in cutting boneless fish.

## NAPE-BONE HOOKS.

Iron hooks, with bent shank, set in pine handle. Length,  $8\frac{1}{4}$  inches. Gloucester, Mass., 1878-'82. 54,694-5. U. S. Fish Commission. Used to tear out the "nape-bones" in the preparation of "boneless" salt fish. One of these hooks was long in use and the handle is encrusted with lime from the dissolving of salt in the operator's hand.

## MITER-BOX FOR BONELESS FISH.

Oblong box with top and ends open. Seven cuts  $3\frac{1}{2}$  inches apart. Cleats on sides. Length, 30 inches; width,  $7\frac{1}{2}$  inches outside,  $5\frac{1}{2}$  inches inside; depth,  $5\frac{1}{2}$  inches outside,  $3\frac{1}{2}$  inches inside. Gloucester, Mass., 1883. 57,853. U. S. Fish Commission. Used in preparing boneless fish. The fish are packed in the box and cut in sections of equal length.

## MITER-BOX FOR ROLY-POLY BONELESS FISH.

Pine wood; open at top and ends; semi-circular at bottom, inside. Length, 5 feet 8 inches; width, outside 7 inches, inside  $4\frac{1}{2}$  inches; depth, outside  $5\frac{1}{2}$  inches, inside 4 inches. Cleats on sides. Fourteen miter cuts  $4\frac{1}{2}$  inches apart; 15 smaller cuts for strings. Gloucester, Mass., 1883. 57,854. U. S. Fish Commission. Used for making roly-poly boneless fish. The fish are put in the box and, after being tied up, are cut into sections.

## ROLY-POLY KNIFE.

Steel blade, long, with single edge; pine handle. Length: blade, 17 inches; handle, 5 inches. Gloucester, Mass., 1883. 57,820. U. S. Fish Commission. Used with a miter-box in cutting rolls of "boneless salt fish" into suitable lengths for boxing. This knife is much worn by use.

**FISH-SKINNING KNIVES.**

Steel blades, single edge, hook-bill tips;  $5\frac{3}{4}$  to 7 inches long; rough, white-pine handles. Gloucester, Mass., 1880-'82. 54,688-93, 57,692. U. S. Fish Commission. This class of knives is exclusively used at Gloucester and other places in extracting bones and cutting off fins in the preparation of "boneless" salt fish. Some of them are much worn by use, and the handles are encrusted with a lime deposit caused by the dissolving of salt in the moisture of the operator's hand.

**CUSK-BONING KNIFE.\***

Steel blade, short and stout; square tip. Pine handle, covered with lime caused by the dissolving of salt in the operator's hand. Length: blade, 2 inches; handle, 5 inches. Gloucester, Mass., 1882. 54,343. U. S. Fish Commission. This knife was in constant use for eighteen months in extracting bones in the preparation of "boneless salt cusk." The bones of this fish are much tougher than those of cod, and a greater pressure is required to cut them than can be obtained by the use of a longer blade.

**BONELESS-FISH COMPRESSOR.**

Rod of iron, two feet long, with hoe-shaped piece at end. Serpentine handle with lever. Claw-hook to fit on side of box. Gloucester, Mass., 1883. 57,855. U. S. Fish Commission. Used in packing "compressed" boneless fish.

**SISAL SPUN-YARN.**

Forty lines, each composed of two strands, and being 60 feet in length, the whole twisted into a loosely laid rope. Gloucester, Mass., 1883. 57,856. U. S. Fish Commission. Used for tying up bundles of dry salt cod fish, &c., for which purpose the lines are cut in sections of suitable length.

**FISH BOXES.**

Samples in great variety of box-ends branded. Used in manufacture of boxes for boneless fish. Gloucester, Mass. U. S. Fish Commission.

**BOXES FOR BONELESS FISH.**

Paper boxes, two pound and three-pound. Boston, Mass. Potter & Wrightington.

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\* For list of splitting-knives, throating and flitching knives, used in the preparation of dry and smoked fish, see Catalogue of Fishery Apparatus used in Capture, &c.

SERIES OF PHOTOGRAPHS, 30 BY 40 INCHES AND 8 BY 10 INCHES,  
ILLUSTRATING THE PREPARATION OF DRY FISH.

#### UNLOADING AND DRESSING FISH.

Schooner Hildegarde at Knowlton's wharf unloading cod and other fish; gang of men dressing and splitting the fish for curing. Gloucester, Mass., 1882. Photo. 2,107. U. S. Fish Commission.

#### DRESSING FRESH COD.

Gang of men on Pew's wharf splitting fresh cod for curing. Gloucester, Mass., 1882. Photo. 2,067. U. S. Fish Commission.

#### CURING HAKE.

Splitting hake (*Phycis chuss*) at Trefethen's wharf, on House Island. The fish to be afterwards salted and dried. Portland, Me., 1882. Photo. 1,859. U. S. Fish Commission.

#### FLAKE-YARD.

View of John Pew & Son's flake-yard. Fish on the flakes and teams loading. Gloucester, Mass., 1882. Photo. 1,844. U. S. Fish Commission.

#### FLAKE-YARD.

View of yard of John Pew & Son's, with flakes for curing dry-salted fish. Gloucester, Mass., 1882. Photo. 1,839. U. S. Fish Commission.

#### FLAKE-YARD.

View of Trefethen's flake-yard from attic window. Portland, Me., 1882. Photo. 1,862. U. S. Fish Commission.

#### FISH-FLAKES.

Trefethen's flake-yard, showing tilted flakes and straight ones, one row of each, with men in position. Portland, Me., 1882. Photo. 1,846. U. S. Fish Commission.

#### FLAKE-YARD.

Trefethen's flake-yard, with men and wheelbarrows in position. Portland, Me., 1882. Photo. 1,855. U. S. Fish Commission.

#### FLAKE-YARD.

Trefethen's flake-yard, from room, with herring-net menders in the foreground and Sterling's flakes in the distance. Portland, Me., 1882. Photo. 1,854. U. S. Fish Commission.

**CURING COD.**

"Dumping" of dry fish in dry-fish house. This plan is adopted when fish are soon to be marketed. Portland, Me., 1882. Photo. 1,858. U. S. Fish Commission.

**CURING COD.**

Keuch of Bank cod at Trefethen's sheds waiting to be dried. Portland, Me., 1882. Photo. 1,857. U. S. Fish Commission.

**CURING CODFISH.**

Shed on wharf of Reed & Gammage, with 500 butts, each 900 pounds capacity, of cod in brine. East Gloucester, Mass., 1882. Photo. 2,038. U. S. Fish Commission.

**DRY-FISH INDUSTRY.**

Unloading, culling, weighing, and wheeling Grand Bank codfish at Parmenter's wharf. Gloucester, Mass., 1882. U. S. Fish Commission.

**FISH-FLAKES.**

Top of E. G. Willard's buildings, covered with flakes for drying fish. Portland, Me., 1882. Photo. 1,851. U. S. Fish Commission.

**STORE-HOUSE FOR DRY FISH.**

Willard's store-room, with kenches of dry-salted cod. Portland, Me., 1882. Photo. 1,850. U. S. Fish Commission.

**FLAKE-YARD.**

Shute & Merchant's flake-yard, with dry fish stacked in faggots. Gloucester, Mass., 1882. Photo. 2,026. U. S. Fish Commission.

**DRYING CODFISH.**

Fish-flakes on wharf of Sylvanus Smith, with 500 quintals of cod spread out to dry. Gloucester, Mass., 1882. Photo. 2,028. U. S. Fish Commission.

**BONELESS FISH FACTORY.**

Interior of John Pew & Son's "skinning-room," with men at work preparing boneless dry-salted fish. Gloucester, Mass., 1882. Photos. 1,841-3. U. S. Fish Commission.

**DRYING FISH.**

Indians drying salmon at Salmon-Breeding Station, McCloud River, California, 1882. U. S. Fish Commission.

**CHINESE CURING FISH.**

California Chinese curing their fish. Monterey, Cal. U. S. Fish Commission.

## APPARATUS FOR PREPARING AND PACKING SMOKE-DRIED FISH.

## HERRING SMOKE-HOUSE.

Model. Shows in miniature all the appliances used in the preparation of smoked herring at Eastport, Me. U. S. Fish Commission.

## FISH-BOXES.

For boneless smoked herring. One-pound wooden boxes and 1-pound cans. Boston, Mass. Potter & Wrightington.

SERIES OF PHOTOGRAPHS, 30 BY 40 INCHES AND 8 BY 10 INCHES, ILLUSTRATING THE PREPARATION OF SMOKED FISH.

## HERRING SMOKING.

Herring-house filled with smoked herring on the way to packing-room. Smoke-house in background. Eastport, Me., 1882. Photo. 1,885. U. S. Fish Commission.

## HERRING SMOKE-HOUSE.

Eastport herring smoke-house, showing slides for landing the fish. Eastport, Me., 1882. Photo. 1,899. U. S. Fish Commission.

## HERRING SMOKE-HOUSE.

Two herring smoke-houses of Mr. Buck. Eastport, Me., 1882. Photo. 1,886. U. S. Fish Commission.

## HERRING SMOKE-HOUSE.

Smoke-house of Mr. Buck, with herring boxes, horses, wood, &c., in foreground. Eastport, Me., 1882. Photo. 1,884. U. S. Fish Commission.

## HERRING SMOKE-HOUSE.

Group of smoke-houses, Lubec, Me., 1882. Photo. 1,924. U. S. Fish Commission.

## SMOKE-HOUSES.

Row of herring smoke-houses, from water side at high tide. Lubec, Me., 1882. Photo. 1,922. U. S. Fish Commission.

## HERRING SMOKE-HOUSE.

Large smoke-house with two windows open, and herring houses in foreground. Lubec, Me., 1882. Photo. 1,923. U. S. Fish Commission.

## HADDOCK SMOKING.

Haddock (*Melanogrammus aeglefinus*) draining ready for smoking at Joseph Farris's factory, Eastport, Me., 1882. Photo. 1,931. U. S. Fish Commission.

**HADDOCK SMOKING.**

Haddock (*Melanogrammus aeglefinus*) in house, ready for smoking. Eastport, Me. U. S. Fish Commission.

**HALIBUT SMOKING.**

Shute and Merchant's halibut smoke-houses, showing interior with halibut hung up to smoke. Flakes in foreground with dried fitches of halibut ready for smoking. Gloucester, Mass., 1882. Photo. 2,029. U. S. Fish Commission.

**SMOKED HALIBUT INDUSTRY.**

Kenches and butts of Greenland fitched halibut ready for drying and smoking, in buildings of W. H. Wonson & Sons. Gloucester, Mass., 1882. Photo. 1,969. U. S. Fish Commission.

**SMOKED HALIBUT INDUSTRY.**

Fitches of salted halibut on the flakes at W. H. Wonson & Sons' wharf, drying before going to the smoke-house. Gloucester, Mass., 1882. Photo. 1,970. U. S. Fish Commission.

**4. PRESERVATION BY BRINE SALTING.****APPARATUS USED IN PACKING PICKLED FISH.****MACKEREL PACKING-CRIB.**

Model. Used in pickling and packing mackerel. Gloucester, Mass. 56,961. U. S. Fish Commission.

**MACKEREL CULLING-CRIB.**

Model. Used in sorting mackerel preparatory to packing in barrels under the standard legal grades. Gloucester, Mass. 56,960. U. S. Fish Commission.

**MACKEREL KNIVES.**

(For list of mackerel splitting knives and reamers used in preparation of salt mackerel, see Catalogue of Fishery Apparatus.)

**MACKEREL BRAND-KETTLE.**

Iron; cylindrical, with closed bottom and perforated sides near bottom; cover for top; brass heads, or brand, of circular form, with raised letters five-eighths inch long. Depth of kettle, 12 inches; diameter, 9 inches; diameter of head, 6 inches. Gloucester, Mass., 1883. 57,860. U. S. Fish Commission. Used for branding mackerel barrels.

**WOODEN HORSE FOR BRANDING-KETTLE.**

Wood; four legs (two at each end), braced at top; slot in top of horse for branding-kettle handle. Three feet high, 3 feet long.

## WOODEN HORSE FOR BRANDING-KETTLE—Continued.

Gloucester, Mass., 1883. 57,862. U. S. Fish Commission. Used for the purpose of holding branding-kettle when it has a fire kindled in it.

## FOUR BRASS NUMBERS.

1, 2, 3, 4,  $\frac{3}{4}$  of an inch long. Gloucester, Mass., 1883. 57,861. U. S. Fish Commission. These are for the purpose of insertion in the head of the brand-kettle to mark the quality of fish.

## BUNDLE OF BLOCK ISLAND FLAGS.

Weight 5 pounds; length  $7\frac{1}{2}$  feet. Gloucester, Mass., 1883. 57,825. U. S. Fish Commission. Used for tightening barrel-heads.

## FLAGGING IRON.

Iron, horseshoe shaped head, with handle flattened at end. Length, 21 inches. Gloucester, Mass., 1883. 57,824. U. S. Fish Commission. Used for the purpose of putting flags in the chines of fish barrels in order to make the latter water-tight.

## LONG BILGE CAN-HOOKS.

Two iron rods with hooks attached to lower ends, and a manila-rope strap spliced with eyes at upper ends. Length of rods,  $2\frac{1}{2}$  feet; rope strap ( $\frac{3}{4}$ -inch manila),  $4\frac{1}{2}$  feet; hooks,  $2\frac{1}{2}$  inches wide. Gloucester, Mass., 1883. 57,834. U. S. Fish Commission. Used for lifting barrels which have one head out and are full of fish and brine.

## BARREL-LIFTERS.

Two galvanized iron can-hooks, with hollow, cylindrical-shaped handles. Length of hooks,  $4\frac{1}{2}$  inches; width,  $2\frac{1}{2}$  inches; handle,  $4\frac{1}{2}$  inches. Middletown, Conn. 56,891. Wilcox, Crittenden & Co. Used for stowing mackerel barrels in a vessel's hold, also for loading barrels on cars. One hook is held in each hand and hooked into the chines of a barrel; the knee is then pressed against the bilge and the barrel is easily lifted without cutting the fingers.

## WAUKEGAN FISHERY.

Model. This model shows in miniature all the apparatus employed in cleaning and salting down the Lake whitefish (*Coregonus clupeiformis*). Waukegan, Ill. 25,750. Collected by J. W. Milner.



SERIES OF PHOTOGRAPHS, 30 BY 40 INCHES AND 8 BY 10 INCHES, ILLUSTRATING THE PREPARATION OF BRINE-SALTED FISH.

PACKING MACKEREL.

Mackerel vessel with supply of empty barrels on deck for packing salt mackerel. Starting on a trip. Boston, Mass., 1882. Photo. 1,807. U. S. Fish Commission.

PACKING FISH.

Interior of store-house and packing-room for pickled fish. Sandusky, Ohio, 1882. Photo. 2,204. U. S. Fish Commission.

PACKING MACKEREL.

Room at E. G. Willard's for packing brine-salted mackerel. Portland, Me., 1882. Photo. 1,849. U. S. Fish Commission.

PACKING MACKEREL.

E. H. Chase's mackerel packing-room. Sorting table, weighing scales and tubs, all full. Portland, Me., 1882. Photo. 1,853. U. S. Fish Commission.

PACKING MACKEREL.

E. H. Chase's mackerel packing-room; very complete; built July, 1882. Portland, Me., 1882. Photo. 1,852. U. S. Fish Commission.

PACKING MACKEREL.

Pickling and branding barrels of mackerel at John Pew & Son's wharf. Gloucester, Mass., 1882. Photo. 1,846. U. S. Fish Commission.

INSPECTION OF MACKEREL.

Culling and inspecting brine-salted mackerel at wharf of Franklin Snow & Co. Boston, Mass., 1882. Photo. 1,816. U. S. Fish Commission.

PACKING MACKEREL.

Table or trough for fish, salt measures, weighing scales, and barrels. Portland, Me., 1882. Photo. 1,871. U. S. Fish Commission.

DRESSING MACKEREL.

Schooner Frank Foster, of Gloucester, at wharf with 200 barrels of mackerel on deck, caught a few hours previous off Eastern Point, and 150 barrels of salt mackerel in the hold; crew hard at work splitting, gibbing, and salting the fish in barrels. Views of deck on port and starboard sides, and view of whole scene. Photos. 1,966-8. U.S. Fish Commission.

## PACKING MACKEREL.

Gang of men on Leighton's wharf, culling, salting, and packing mackerel in barrels. Gloucester, Mass., 1882. Photos. 2,073-5. U. S. Fish Commission.

## DRESSING ALEWIVES.

Negroes cleaning alewives preparatory to brine-salting them in barrels. North Carolina. U. S. Fish Commission.

## DRESSING FISH.

Cleaning and cutting up fresh fish for packing at establishment of Post & Co. Sandusky, Ohio, 1882. Photo. 2,198. U. S. Fish Commission.

## PACKING FISH.

Interior of packing house showing dressed fish ready to salt and pack. Sandusky, Ohio, 1882. Photo. 2,202. U. S. Fish Commission.

## SHELLING CLAMS.

Scene on the beach at Essex River; dories unloading clams, and men and boys near clam houses shelling clams and salting in barrels for bait. Essex, Mass., 1882. Photo. 1,961. U. S. Fish Commission.

## 5. PRESERVATION BY CANNING.

## MODELS OF CANNERIES AND CANNING TOOLS.

## SARDINE CANNERY.

Model of cannery of Union Fish Company, showing the interior arrangements on each floor for canning sardines or small herring (*Clupea harengus*). Miniature models of the cans, soldering implements, &c., are shown in position. Camden, Me. Gift of Henry Sellman.

## OYSTER CANNERY.

(For list of apparatus and description of methods employed in canning oysters, see Section D, Catalogue of Mollusca.)

## COTTON-SEED OIL AND ITS PREPARATION.

The refined oil is sometimes used instead of olive oil in oil sardines.

## COTTON SEED.

Before linting. Selma, Ala. 57,501. Presented by George O. Baker & Co.

## COTTON SEED.

After linting. Selma, Ala. 57,502. Presented by George O. Baker & Co.

## COTTON SEED.

After passing through huller. Selma, Ala. 57,503. Presented by George O. Baker & Co.

## COTTON-SEED KERNEL.

Separated from hull. Selma, Ala. 57,504. Presented by George O. Baker & Co.

## COTTON-SEED HULLS.

The hull of the cotton seed when burned makes a fine ingredient for fertilizing. In some sections the dairymen use them largely in feeding cows, mixing cotton-seed meal with them. They are also a good fertilizer by themselves if properly used. Analysis: Phosphoric acid, 10.89; potash, 14.70. Selma, Ala. 57,505. Presented by George O. Baker & Co.

## COTTON-SEED KERNEL.

Crushed but not cooked. Selma, Ala. 57,508. Presented by George O. Baker & Co.

## COTTON-SEED KERNEL.

Crushed and cooked. Selma, Ala. 57,507. Presented by George O. Baker & Co.

## LINT FROM COTTON SEED.

Used in carpet linings, also in mattresses, comforters, &c. Selma, Ala. 57,510. Presented by George O. Baker & Co.

## COTTON-SEED CAKE.

After the oil is taken out. Selma, Ala. 57,506. Presented by George O. Baker & Co.

## COTTON-SEED MEAL.

Ground from the cake. "Analysis and experience proves that it is a most nutritious and highly concentrated food. Some consider it superior to corn as a milk producer." It is also used as a fertilizer. Selma, Ala. 57,509. Presented by George O. Baker & Co.

## CRUDE COTTON-SEED OIL.

Selma, Ala. 57,511. Presented by George O. Baker & Co.

## REFINED COTTON-SEED OIL.

Sold as olive oil, and under the name of olive butter; used in the place of lard for cooking purposes. It also takes the place of olive oil in packing sardines. Selma, Ala. 57,512. Presented by George O. Baker & Co.

## SAMPLES OF TIN BOXES USED IN CANNING MARINE PRODUCTS.

FOR PRODUCTS PLAIN-BOILED, OR FRIED.

## FRESH HADDOCK.

Round can. Height, 4 inches; diameter, 5 inches. Boston, Mass. 54,793. E. T. Cowdrey & Co.

## FRESH CODFISH.

Half dozen 2-pound cans. Boston, Mass. L. Pickert & Co.

## PLAIN BOILED COD.

Round can. Height, 4 inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass. 54,792. William Underwood & Co.

## PLAIN BOILED COD.

Round can. Height, 3 inches; diameter, 4 inches. Boston, Mass. 54,791. Henry Mayo & Co.

## PLAIN BOILED COD.

Round can. Height,  $3\frac{3}{8}$  inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass. 54,790. Henry Mayo & Co.

## FRESH CODFISH.

Round can. Height, 4 inches; diameter, 5 inches. Boston, Mass. 54,789. E. T. Cowdrey & Co.

## FRESH CODFISH.

Round cans. Height,  $3\frac{5}{8}$  inches; diameter,  $4\frac{3}{4}$  inches. Boston, Mass. 54,788. E. T. Cowdrey & Co.

## FRESH COD.

One-pound round cans. Boston, Mass. Potter & Wrightington.

## FRESH CUSK.

Round can. Height,  $3\frac{5}{8}$  inches; diameter,  $4\frac{3}{4}$  inches. Boston, Mass. 54,903. Henry Mayo & Co.

## FRESH SEA-BASS.

One dozen 1-pound round cans. Boston, Mass. A. H. Bailey & Co.

## FRESH BLUE-FISH.

Half dozen 1-pound cans. Boston, Mass. L. Pickert & Co.

## FRESH BLUE-FISH.

One dozen 1-pound round cans. Boston, Mass. A. H. Bailey & Co.

## FRIED SMELTS.

Half dozen 2-pound cans. Boston, Mass. L. Pickert & Co.

## FRIED BROOK-EELS.

Oval can,  $4\frac{1}{2}$  by  $3\frac{1}{2}$  by 2 inches. Camden, Me. 54,921. Union Fish Company.

## "OCEAN-TROUT." (Sea-herring.)

One-pound round cans. Boston, Mass. Potter & Wrightington.

## FRESH HERRING.

One-pound round cans. Boston, Mass. Potter & Wrightington.

## CANNED HALIBUT.

Oval cans. New York. Hine & Co., 13 and 15 Doyers street.

## FRESH HALIBUT.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Sitka, Alaska. 54,975. Cutting Packing Company.

## "BROOK-TROUT." (Small sea-herring.)

Half dozen 3-pound cans. Boston, Mass. L. Pickert & Co.

## "OCEAN-TROUT." (Sea-herring.)

Oval can,  $5\frac{1}{2}$  by  $3\frac{1}{2}$  by 3 inches. Port Monmouth, Me. 54,947. Ocean-Trout Company.

## FRIED "SEA-TROUT." (Sea-herring.)

Oval can,  $4\frac{1}{2}$  by  $3\frac{1}{2}$  by 2 inches. Eastport, Me. 54,918. Eagle Preserved Fish Company.

## FRESH HERRING.

One dozen 1-pound round cans. Boston, Mass. A. H. Bailey & Co.

## CANNED SALMON.

Oval cans. New York. Hine & Co., 13 and 15 Doyers street.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{5}{8}$  inches. New York. 54,759. H. K. & F. B. Thurber & Co.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass. 54,756. W. K. Lewis & Brother.

## FRESH SALMON.

Round can. Height, 4 inches; diameter, 5 inches. Boston, Mass.  
54,761. E. T. Cowdrey & Co.

## FRESH SALMON.

Round can. Height,  $3\frac{3}{8}$  inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass.  
54,762. E. T. Cowdrey & Co.

## DEEP-SEA SALMON.

One dozen 1-pound round cans. Boston, Mass. A. H. Bailey & Co.

## FRESH SALMON.

One-pound round cans. Boston, Mass. Henry Mayo & Co.

## FRESH PROVINCE SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Portland, Me.  
54,953. J. Winslow Jones.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Portland, Me.  
54,780. J. Winslow Jones.

## FRESH SALMON.

Round can. Height,  $4\frac{1}{2}$  inches; diameter,  $2\frac{1}{2}$  inches. Labrador;  
Portland, Me. 54,781. J. Winslow Jones.

## FRESH SALMON.

Round can. Height,  $4\frac{1}{2}$  inches; diameter,  $2\frac{1}{2}$  inches. San Fran-  
cisco, Cal. 54,769. Columbia River Packing Company.

## FRESH SALMON.

Round can. Height,  $4\frac{1}{2}$  inches; diameter,  $4\frac{1}{2}$  inches. San Fran-  
cisco, Cal. 54,763. California Packing Company.

## FRESH SALMON.

Round can. Height, 3 inches; diameter, 5 inches. San Francisco,  
Cal. 54,760. Dickson, De Wolf & Co.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. San Francisco,  
Cal. 54,755. Eureka Packing Company.

## FRESH SALMON.

Round can. Height, 4 inches; diameter,  $4\frac{3}{4}$  inches. Portland,  
Oregon; San Francisco, Cal. 54,757. J. G. Megler & Co.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Portland,  
Oregon; San Francisco, Cal. 54,758. J. G. Megler & Co.

## SALMON BELLIES.

Round can. Height, 6 inches; diameter,  $4\frac{1}{2}$  inches. San Francisco, Cal. 54,951. Cutting Packing Company.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{3}$  inches. San Francisco, Cal. 54,765. Cutting Packing Company.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $2\frac{1}{4}$  inches. San Francisco, Cal. 54,764. Cutting Packing Company.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. San Francisco, Cal. 54,770. Cutting Packing Company.

## FRESH SALMON.

Round can. Height, 6 inches; diameter,  $4\frac{1}{2}$  inches. San Francisco, Cal. 54,768. Cutting Packing Company.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. San Francisco, Cal. 54,767. Cutting Packing Company.

## FRESH SALMON.

One dozen assorted cans for packing Alaska, California, and Oregon salmon. Cutting Packing Company. Office in San Francisco, Cal.

## FRESH SALMON.

Round can. Height,  $2\frac{7}{8}$  inches; diameter,  $4\frac{1}{2}$  inches. Astoria, Oregon. 54,754. A. Booth.

## FRESH SALMON.

Several cases of 1-pound, 2-pound, and  $2\frac{1}{2}$ -pound cans. Chicago, Ill. Canneries at Astoria, Oregon. A. Booth.

## FRESH SALMON.

Two fish-shaped cans for packing whole fish. Chicago, Ill. Canneries at Astoria, Oregon. A. Booth.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Astoria, Oregon. 54,954. Badollet & Co.

## FRESH OREGON SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Ellensburg, Ohio. 54,952. Hume & Co.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Astoria, Oregon.  
54,782. West Coast Packing Company.

## FRESH COLUMBIA-RIVER SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Astoria, Oregon.  
54,787. C. Daborich & Co.

## FRESH COLUMBIA-RIVER SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Astoria, Oregon.  
54,786. Aberdeen Packing Company.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Astoria, Oregon.  
54,783. G. W. Hume.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Knappton,  
Washington Territory. 54,784. Joseph Hume.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Rogue River;  
San Francisco, Cal. 54,785. R. D. Hume.

## FRESH SALMON.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{1}{2}$  inches. Astoria,  
Oregon. 54,751. Astoria Packing Company.

## FRESH SALMON.

Round can. Height, 4 inches; diameter,  $2\frac{1}{2}$  inches. Astoria, Oregon.  
54,752. Astoria Packing Company.

## FRESH SALMON.

Round can. Height,  $3\frac{1}{2}$  inches; diameter, 3 inches. Astoria, Oregon.  
54,753. Astoria Packing Company.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Astoria, Oregon.  
54,771. West Coast Packing Company.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Astoria, Oregon.  
54,772. West Coast Packing Company. G. W. Hume, agent.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. San Francisco, Cal. 54,773. R. D. Hume.



## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. San Francisco, Cal. 54,774. R. D. Hume.

## FRESH SALMON.

Round can. Height, 4 inches; diameter,  $4\frac{1}{2}$  inches. Astoria, Oregon. 54,775. W. S. Kinney.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Astoria, Oregon. 54,776. W. S. Kinney.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Astoria, Oregon. 54,779. Occident Packing Company.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Astoria, Oregon. 54,778. J. Williams & Co.

## FRESH SALMON.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Astoria, Oregon. 54,777. Scandinavian Packing Company.

## FRESH MACKEREL.

Round can. Height,  $4\frac{1}{4}$  inches; diameter,  $2\frac{1}{2}$  inches. Portland, Me. 54,811. J. Winslow Jones.

## FRESH MACKEREL.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Portland, Me. 54,812. J. Winslow Jones.

## FRESH MACKEREL.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass. 54,803. Potter & Wrightington.

## FRESH MACKEREL.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass. 54,809. E. T. Cowdrey & Co.

## FRESH MACKEREL.

Round can. Height,  $3\frac{3}{8}$  inches; diameter,  $4\frac{3}{4}$  inches. Boston, Mass. 54,808. E. T. Cowdrey & Co.

## FRESH MACKEREL.

Round can. Height, 3 inches; diameter,  $4\frac{1}{3}$  inches. New York. 54,796. Kemp, Day & Co.

## FRESH MACKEREL.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. New York.  
54,804. H. K. & F. B. Thurber & Co.

## FRESH MACKEREL.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass.  
54,801. W. K. Lewis & Brother.

## CAPE SHORE MACKEREL.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Portland, Me.  
54,810. Burnham & Morrill.

## CAPE SHORE MACKEREL.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{1}{2}$  inches. Portland, Me.  
54,807. Burnham & Morrill.

## FRESH MACKEREL.

One dozen 1-pound round cans. Portland, Me. Burnham & Morrill.

## FRESH MACKEREL.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass.  
45,802. Henry Mayo & Co.

## FRESH MACKEREL.

One dozen 1-pound round cans. Boston, Mass. A. H. Bailey & Co.

## FRESH MACKEREL.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass.  
54,806. William Underwood & Co.

## FRESH MACKEREL.

Perfection brand. Oval can,  $4\frac{1}{2}$  by 3 by  $2\frac{3}{4}$  inches. Boston, Mass.  
54,805. William Underwood & Co.

## SOUSED MACKEREL.

Two-pound round cans. Boston, Mass. Potter & Wrightington.

## FRESH CLAMS.

Round can. Height,  $3\frac{1}{4}$  inches; diameter,  $4\frac{1}{2}$  inches. Boston,  
Mass. 54,936. Eastern Packing Company.

## FRESH CLAMS (soft shell).

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass.  
54,881. Eastern Packing Company.

## OLD ORCHARD BEACH CLAMS.

Round can. Height,  $4\frac{1}{2}$  inches; diameter, 3 inches. Portland,  
Me. 54,884. Portland Packing Company.

## OLD ORCHARD BEACH CLAMS.

Round can. Height,  $4\frac{1}{2}$  inches; diameter,  $3\frac{1}{2}$  inches. Portland, Me. 54,883. Portland Packing Company.

## FRESH CLAMS.

Globe branch. Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{1}{2}$  inches. Portland, Me. 54,882. J. Winslow Jones.

## SCARBOROUGH BEACH CLAMS.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass. 54,935. Burnham & Morrill.

## SCARBOROUGH BEACH CLAMS.

Round can. Height, 8 inches; diameter,  $4\frac{1}{2}$  inches. Portland, Me. 54,880. Burnham & Morrill.

## FRESH CLAMS.

One dozen 1-pound round cans. Portland, Me. Burnham & Morrill.

## FRESH CLAMS.

Half dozen 1-pound cans. Boston, Mass. L. Pickert & Co.

## FRESH CLAMS.

One-pound round cans. Boston, Mass. Potter & Wrightington.

## LITTLE NECK CLAMS.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass. 54,875. William Underwood & Co.

## PENOBSCOT BAY LITTLE NECK CLAMS.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{1}{2}$  inches. Castine, Me. 54,870. Castine Packing Company.

## LITTLE NECK CLAMS.

Round can. Height,  $2\frac{1}{2}$  inches; diameter, 4 inches. New York. 54,874. Bogert & Co.

## LITTLE NECK CLAMS.

Round can. Height,  $3\frac{1}{8}$  inches; diameter,  $4\frac{1}{2}$  inches; Capeville, Virginia. 54,873. J. A. Ketcham & Co.

## LITTLE NECK CLAMS.

Round can. Height, 3 inches; diameter,  $3\frac{1}{8}$  inches. New York. 54,872. Kemp, Day & Co.

## ORCHARD BEACH CLAMS.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{1}{2}$  inches. New York. 54,871. Kemp, Day & Co.

## FRESH CLAMS.

Round can. Height, 6 inches; diameter,  $4\frac{5}{8}$  inches. Boston, Mass.  
54,876. W. K. Lewis & Brother.

## LITTLE NECK CLAMS.

Round can. Height,  $2\frac{1}{2}$  inches; diameter, 4 inches. Norfolk, Va.  
54,877. Maltby & Edwards.

## FRESH CLAMS.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass.  
54,879. E. T. Cowdrey & Co.

## FRESH CLAMS.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{1}{2}$  inches. Boston,  
Mass. 54,878. E. T. Cowdrey & Co.

## FRESH COVE OYSTERS.

Round can. Height, 4 inches; diameter,  $2\frac{3}{4}$  inches. New York.  
54,852. Kemp, Day & Co.

## OYSTERS, STANDARD BRAND.

Round can,  $3\frac{3}{8}$  by  $4\frac{1}{2}$  inches. Baltimore, Md. 54,851. A. Booth.

## FRESH COVE OYSTERS.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{1}{2}$  inches. Boston,  
Mass. 54,958. E. T. Cowdrey & Co.

## SADDLE ROCK COVE OYSTERS.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{1}{2}$  inches. New York.  
54,853. H. K. & F. B. Thurber & Co.

## LUNCH OYSTERS.

Three cases, twelve dozen empty cans. Baltimore, Md. A. Booth.

## COVE OYSTERS.

Three cases, six dozen 1-pound; and three cases, six dozen 2-pound  
empty cans. Baltimore, Md. A. Booth.

## SCALLOPED OYSTERS.

Oval cans. New York. Hine & Co., 13 and 15 Doyers street.

## OLD RELIABLE OYSTERS.

Oval cans, 6 by  $4\frac{1}{2}$  by  $1\frac{3}{4}$  inches. Baltimore, Md. 54,868. C. S.  
Maltby.

## FRESH COVE OYSTERS.

Round can. Height, 4 inches; diameter,  $2\frac{1}{2}$  inches. Baltimore,  
Md. 54,867. C. S. Maltby.

## FRESH COVE OYSTERS.

Round can. Height,  $4\frac{1}{2}$  inches; diameter,  $3\frac{1}{2}$  inches. Baltimore, Md. 54,866. C. S. Maltby.

## STANDARD OYSTERS.

Round can. Height,  $2\frac{7}{8}$  inches; diameter, 4 inches. Baltimore, Md. 54,855. Union Oyster Company.

## STANDARD OYSTERS.

Round can,  $3\frac{3}{4}$  by  $4\frac{5}{8}$  inches. Baltimore, Md. 54,854. Union Oyster Company.

## FRESH COVE OYSTERS (Beauties of Hampton Roads).

Hampton, Va. 54,864. T. T. Bryce.

## FRESH COVE OYSTERS.

Round can. Height,  $3\frac{3}{8}$  inches; diameter,  $4\frac{1}{2}$  inches. Hampton, Va. 54,863. T. T. Bryce.

## SELECTED COVE OYSTERS.

Round can. Height,  $3\frac{3}{8}$  inches; diameter,  $4\frac{1}{2}$  inches. Hampton, Va. 54,862. T. T. Bryce.

## FRESH COVE OYSTERS.

Round can. Height,  $2\frac{5}{8}$  inches; diameter, 4 inches. Hampton, Va. 54,861. T. T. Bryce.

## FRESH COVE OYSTERS.

Round can. Height,  $3\frac{3}{8}$  inches; diameter,  $4\frac{1}{2}$  inches. Hampton, Va. 54,860. T. T. Bryce.

## SELECTED COVE OYSTERS.

Round can. Height,  $2\frac{3}{4}$  inches; diameter, 4 inches. Hampton, Va. 54,859. T. T. Bryce.

## HAMPTON ROADS OYSTERS.

Round can. Height,  $2\frac{3}{4}$  inches; diameter, 4 inches. Hampton, Va. 58,959. McMenamin & Co.

## OYSTERS.

Hampton Roads brand. Round can. Height,  $2\frac{3}{4}$  inches; diameter, 4 inches. Hampton, Va. 54,932. McMenamin & Co.

## LUNCH OYSTERS.

Two packages; small flat cans. Hampton, Va. McMenamin & Co.

## EXTRA COVE OYSTERS.

Hampton Roads brand. Two packages; round cans. Hampton, Va. McMenamin & Co.

## COVE OYSTERS.

Hampton Roads brand. Two packages of assorted sizes; round cans. Hampton, Va. McMenamini & Co.

## EXTRA SELECTED OYSTERS.

Lion brand. Two packages of assorted sizes; round cans. Hampton, Va. McMenamini & Co.

## HAMPTON ROADS OYSTERS.

Round can. Height,  $3\frac{3}{8}$  inches; diameter,  $4\frac{1}{2}$  inches. Hampton, Va. 54,865. McMenamini & Co.

## FRESH COVE OYSTERS.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{1}{2}$  inches. Baltimore, Md. 54,934. Platt & Co.

## FRESH COVE OYSTERS.

Round can. Height,  $2\frac{3}{4}$  inches; diameter, 4 inches. Baltimore, Md. 54,933. Platt & Co.

## LOUISIANA COVE OYSTERS.

Round can. Height,  $2\frac{3}{4}$  inches; diameter, 4 inches. New Orleans, La. 54,858. G. W. Dunbar's Sons.

## LOUISIANA COVE OYSTERS.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{3}{4}$  inches. New Orleans, La. 54,857. G. W. Dunbar's Sons.

## FRESH BARATARIA OYSTERS.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{3}{4}$  inches. New Orleans, La. 54,856. G. W. Dunbar's Sons.

## ROYAL LOBSTER.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Eastport, Me. 54,817. Eastport Packing Company.

## PORTLAND LOBSTER.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Portland, Me. 54,955. Maine Packing Company.

## EGMONT BAY LOBSTER.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. New York. 54,819. H. K. & F. B. Thurber & Co.

## FRESH LOBSTER.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. New York. 54,818. Kemp, Day & Co.

## FRESH LOBSTER.

Six cases, twelve dozen 1-pound round cans. Portland, Me. Portland Packing Company.

## FRESH LOBSTER.

One-pound round cans. Boston, Mass. Henry Mayo & Co.

## FRESH LOBSTER.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass. 54,822. Potter & Wrightington.

## FRESH LOBSTER.

One-pound round cans. Boston, Mass. Potter & Wrightington.

## FRESH LOBSTER.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass. 54,827. E. T. Cowdrey & Co.

## FRESH LOBSTER.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{3}{4}$  inches. Boston, Mass. 54,826. E. T. Cowdrey & Co.

## FRESH LOBSTER.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass. 54,820. William Underwood & Co.

## FRESH LOBSTER.

Round can. Height,  $3\frac{1}{2}$  inches; diameter, 4 inches. Boston, Mass. 54,823. William Underwood & Co.

## FRESH BAY LOBSTER.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass. 54,825. J. Winslow Jones.

## FRESH BAY LOBSTER.

Round can. Height,  $4\frac{1}{4}$  inches; diameter,  $2\frac{1}{2}$  inches. Portland, Me. 54,832. J. Winslow Jones.

## FRESH BAY LOBSTER.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Portland, Me. 54,834. J. Winslow Jones.

## FRESH BAY LOBSTER.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Portland, Me. 54,837. J. Winslow Jones.

## PORTLAND LOBSTER.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Portland, Me. 54,840. J. Winslow Jones.

## FRESH BAY LOBSTER.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Portland, Me.  
54,838. William Wortley Jones.

## FRESH LOBSTER.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass.  
54,821. W. K. Lewis & Bros.

## FRESH LOBSTER.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Castine, Me.  
54,841. Castine Packing Company.

## FRESH LOBSTER.

Round can. Height,  $4\frac{1}{4}$  inches; diameter,  $2\frac{1}{2}$  inches. Portland,  
Me. 54,828. Burnham & Morrill.

## FRESH LOBSTER.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. Portland,  
Me. 54,824. Burnham & Morrill.

## FRESH LOBSTER.

Queen brand. Round can. Height,  $4\frac{1}{4}$  inches; diameter,  $2\frac{1}{2}$  inches.  
Portland, Me. 54,829. Burnham & Morrill.

## FRESH LOBSTER.

Homards de la Reine. Round can. Height,  $4\frac{1}{4}$  inches; diameter,  
 $2\frac{1}{2}$  inches. 54,830. Burnham & Morrill.

## FRESH LOBSTER.

One dozen 1-pound flat and 1-pound tall cans. Portland, Me.  
Burnham & Morrill.

## MACHIAS BAY LOBSTER.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{1}{2}$  inches. Portland,  
Me. 54,831. Burnham & Morrill.

## FRESH LOBSTER.

Half dozen 1-pound cans. Boston, Mass. L. Pickert & Co.

## FRESH HARD CRABS.

Round can. Height,  $3\frac{3}{8}$  inches; diameter,  $4\frac{5}{8}$  inches. Hampton,  
Va. 54,843. McMenamin & Co.

## FRESH HARD CRABS.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{1}{2}$  inches. Baltimore,  
Md. 54,957. Maryland Packing Company.

## FRESH HARD CRABS.

Round can. Height, 3 inches; diameter, 4 inches. Baltimore,  
Md. 54,956. Maryland Packing Company.



## FRESH HARD CRABS.

Round can. Height,  $2\frac{3}{4}$  inches; diameter, 4 inches. Hampton, Va. 54,846. McMenamin & Co.

## FRESH CRAB MEAT.

Two packages assorted sizes, round cans. Hampton, Va. McMenamin & Co.

## FRESH CRAB MEAT.

Round can. Height,  $2\frac{5}{8}$  inches; diameter, 4 inches. Hampton, Va. 54,845. T. T. Bryce.

## FRESH CRAB MEAT.

Round can. Height,  $3\frac{1}{4}$  inches; diameter,  $4\frac{1}{2}$  inches. Hampton, Va. 54,844. T. T. Bryce.

## GREEN TURTLE.

Round can. Height,  $3\frac{1}{4}$  inches; diameter,  $4\frac{1}{2}$  inches. Norfolk, Va. 54,894. Maltby & Edwards.

## GREEN TURTLE MEAT.

Round can. Height,  $4\frac{1}{4}$  inches; diameter, 5 inches. New York. 54,893. H. K. & F. B. Thurber & Co.

## BARATARIA PRAWNS.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $2\frac{1}{4}$  inches. 54,892. G. W. Dunbar's Sons.

## BARATARIA SHRIMP.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $3\frac{5}{8}$  inches. New Orleans, La. 54,890. G. W. Dunbar's Sons.

## BARATARIA SHRIMP.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $2\frac{1}{2}$  inches. New Orleans, La. 54,891. G. W. Dunbar's Sons.

FOR PRODUCTS BOILED WITH VEGETABLES, ETC.

## GREEN TURTLE STEW.

Oval cans. New York. Hine & Co., 13 and 15 Doyers street.

## GREEN TURTLE SOUP.

Oval cans. New York. Hine & Co., 13 and 15 Doyers street.

## TERRAPIN STEW.

Oval cans. New York. Hine & Co., 13 and 15 Doyers street.

## TERRAPIN SOUP.

Oval cans. New York. Hine & Co., 13 and 15 Doyers street.

## FISH CHOWDER.

Three-pound round cans. Boston, Mass. Henry Mayo & Co.

## FISH CHOWDER.

One dozen 3-pound round cans. Boston, Mass. A. H. Bailey & Co.

## NEW ENGLAND FISH CHOWDER.

Round can. Height,  $4\frac{1}{4}$  inches; diameter,  $4\frac{1}{4}$  inches. Boston, Mass. 54,896. William Underwood & Co.

## BOSTON FISH CHOWDER.

Round can. Height,  $4\frac{1}{4}$  inches; diameter, 5 inches. Boston, Mass. 54,895. Henry Mayo & Co.

## BOSTON CODFISH BALLS.

Round can. Height,  $3\frac{5}{8}$  inches; diameter,  $5\frac{3}{4}$  inches. Boston, Mass. 54,902. Henry Mayo & Co.

## CODFISH BALLS.

Two-pound round cans. Boston, Mass. Henry Mayo & Co.

## CODFISH CHOWDER.

Two-pound and 3-pound cans. Boston, Mass. Potter & Wrightington.

## MINCED COD.

One-pound round cans. Boston, Mass. Potter & Wrightington.

## SCARBOROUGH BEACH CLAM CHOWDER.

Round can. Height,  $4\frac{1}{4}$  inches; diameter,  $4\frac{3}{4}$  inches. Portland, Me. 54,899. Burnham & Morrill.

## NEW ENGLAND CLAM CHOWDER.

Round can. Height,  $4\frac{1}{4}$  inches; diameter,  $4\frac{7}{8}$  inches. Boston, Mass. 54,898. William Underwood & Co.

## BOSTON CLAM CHOWDER.

Round can. Height,  $4\frac{1}{4}$  inches; diameter,  $4\frac{7}{8}$  inches. Boston, Mass. 54,897. Henry Mayo & Co.

## CLAM CHOWDER.

Two-pound and 3-pound round cans. Boston, Mass. Potter & Wrightington.

## CLAM CHOWDER.

One dozen 3-pound round cans. Boston, Mass. A. H. Bailey & Co.

## CLAM CHOWDER.

Half dozen 3 pound cans. Boston, Mass. L. Pickert & Co.

## CLAM CHOWDER.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass.  
54,937. William Underwood & Co.

## BAY STATE CLAM CHOWDER.

Round can. Height,  $4\frac{1}{4}$  inches; diameter, 5 inches. Boston, Mass.  
54,901. E. T. Cowdrey & Co.

## BAY STATE CLAM CHOWDER.

Round can. Height,  $3\frac{1}{4}$  inches; diameter,  $4\frac{1}{2}$  inches. Boston, Mass.  
54,900. E. T. Cowdrey & Co.

## CLAM CHOWDER.

Three-pound round cans. Boston, Mass. Henry Mayo & Co.

FOR PRODUCTS CANNED IN BRINE, WITH HEAT.

## AMERICAN CAVIARE.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. New York.  
54,886. Max Ams.

## PRIME RUSSIAN CAVIARE.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{1}{2}$  inches. New York.  
54,888. Max Ams.

## PRIME RUSSIAN CAVIARE.

Round can. Height, 3 inches; diameter,  $4\frac{1}{2}$  inches. New York.  
54,889. Max Ams.

FOR PRODUCTS CANNED IN BRINE, WITHOUT HEAT.

## SEGUIN MACKEREL.

Round can. Height,  $4\frac{1}{2}$  inches; diameter,  $3\frac{1}{2}$  inches. Portland, Me.  
54,814. Portland Packing Company.

## FAMILY MESS MACKEREL.

In brine. Oval can,  $7\frac{7}{8}$  by  $5\frac{7}{8}$  by  $3\frac{3}{8}$  inches. Boston, Mass. 54,922.  
Boston Packing Company.

## LION AND UNICORN MESS MACKEREL.

Five pound round cans. Boston, Mass. Potter & Wrightington.

## BREAKFAST MESS MACKEREL.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $8\frac{3}{4}$  inches. Boston,  
Mass. 54,790. Potter & Wrightington.

## PRIZE MESS MACKEREL.

Five-pound round and oval cans. Boston, Mass. Potter & Wrightington.

## MINOT'S LIGHT BREAKFAST MESS MACKEREL.

Five-pound round cans. Boston, Mass. Potter & Wrightington.

## PARAGON MESS MACKEREL.

Samples of 5-pound cans. Boston, Mass. Henry Mayo & Co.

## FAMILY MESS MACKEREL.

Samples of 5-pound cans. Boston, Mass. Henry Mayo & Co.

## BREAKFAST MESS MACKEREL.

Samples of 5-pound cans. Boston, Mass. Henry Mayo & Co.

## STANDARD MESS MACKEREL.

Samples of 5-pound cans. Boston, Mass. Henry Mayo & Co.

## PERFECTION MESS MACKEREL.

Round can. Height,  $4\frac{1}{2}$  inches; diameter, 8 inches. Boston, Mass. 54,797. Henry Mayo & Co.

## CHOICE FAT MACKEREL.

Round can. Height,  $4\frac{5}{8}$  inches; diameter,  $6\frac{3}{8}$  inches. Boston, Mass. 54,799. Franklin Snow & Co.

## DEEP-SEA MACKEREL.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $8\frac{3}{4}$  inches. New York. 54,800. H. K. & F. B. Thurber & Co.

## NONPAREIL SALT MACKEREL.

Half-dozen cans. Boston, Mass. L. Pickert & Co.

## ISLES OF SHOALS SALT MACKEREL.

Half-dozen cans. Boston, Mass. L. Pickert & Co.

## CLIMAX SALT MACKEREL.

Half-dozen cans. Boston, Mass. L. Pickert & Co.

## DIADEM SALT MACKEREL.

Half-dozen cans. Boston, Mass. L. Pickert & Co.

## CORNEDED CODFISH.

Samples of 2-pound cans for packing brine-salted codfish. Boston, Mass. L. Pickert & Co.

FOR PRODUCTS CANNED IN SPICES, SAUCES, ETC.

## SPICED "BROOK TROUT." (Small sea herring.)

Oval can,  $4\frac{1}{2}$  by  $9\frac{1}{2}$  by 2 inches. Eastport, Me. 54,917. Eagle Preserved Fish Company.

## "OCEAN TROUT." (Sea herring.)

In tomato sauce. One-pound oblong cans. Boston, Mass. Potter & Wrightington.

## FRESH HERRING.

In tomato sauce. Three-pound oval cans. Boston, Mass. Potter & Wrightington.

## "OCEAN TROUT." (Sea herring.)

In tomato sauce. Three-pound oval cans. Boston, Mass. Potter & Wrightington.

## MACKEREL.

In tomato sauce. One dozen 2-pound oval cans. Boston, Mass. A. H. Bailey & Co.

## SOUSED HERRING.

Three-pound oval cans. Boston, Mass. Potter & Wrightington.

## SOUSED OR SPICED "OCEAN TROUT." (Sea herring.)

One dozen 2-pound oval cans. Boston, Mass. A. H. Bailey & Co.

## "OCEAN TROUT." (Sea herring.)

In tomato sauce. One dozen 2-pound oval cans. Boston, Mass. A. H. Bailey & Co.

## "OCEAN TROUT." (Sea herring.)

In mustard sauce. One dozen 2-pound round cans. Boston, Mass. A. H. Bailey & Co.

## SOUSED "TROUT." (Sea herring.)

In 3-pound oval cans. Boston, Mass. Potter & Wrightington.

## SOUSED MACKEREL.

Half-dozen 1-pound and 3-pound cans. Boston, Mass. L. Pickert & Co.

## SOUSED MACKEREL.

Assorted sizes of round and oval cans. Boston, Mass. Henry Mayo & Co.

## SOUSED OR SPICED MACKEREL.

One dozen 2-pound oval cans. Boston, Mass. A. H. Bailey & Co.

## FRESH MACKEREL.

In mustard sauce. Two-pound square and 3-pound round cans.  
Boston, Mass. Henry Mayo & Co.

## MACKEREL.

In mustard sauce. One dozen 2-pound oval cans. Boston, Mass.  
A. H. Bailey & Co.

## FRESH MACKEREL.

In tomato sauce. Two-pound square and 3 pound round cans.  
Boston, Mass. Henry Mayo & Co.

## MARINÉE SARDINES.

Sample of oblong cans. Eastport, Me. Wolff & Riesing.

## SARDINES ROYALES AROMATIQUE.

Oblong can, 2 by 2 by  $4\frac{1}{2}$  inches. New York. 54,905. American  
Sardine Company.

## MUSTARD SARDINES.

Oblong can, 2 by 2 by  $4\frac{1}{2}$  inches. New York. 54,904. American  
Sardine Company.

## MUSTARD SARDINES.

Oblong can,  $3\frac{1}{2}$  by  $4\frac{1}{2}$  by 2 inches. New York. 54,908. Hausen &  
Drickman.

## MUSTARD SARDINES.

Oblong can,  $4\frac{1}{2}$  by  $3\frac{1}{2}$  by 2 inches. Eastport, Me. 54,909. Eagle  
Preserved Fish Company.

## MUSTARD SARDINES.

Samples of  $\frac{1}{4}$  and  $\frac{1}{2}$  cans. Camden, Me. Office, 323 Greenwich  
street, New York. Rosenstein Bros.

## SPICED SARDINES.

Royal brand. Samples of  $\frac{1}{4}$  cans. Camden, Me. Office, 323 Green-  
wich street, New York. Rosenstein Bros.

## MUSTARD SARDINES.

Samples of oblong cans. Eastport, Me. Wolff & Riesing.

## NANTUCKET STURGEON IN PICCALILLI DRESSING.

One dozen 2-pound oval cans. Boston, Mass. A. H. Bailey & Co.

## SPICED SALMON.

Round can. Height,  $4\frac{1}{4}$  inches; diameter,  $2\frac{1}{4}$  inches. Portland, Me. 54,906. J. Winslow Jones.

## SPICED SALMON.

Globe brand. Round can. Height,  $4\frac{1}{4}$  inches; diameter,  $2\frac{1}{4}$  inches. Portland, Me. 54,907. J. Winslow Jones.

## CURRIED OYSTERS.

Round can. Height,  $3\frac{1}{2}$  inches; diameter, 2 inches. New York. 54,869. H. K. & F. B. Thurber & Co.

## ORIGINAL DEVEILED LOBSTER.

Round can. Height, 3 inches; diameter,  $2\frac{1}{3}$  inches. Boston, Mass. 54,842. William Underwood & Co.

## FRESH DEVEILED CRABS.

Two packages, assorted sizes, round cans. Hampton, Va. McMenamin & Co.

## DEVEILED CRABS.

Round can,  $2\frac{1}{2}$  by 4 inches. Norfolk, Va. 54,849. Maltby & Edwards.

## DEVEILED CRABS.

Round can. Height,  $3\frac{1}{2}$  inches; diameter,  $4\frac{1}{2}$  inches. Hampton, Va. 54,847. McMenamin & Co.

## DEVEILED CRABS.

Round can. Height,  $3\frac{1}{2}$  inches; diameter, 4 inches. Hampton, Va. 54,848. McMenamin & Co.

## FOR PRODUCTS CANNED IN VINEGAR.

## PICKLED LOBSTER.

Round can. Height, 3 inches; diameter,  $6\frac{1}{2}$  inches. Boston, Mass. 54,926. E. T. Cowdrey & Co.

## FLORIDA PICKLED SHRIMPS.

Round can. Height, 6 inches; diameter,  $2\frac{1}{2}$  inches. New York. 54,927. H. K. & F. B. Thurber & Co.

## FOR PRODUCTS CANNED IN OIL.

## HOWE &amp; ODELL SARDINES.

Oblong can,  $5\frac{7}{8}$  by  $3\frac{7}{8}$  by 2 inches. New York. 54,919. Howe & Odell.

## SARDINES IN OIL.

"Alexis Codellot." Oblong can,  $4\frac{1}{2}$  by  $3\frac{1}{2}$  by  $1\frac{1}{2}$  inches. 54,938.

“SARDINES À L'HUILE D'OLIVE.”

Oblong can,  $4\frac{1}{2}$  by 3 by  $1\frac{1}{2}$  inches. Eastport, Me. 54,920. Heman & Banister.

SARDINES.

“Alexandre Grenier.” Oblong can,  $4\frac{1}{2}$  by  $3\frac{1}{2}$  by 1 inch. Eastport, Me. 54,915. Eagle Preserved Fish Company.

SARDINES.

“C. Boutier et Cie.” Oblong can,  $4\frac{1}{2}$  by  $3\frac{1}{2}$  by 1 inch. Eastport, Me. 54,913. Eagle Preserved Fish Company.

SARDINES.

“Boutier.” Oblong can, 3 by 3 by  $4\frac{1}{2}$  inches. Eastport, Me. 54,911. Eagle Preserved Fish Company.

SARDINES IN OIL.

“Frère Maladin.” Oblong can. Eastport, Me. 54,910. Eagle Preserved Fish Company.

SARDINES.

“Pilloux Frères.” Oblong can,  $4\frac{1}{2}$  by  $3\frac{1}{2}$  by 1 inch. Eastport, Me. 54,914. Eagle Preserved Fish Company.

SARDINES.

“Alfonse Pallier Fils.” Oblong can, 3 by  $4\frac{1}{2}$  by 1 inch. Eastport, Me. 54,912. Eagle Preserved Fish Company.

SARDINES.

“Usine Prévôt.” Oblong can,  $4\frac{1}{4}$  by 3 by 1 inch. Camden, Me. 54,946. Union Fish Company.

SARDINES.

“Alfonse Pallier Fils.” Oblong can,  $4\frac{1}{2}$  by  $3\frac{1}{2}$  by  $1\frac{1}{2}$  inches. Eastport, Me. 54,916. Eagle Preserved Fish Company.

OIL SARDINES.

“Dubois,” “Louis Philippe,” and “Alfred Étienne” brands. Samples of  $\frac{1}{4}$ ,  $\frac{1}{2}$ , and  $\frac{1}{1}$  cans. Camden, Me. Office 323 Greenwich street, New York. Rosenstein Bros.

OIL SARDINES.

Samples of oblong cans. Eastport, Me. Wolff & Riesing.

FOR PRODUCTS CANNED DRY.

BONELESS HERRING.

Half dozen small tin boxes for packing smoked herring stripped of skin and bones. Boston, Mass. L. Pickert & Co.



## KIPPERED HERRING.

One dozen 1-pound oval cans. Boston, Mass. A. H. Bailey & Co.

## SMOKED HALIBUT.

One-pound flat cans. Boston, Mass. Potter & Wrightington.

## SMOKED HALIBUT.

Oval can, 5 by  $3\frac{3}{4}$  by  $1\frac{3}{4}$  inches. Boston, Mass. 54,948. Potter & Wrightington.

## PARAGON ENGLISH HERRING.

Smoked. Round can. Height, 5 inches; diameter,  $1\frac{1}{2}$  inches. Boston, Mass. 54,928. Henry Mayo & Co.

## BONELESS HERRING.

Oval can, 5 by  $2\frac{1}{2}$  by  $\frac{1}{2}$  inch. Boston, Mass. 54,929. Potter & Wrightington.

## STAR BRAND BONELESS HERRING.

Oblong can, 6 by 4 by  $2\frac{3}{8}$  inches. New York. 54,930. J. W. Beardsley's Sons.

## TIGER BRAND BONELESS HERRING.

Oblong can, 6 by 4 by  $2\frac{3}{8}$  inches. Boston, Mass. 54,931. Boston Packing Company.

## FINNAN HADDIES.

One dozen 1-pound oval cans. Boston, Mass. A. H. Bailey & Co.

## FINNAN HADDIES.

Half dozen 1-pound cans. Boston, Mass. L. Pickert & Co.

## FINNAN HADDIES OR SMOKED HADDOCK.

One dozen 1-pound round cans. Portland, Me. Burnham & Morrill.

## SMOKED SALMON.

Oval can, 5 by  $3\frac{3}{4}$  by  $1\frac{3}{4}$  inches. Boston, Mass. 54,949. Potter & Wrightington.

## SMOKED SALMON.

One-pound flat and round cans. Boston, Mass. Potter & Wrightington.

## BONELESS SMOKED SALMON.

Oval can, 5 by  $3\frac{1}{2}$  by  $6\frac{1}{4}$  inches. San Francisco, Cal. 54,950. Cutting Packing Company.

## COMPRESSED COD.

Samples of tin box for packing salt codfish stripped of skin and bones. Boston, Mass. L. Pickert & Co.

SERIES OF PHOTOGRAPHS, 30 BY 40 INCHES AND 8 BY 10 INCHES, ILLUSTRATING THE PREPARATION OF CANNED PRODUCTS.

## SARDINE CANNERY.

View of Wolff's cannery from the water. Eastport, Me., 1882. Photo. 1,889. U. S. Fish Commission.

## SARDINE CANNERY.

Views of Green's cannery from opposite hill. Eastport, Me., 1882. Photos. 1,892-3. U. S. Fish Commission.

## SARDINE INDUSTRY.

View of Martin's cannery. Eastport, Me., 1882. Photo. 1,928. U. S. Fish Commission.

## UNLOADING SARDINES.

Hoisting in sardines at Wolff's factory from sloop Lulu. Eastport, Me., 1882. Photo. 1,883. U. S. Fish Commission.

## SARDINE CANNERY.

Views of Green's wharf from an elevation looking toward the water. Flakes, workmen, fish, and baskets in background. Eastport, Me., 1882. Photos. 1,890 (*a, b, c*). U. S. Fish Commission.

## WASHING SARDINES.

Green's wharf, looking toward the land. Washing fish in foreground. Eastport, Me., 1882. Photo. 1,891. U. S. Fish Commission.

## DRESSING SARDINES.

Cutting off heads and tails from sardines preparatory to canning. Eastport, Me., 1882. Photos. 1,888 (*a, b*). U. S. Fish Commission.

## SARDINE BASKETS.

Fish baskets filled with sardines for flakes. Eastport, Me., 1882. Photo. 1,882. U. S. Fish Commission.

## DRYING SARDINES.

Flaking scene at factory of John Abrams. Nova Scotia girls at work. Eastport, Me., 1882. Photo. 1,887. U. S. Fish Commission.

## SARDINE FLAKES.

Holmes's sardine cannery, showing flakes on roof for drying fish. Eastport, Me., 1882. Photo. 1,896. U. S. Fish Commission.

## SARDINE CANNERY.

Flaking-room at Green's cannery, showing fish elevator. Eastport, Me., 1882. Photo. 1,895. U. S. Fish Commission.

## FRYING SARDINES.

Frying sardines at Green's cannery, preparatory to canning. Eastport, Me., 1882. Photo. 1,929. U. S. Fish Commission.

## COOKING SARDINES.

Bathing-room at cannery of Eagle Preserved Fish Company, showing retorts and men venting cans. Eastport, Me., 1882. Photo. 1,879. U. S. Fish Commission.

## CANNING SARDINES.

Sealing-room at cannery of Eagle Preserved Fish Company, showing men at work sealing cans. Eastport, Me., 1882. Photo. 1,880. U. S. Fish Commission.

## SARDINE CANS.

Making sardine cans at cannery of Eagle Preserved Fish Company, Eastport, Me., 1882. Photo. 1,881. U. S. Fish Commission.

## CANNING SARDINES.

Packing-room of Eagle Preserved Fish Company's cannery, showing oven in the background. Eastport, Me., 1882. Photo. 1,878. U. S. Fish Commission.

## CANNING SARDINES.

Packing-room at Eagle Preserved Fish Company's sardine cannery. Eastport, Me., 1882. Photo. 1,877. U. S. Fish Commission.

## CANNING MACKEREL.

Filled cans in trays ready for hot bath, and girls cleaning cans at Potter & Wrightington's cannery. Boston, Mass., 1882. Photo. 1,813. U. S. Fish Commission.

## CANNING MACKEREL.

Girls at work canning tomato-sauce to be used in preserving boiled mackerel. Potter & Wrightington's cannery. Boston, Mass., 1882. Photo. 1,814. U. S. Fish Commission.

## CANNING MACKEREL.

Men at work making cans at Potter & Wrightington's cannery. Boston, Mass., 1882. Photo. 1,815. U. S. Fish Commission.

## FISH-CLEANING MACHINE.

Revolving brushes for cleaning mackerel for canning at Charles A. Dyer & Co.'s establishment, with two boys at wheels. Portland, Me., 1882. Photo. 1,870. U. S. Fish Commission.

## CANNING SALT MACKEREL.

Interior view of John Pew & Son's cannery, with men packing brine-salted mackerel in cans. Gloucester, Mass., 1882. Photo. 1,845. U. S. Fish Commission.

## 6. PRESERVATION BY BOILING.

## BOILED LOBSTERS.

## LOBSTER-BOILING FACTORY.

Model. This model shows the factory with its vats for steaming the lobsters, the wharf, and the derricks used in handling them. Boston, Mass. 26,583. Johnson & Young. The lobsters are boiled alive, and after turning red are considered cooked, and peddled through the streets. Large quantities are shelled and canned.

## BOILING LOBSTERS.

Apparatus for lobster-boiling at A. L. Johnson's, Portland, Me., 1882. Photo. 1,872. U. S. Fish Commission.

## 7. ANTISEPTICS FOR PRESERVING FISH.

## SALT.

## PHOTOGRAPH.

Ship unloading salt with horses at Pew's wharf. Gloucester, Mass., 1882. Photo. 1,847. U. S. Fish Commission.

## VARIETIES OF SALT USED IN PRESERVING FISH.

- (1) Trapani salt, especially used for dry-salting codfish; Cadiz salt, especially used for dry-salting codfish; (2) Liverpool salt, especially used for pickling mackerel; (3) Syracuse (American) salt, sometimes used for curing fish. Gloucester, Mass. Collected by Capt. S. J. Martin.

## II.—PREPARATION OF OILS, GUANO, AND GLUE.

## 8. WHALE-FISHERY PRODUCTS.

## EXTRACTION OF WHALE OIL AND PREPARATION OF WHALEBONE.

(For list of apparatus exhibited to illustrate the preparation of these products see Section E, "Catalogue of Whale-fishery Appliances.")

## PHOTOGRAPHS TO ILLUSTRATE THE REFINING AND STORAGE OF WHALE OIL.

## WHALE-OIL REFINERY.

Bleaching room at refinery of George Delano & Co. New Bedford, Mass., 1882. Photo. 1824. U. S. Fish Commission. In this

### WHALE-OIL REFINERY—Continued.

room the oil, previously chilled and pressed, is drained into shallow tanks and bleached by exposure to the sun, shining through large skylights.

### STORAGE OF WHALE OIL.

View of wharf, with casks of oil partly covered with sea-weed to prevent leakage. New Bedford, Mass., 1882. Photo. 1,822 U. S. Fish Commission.

## 9. FISH OILS AND GUANO.

### MENHADEN OIL AND GUANO.

#### MENHADEN OIL AND GUANO FACTORY.

Large model of factory of Joseph Church & Co. All the apparatus used in preparing oil and guano is shown in this model, the fish-pens, cooking-tanks, presses, oil-room, &c.; also, the boarding-house for the workmen, and the office of the superintendent. A Menhaden steamer is represented at the wharf in position to unload her cargo. Tiverton, R. I. U. S. Fish Commission.

#### GUANO MIXER.

Model. Patented April 27, 1867. Baltimore, Md. This mixer is employed in the fish-guano works for the purpose of thoroughly mixing the fish scrap with the mineral phosphates and sulphuric acid.

### COD-LIVER OIL.

#### OIL-BAGS.

Stout cotton drilling; three loops around opening to attach it to bag-filler. Length,  $16\frac{1}{2}$  inches; width, 14 inches. Gloucester, Mass., 1883. 57,865. U. S. Fish Commission. Used in making cod-liver oil. These are filled with stearine or blubber and subjected to heavy pressure, which extracts the oil from the contents of the bags.

#### BAG-FILLER.

Tin; conical; opening at top,  $14\frac{1}{2}$  inches diameter; mouth, or lower opening, 8 inches diameter. Iron hooks around bottom to hang bags on, 12 inches deep. Projecting shelf attached to top to catch drippings. Width of shelf, 13 inches; length, 12 inches. Gloucester, Mass., 1883. 57,863. U. S. Fish Commission. Used for filling bags with blubber and stearine.

#### WOODEN HORSE FOR BAG-FILLER.

Two feet high, 2 feet 3 inches long, 13 inches wide. Circular hole in top of horse for bag-filler. Gloucester, Mass., 1883. 57,864. U. S. Fish Commission. Used in the manufacture of cod-liver oil.

## PRESS-BOARDS FOR COD-LIVER OIL.

Pine wood; square cuts  $1\frac{1}{2}$  inches deep at ends for press uprights. Two feet 6 inches long, 18 inches wide; made of two boards. Gloucester, Mass., 1883. 57,859. U. S. Fish Commission. Used for pressing oil. Bags filled with blubber or stearine are placed between these in alternate layers, first a board and then a bag. On top of all is a heavy press which squeezes out the oil.

## OIL-SUCKER, OR BUNG-THIEF.

Tin cylinder, cone-shaped bottom; vent hole and handle at top. Length, 17 inches; diameter,  $1\frac{1}{2}$  inches. Gloucester, Mass., 1883. 57,866. U. S. Fish Commission. Used for transferring oil from one cask to another when the first has been filled too full.

## OIL-DIPPER.

Tin. Used with long wooden handle. Capacity, one gallon. Gloucester, Mass., 1883. 57,808. U. S. Fish Commission. Used for dipping oil from kettles.

## OIL-BAILER.

Tin dipper, with tin handle. Diameter of bowl,  $9\frac{1}{2}$  inches; depth, 4 inches; length of handle, 6 inches. Gloucester, Mass., 1883. 57,809. U. S. Fish Commission. Used for dipping oil.

## OIL-SKIMMER.

Tin. Round handle of tin. Blade  $8\frac{1}{2}$  inches wide, handle  $6\frac{1}{2}$  inches long. Gloucester, Mass., 1883. 57,810. U. S. Fish Commission. Used for skimming oil.

SERIES OF PHOTOGRAPHS, 30 BY 40 INCHES, AND 8 BY 10 INCHES, ILLUSTRATING THE PREPARATION OF FISH OIL AND GUANO.

## MENHADEN OIL FACTORY.

Views of Joseph Church & Co.'s menhaden factory. Tiverton, R. I., 1882. Photo. 1,981, south side of building. Photo. 1,981*a*, duplicate nearer view of south side. Photo. 1,982, west side of building. Photo. 1,982*a*, west side, more distant view. U. S. Fish Commission.

## MENHADEN STEAMER UNLOADING.

View of menhaden steamer, Joseph Church, at wharf, just arrived with 500 barrels menhaden, caught off Delaware Breakwater. Photo. 1,990. View of deck, hatches off, showing hold full of fish. Photos. 1,991-4, general view, unloading the fish. Joseph Church & Co.'s factory. Tiverton, Rhode Island, 1882. U. S. Fish Commission.

## RECEPTACLES FOR MENHADEN.

Fish-pens where the menhaden are received from steamer. Trough leading to cooking tank. Pens empty, capacity 5,000 barrels. Joseph Church & Co.'s factory. Tiverton, R. I., 1882. Photo. 1,987. U. S. Fish Commission.

## UNLOADING CARGO OF MENHADEN.

Dumping menhaden in fish-pens at Joseph Church & Co.'s factory. Tiverton, R. I., 1882. Photo. 1,993. U. S. Fish Commission.

## MENHADEN COOK-ROOM.

Cook-room with row of 23 tanks, total capacity 2,000 barrels. In these tanks the menhaden are boiled in salt water, the oil drained into the oil-room and the refuse or scrap pressed to remove the remaining oil. The scrap then goes to the scrap-room for drying. Joseph Church & Co.'s factory. Tiverton, R. I. Photo. 1,988. U. S. Fish Commission.

## MENHADEN PRESS-ROOM.

Press-room with presses for removing oil from cooked menhaden. Joseph Church & Co.'s factory. Tiverton, R. I., 1882. Photo. 1,992. U. S. Fish Commission.

## MENHADEN OIL-ROOM.

Oil-room; tanks holding a total of 800 gallons of oil. Factory of Joseph Church & Co. Tiverton, R. I., 1882. Photo. 1,995. U. S. Fish Commission.

## MENHADEN GUANO-ROOM.

View of shipping-room at Joseph Church & Co.'s factory, showing 6,000 tons of menhaden scrap in piles and men bagging it for shipment. Tiverton, R. I., 1882. Photo. 1,984. U. S. Fish Commission.

## MENHADEN OIL INDUSTRY.

View on wharf at Joseph Church & Co.'s menhaden factory, showing carboys of vitriol, used in the business. Tiverton, R. I., 1882. Photo. 1,983. U. S. Fish Commission.

## WATER PUMP.

Steam pump for supplying cooking-tanks with salt water. Joseph Church & Co.'s factory. Tiverton, R. I., 1882. Photo. 1,986. U. S. Fish Commission.

## ENGINE FOR UNLOADING VESSELS.

Hoisting-engine used in unloading cargoes of menhaden at Joseph Church & Co.'s factory; unloads 300 barrels per hour. Tiverton, R. I., 1882. Photo. 1,985. U. S. Fish Commission.

## OIL-MAKING.

Oil-kettle, press, pomace, and salt-bin at Brown's factory. Lubeck, Me., 1882. Photo. 1,921. U. S. Fish Commission.

## 10. FISH GLUE AND ISINGLASS.

## PHOTOGRAPHS ILLUSTRATING THE MANUFACTURE OF GLUE AND ISINGLASS.

## DRYING HAKE SOUNDS.

Flakes at wharf of Sylvanus Smith, with hake sounds spread out to dry. Gloucester, Mass., 1882. Photos. 2,027-8. U. S. Fish Commission. To be rolled into ribbon isinglass.

## FISH-GLUE FACTORY.

Buildings of Russia Cement Company for the manufacture of liquid fish-glue from fish skins. Built, 1881. West Gloucester, Mass., 1882. Photo. 1,965. U. S. Fish Commission.

## III.—WHARVES, MARKETS, AND TRANSPORTATION.

## 11. MODELS AND ILLUSTRATIONS.

## FISH-WHARVES.

## GLOUCESTER FISH-WHARF.

Model showing fish-wharf, with house for storing of salt and vessel tackle, sheds for storing fish, butts for pickling, flakes, weighing-scales, and other apparatus for handling and curing dry-salted and pickled fish. Gloucester, Mass. Made by Higgins & Gifford.

## TRANSPORTATION CANS AND KEGS.\*

## OYSTER CANS.

Samples of tin pails and boxes used for the transportation of shelled oysters. Baltimore, Md. A. Booth.

## OYSTER KEGS.

Wooden kegs, from one quart to several gallons capacity, used for transportation of shelled oysters. Baltimore, Md. A. Booth.

## TUBS AND KEGS.

Made of wood and used for packing oysters and fish: 2-gallon oak oyster tub, 3-gallon oak oyster tub, 4-gallon oak oyster tub, 6-gallon oak oyster tub, 10-gallon oak oyster tub, 15-gallon oak oyster tub,  $\frac{1}{4}$ -gallon oyster keg,  $\frac{1}{2}$ -gallon oyster keg, 1-gallon oyster keg, 2-gallon oyster keg, 3-gallon oyster keg, 4-gallon

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\* See also Refrigerators.



## TUBS AND KEGS—Continued.

oyster keg, 5-gallon oyster keg,  $\frac{1}{4}$  anchovy keg,  $\frac{1}{2}$  anchovy keg, 1 anchovy keg,  $\frac{1}{4}$  Russian sardine keg,  $\frac{1}{2}$  Russian sardine keg, 1 Russian sardine keg, 1 Russian sardine keg (white hoops),  $\frac{1}{8}$  sardelle keg, herring keg. New Haven, Conn. W. S. Robinson & Co.

## OYSTER PAILS.

Assorted sizes of patent pail for transporting oysters. Chicago, Ill. Mann Brothers.

## APPARATUS USED IN FISH MARKETS.

## WEIGHING SCALES.

Used in fish markets, on wharves, or in scientific investigations:

1. Nickel-plated prescription scales in glass case; set of weights, 1-ounce troy to  $\frac{1}{4}$  grain. Value \$19.50.
2. Galvanized-iron fish scales; platform, with wheels, &c.; weighs 1,000 pounds. Value \$57.50.
3. Union scale. Value \$14.
4. Union 2-platform scale. Value \$14.50.
5. Union "D. B." scale. Value \$15.
6. Grocer "D. B." scale. Value \$13.
7. Grocer square "P. P." scale. Value \$12.50.
8. Counter scale. Value \$10.
9. Tea scale. Value \$8.
10. Two-trip "B. S." and 2 "I. P." scale. Value \$9.
11. One-trip "P. I. P.," and "Bm." scale. Value \$12.50.
12. One-trip square "P." and "I. P." scale. Value \$11.
13. Boston market scale, "S. P." copper-pan, with set of brass weights. Value \$30.
14. Brass beam and brass poiser, 400 pounds. Value \$44.  
New York. Fairbanks & Co., manufacturers, 311 Broadway.

## FISH-SCALER.

Rubber currycomb, with brass tips. Boston, Mass., 1882. 54,485.  
U. S. Fish Commission. Used in fish markets for removing scales from fish.

## FISH-SCALER.

Iron plate, with short projecting points, for scraping off fish scales. Open handle. Length, 9 inches. Boston, Mass., 1882. 54,486.  
U. S. Fish Commission. Not so much used as the currycomb.

## FISH-SCALING KNIFE.

Steel blade, with saw-like teeth on cutting edge. Hard-wood handle. Length: blade, 6 inches; handle,  $4\frac{1}{2}$  inches. Centennial col-

## FISH-SCALING KNIFE—Continued.

lection, 1876. 26,210. Made by John Russell Cutlery Co., Turner's Falls, Mass. Used in fish markets for removing scales from fish.

SERIES OF PHOTOGRAPHS, 30 BY 40 INCHES AND 8 BY 10 INCHES, ILLUSTRATING FISH MARKETS, WHARVES, AND TRANSPORTATION APPLIANCES.

## FRESH-FISH MARKET.

General view of commercial wharf, with fleet of vessels unloading their catch, peddlers purchasing fish, &c. Boston, Mass., 1882. Photo. 1,805. U. S. Fish Commission. Commercial wharf is the headquarters in New England of the fresh-fish business. The fish are here packed in ice and shipped to all parts of the country.

## SALT-FISH MARKET.

View of western side of Snow's wharf, with vessels unloading dry and pickled fish. Piles of fish and barrels on the wharf. Boston, Mass., 1882. Photo. 1,812. U. S. Fish Commission.

## FRESH-FISH MARKET.

Sale tables at retail fish stand of E. G. Blackford. New York, 1882. Photos. 2,114-7. U. S. Fish Commission.

## FRESH-FISH MARKET.

Interior of E. G. Blackford's office at his retail fish stand in Fulton Market. New York, 1882. Photo. 2,123. U. S. Fish Commission.

## CARTING CODFISH.

Jigger loaded with dry-salted cod. Gloucester, Mass., 1882. Photo. 2,102. U. S. Fish Commission.

## PACKING SALT COD FOR EXPORT.

View of interior of buildings of Franklin Snow & Co., with men engaged in packing dry-salted cod in drums for exportation to West Indies. Boston, Mass., 1882. Photo. 1,811. U. S. Fish Commission.

## DRY-FISH MARKET.

Shipping-room for dry-salted fish at Franklin Snow & Co.'s buildings. Boston, Mass., 1882. Photo. 1,817. U. S. Fish Commission.

**CARTING MACKEREL.**

Jigger loaded with barrels of brine-salted mackerel. Gloucester, Mass., 1882. U. S. Fish Commission.

**FRESH-FISH MARKET.**

Street-front view of Fulton wholesale fish market. New York, 1882. Photo. 2,113. U. S. Fish Commission.

**FRESH-FISH MARKET.**

Interior view of Fulton wholesale fish market. New York, 1882. Photo. 2,118. U. S. Fish Commission.

**FRESH-FISH MARKET.**

Water-front view of Fulton wholesale fish market, with live-cars and vessels in foreground. New York, 1882. Photo. 2,124. U. S. Fish Commission.

**FISH CART.**

Two-wheeled hand-cart used by fish peddlers in New England towns. Boston, Mass., 1882. Photo. 1,803. U. S. Fish Commission.

**LOADING DRY FISH.**

Vessel at Trefethen's wharf loading the dry fish for market. Portland, Me., 1882. Photo. 1,861. U. S. Fish Commission.

**FISH MARKET.**

View of dock and fish cars. Detroit, Mich., 1882. Photo. 2,205. U. S. Fish Commission.

**FISH WHARF.**

View of Perkins's wharf, with men at work packing dry and pickled fish and wagons loading with boxes and barrels of fish. Gloucester, Mass., 1882. Photo. 2,109. U. S. Fish Commission.

**IV.—PATENTS RELATING TO FISHERY PRODUCTS.**

12 SPECIFICATIONS AND DRAWINGS; ISSUED FROM 1834 TO 1883.

(Issued by the United States prior to January 1, 1883. In three volumes. The third volume contains nearly three hundred patents relating to the preparation and preservation of fish and products, classified as follows:)

- "1. Food compounds: Extract of clams, extract of oysters, fish and potatoes, manufacture of caviare.
- "2. Implements for preparing: Clam-openers, eel-skinners, fish-boners, fish-cutters, fish-drainers, fish-dressers, fish-flakers, fish-scalers, mackerel-splitters, oyster-blocks, oyster-knives, oyster-nippers, oyster-openers, oyster-shuckers.

- “3. Miscellaneous products. Artificial stone, buttons, cement, clearing coffee, coating sponge, compositions, cuttle-fish holders, dressing leather, dyeing, lime, mattresses, mounting pearl, preparation of whalebone, refining varnish, shells, taxidermy, treating cordage, treating fibers, varnish for cans, whalebone for hats.
- “4. Preserving apparatus. Boxes, bundles, cans, can fillers, coolers, dessicating, driers, flakes, freezing, houses, jars, pans, packing, pickling, presses, refrigerators, safes, sealing cans, steamers, smoke-houses.
- “5. Preserving processes. Condensing, compositions, desiccating, pickling, salting, smoking.
- “6. Fertilizers. Apparatus, clam shells, compositions, driers, fish guano, grinding, lobsters, marl-oyster shells, presses, tanks.
- “7. Isinglass and glue. Glue, gelatine, isinglass, preparation.
- “8. Oils. Cleansing, drying, extracting, mincing whale-blubber, presses, purifying, refining, rendering, separating, treating.”

## C.—ANIMAL PRODUCTS AND THEIR APPLICATION.

### V.—FISHERY PRODUCTS USED FOR FOOD.

#### 13. FOODS IN A FRESH CONDITION.

(This section includes specimens of marketable fishes in a fresh condition, in refrigerators, forwarded from time to time by E. G. Blackford, Fulton Market, New York.)

#### 14. FOODS: DRIED AND SMOKED.

##### PLAIN DRIED AND DRY-SALTED PREPARATIONS.

(See also Preparations in cans ; canned dry.)

##### GEORGE'S CODFISH.

Dry-salted cod (*Gadus morrhua*) from George's fishing bank. Packed in 100-pound wooden box. Gloucester, Mass. U. S. Fish Commission.

##### WESTERN BANK CODFISH.

Dry-salted cod (*Gadus morrhua*) from Western Bank and Banque-reau fishing grounds. Packed in 100-pound wooden box. Gloucester, Mass. U. S. Fish Commission.

##### GRAND BANK CODFISH.

Dry-salted cod (*Gadus morrhua*) from Grand Bank fishing grounds. Packed in 100-pound wooden box. Gloucester, Mass. U. S. Fish Commission.

##### HADDOCK.

Dry-salted haddock (*Melanogrammus aeglefinus*). Packed in 100-pound wooden box. Gloucester, Mass. U. S. Fish Commission.

##### HAKE.

Dry-salted hake (*Phycis chuss*). Packed in 100-pound wooden box. Gloucester, Mass. U. S. Fish Commission.

##### CUSK.

Dry-salted cusk (*Brosmius brosme*). Packed in 100-pound wooden box. Gloucester, Mass. U. S. Fish Commission.

## POLLOCK.

Dry-salted pollock (*Pollachius carbonarius*). Packed in 100-pound wooden box. Gloucester, Mass. U. S. Fish Commission.

## DRESSED COD.

Dry-salted cod (*Gadus morrhua*), stripped of skin and bones, and packed whole in 40-pound wooden box. Gloucester, Mass. U. S. Fish Commission.

## BONELESS COD.

Selected George's Bank dry-salted cod (*Gadus morrhua*), stripped of skin and bones, and cut into pieces about one foot long. Packed in 5-pound and 40-pound wooden boxes. Gloucester, Mass. U. S. Fish Commission.

## COMPRESSED BONELESS COD.

Dry-salted cod (*Gadus morrhua*), stripped of skin and bones, cut into pieces 4 inches wide, and pressed, cut-edge up, in 40-pound wooden box. Gloucester, Mass. U. S. Fish Commission.

## ROLY-POLY BONELESS COD.

Dry-salted cod (*Gadus morrhua*), stripped of skin and bones, tied into rolls, and cut into lengths of  $4\frac{1}{2}$  inches. Packed in 40-pound wooden boxes. Gloucester, Mass.

## DRESSED HAKE.

Dry-salted hake (*Phycis chuss*), stripped of skin and bones, and packed whole in 40-pound wooden box. Gloucester, Mass. U. S. Fish Commission.

## BONELESS HAKE.

Dry-salted hake (*Phycis chuss*), stripped of skin and bones, and cut into 12-inch lengths. Packed in 40-pound wooden box.

## COMPRESSED BONELESS HAKE.

Dry-salted hake (*Phycis chuss*), stripped of skin and bones, and cut into  $4\frac{1}{2}$ -inch lengths. Packed, cut-edge up, in 40-pound wooden box. Gloucester, Mass. U. S. Fish Commission.

## ROLY-POLY BONELESS HAKE.

Dry-salted hake (*Phycis chuss*), stripped of skin and bones, rolled lengthwise, and tied and cut into bundles  $4\frac{1}{2}$  inches long. Packed, cut-edge up, in 40-pound wooden box. Gloucester, Mass. U. S. Fish Commission.

## DRESSED HADDOCK.

Dry-salted haddock (*Melanogrammus aeglefinus*), stripped of skin and bones, and packed whole in 40-pound wooden boxes.

## BONELESS HADDOCK.

Dry-salted haddock (*Melanogrammus aeglefinus*), stripped of skin and bones, and cut into 12-inch lengths. Packed in 40-pound wooden boxes. Gloucester, Mass. U. S. Fish Commission.

## COMPRESSED BONELESS HADDOCK.

Dry-salted haddock (*Melanogrammus aeglefinus*), stripped of skin and bones, cut into 4½-inch lengths; packed, cut-edge up, in 40-pound box. Gloucester, Mass. U. S. Fish Commission.

## ROLY-POLY BONELESS HADDOCK.

Dry-salted haddock (*Melanogrammus aeglefinus*), stripped of skin and bones, rolled lengthwise, and tied into bundles and cut into 4½-inch lengths; packed, cut-edge up, in 40-pound wooden boxes.

## DRESSED CUSK.

Dry-salted cusk (*Brosmius brosme*), stripped of skin and bones, and packed whole in 40-pound wooden box. Gloucester, Mass. U. S. Fish Commission.

## BONELESS CUSK.

Dry salted cusk (*Brosmius brosme*), stripped of skin and bones, cut into 12-inch lengths, and packed in 40-pound wooden box. Gloucester, Mass. U. S. Fish Commission.

## COMPRESSED BONELESS CUSK.

Dry-salted cusk (*Brosmius brosme*), stripped of skin and bones, and cut into 4½-inch lengths. Packed, cut-edge up, in 40-pound wooden box. Gloucester, Mass. U. S. Fish Commission.

## ROLY-POLY BONELESS CUSK.

Dry-salted cusk (*Brosmius brosme*), stripped of skin and bones, rolled lengthwise and tied, and cut into bundles 4½ inches long; packed, cut-edge up, in 40-pound wooden box. Gloucester, Mass. U. S. Fish Commission.

## BONELESS COD.

One box of compressed cod (*Gadus morrhua*), 10 packages in case, 5 pounds each, with all large bones removed, compressed in rolls of a round shape, and ready for cooking. Portland, Me. Perkins & Shurtleff.

## BEARDSLEY'S SHREDDED CODFISH.

Dry-salted cod (*Gadus morrhua*), stripped of skin and bones, shredded or torn into a fibrous mass, and packed in 1-pound boxes. New York. J. W. Beardsley's Sons, 179 West street.

## BONELESS CODFISH, BEEHIVE BRAND.

Dry-salted cod (*Gadus morrhua*), stripped of skin and bones, cut into pieces, and put up in packages of 1 pound each, rolled in waxed paper. New York. J. W. Beardsley's Sons, 179 West street.

## BONELESS CODFISH.

Dry salted cod (*Gadus morrhua*), stripped of skin and bones, cut in pieces, and packed in 5-pound wooden boxes, with glass covers. Boston, Mass. B. S. Snow & Co.

## ALDEN'S PREPARED FOODS.

(Fresh codfish are cleaned, stripped of skin and bones, and exposed to heat in a large circular pan, when the flesh is reduced to a dry fibrous mass, but still retaining its nutrient properties. It is easily and quickly prepared for cooking by soaking a few moments in water.)

1. Dried fresh codfish in one-quarter and one-half pound paper packages.
2. Dried fresh haddock, in one-quarter and one-half pound paper packages.
3. Codfish cakes, fresh fish, and potatoes, in one-quarter and one-half pound paper packages.
4. Dried fresh clams, in one-half pound paper packages.
5. Dried fresh oysters, in one-quarter pound paper packages.
6. Mince-meat, beef, beef-hash, carrots, potatoes, and beets, in one-quarter and one half pound paper packages.

Randolph, Mass., and New York. Charles Alden.

## DRIED HALIBUT.

Shooyoult. Indian food-fish. Northwest coast of America. 55,39 .  
Collected by James G. Swan.

## DRIED FALL SALMON.

Chuch-kowis. Indian foodfish. Northwest coast of America. 55,395.  
Collected by James G. Swan.

## DRIED SALMON.

Eskimo food. Eschscholtz Bay, Alaska. 46,469. Collected by E. P. Herendeen.

## DRIED TROUT.

The flesh of trout (*Salmo* sp.) prepared and used for food by the Ahgy Pai-Ute Indians. Walker Lake, Nevada. 19,646. Collected by Stephen Powers.

OULACHON OR CANDLE-FISH (*Thaleichthys pacificus*).

Dried for food by the Indians. Washington Territory. 30,255.  
Collected by James G. Swan.



## SHOW.

Pronounced to rhyme with how. Chiton. Indian food-fish. Northwest coast of America. 65,397. Collected by James G. Swan.

## BADÓWITS.

Smelts. Indian food-fish. Northwest coast of America. 59,393. Collected by James G. Swan.

## DRIED FISH.

Varieties of fish prepared and used for food by the Chinese of the Pacific coast, California. 55,399, 56,401-5. Collected by Prof. David S. Jordan.

## DRIED SALMON-EGGS.

The eggs of the quinnat salmon (*Oncorhynchus chowicha*). Prepared for food by McCloud River Indians. Shasta County, California. 11,049. Collected by Livingston Stone.

## DRIED HERRING-EGGS.

Indian name, Haterbok. Prepared for food by Indians of Pacific coast. Washington Territory. 55,392. Collected by J. G. Swan.

## HERRING EGGS.

The eggs of herring. (*Clupea mirabilis*.) Used as food by Sitka Indians. Collected by them upon branches of hemlock (*Abies merten siana*), placed in shallow water, upon the spawning grounds of the fish. Sitka, Alaska. 21,187. Collected by J. G. Swan.

## FISH MEAL.

Flour or meal made from dried flesh of quinnat salmon (*Oncorhynchus chowicha*), by the McCloud River Indians. Shasta County California. 21,716. Collected by Livingston Stone.

## DRIED SALMON-EGGS.

The eggs of quinnat salmon (*Oncorhynchus chowicha*), prepared for food by the Bannock Indians. Montana Territory. 11,049. Deposited by Army Medical Museum.

## CHY.

A small frog (*Engystoma*). Food of the Nishimans Indians, Bear River. Placer County, California. 21,430. Collected by S. Powers. Roasted in the ashes and eaten.

## DRIED ABALONES.

Used as food by the Indians on Southern coast of California, and exported to China, as food, in large quantities. Santa Barbara, California. 32,795. Collected by Prof. David S. Jordan.

## WHALE SINEW.

The sinews of the California gray whale and other species, dried and used for food by the Chinese on the Pacific coast. San Francisco, California. 39,473. Collected by Prof. D. S. Jordan.

## DRIED PORPOISE MEAT.

Used by the Passamaquoddy Indians. Eastport, Me. 11,436. Collected by Dr. E. Palmer.

## DRIED SEAL MEAT.

Used by the Passamaquoddy Indians. Eastport, Me. 11,135. Collected by Dr. E. Palmer.

## PRAWNS.

Dried. Used by the Chinese of California. Collected by Prof. David S. Jordan. 55,408.

## PRAWNS.

In shell. Used by the Chinese of California. Collected by Prof. David S. Jordan. 55,407.

## DRIED PRAWNS.

On bamboo sticks. Used by the Chinese of California. Collected by Prof. David S. Jordan. 55,410.

## SHRIMPS.

Dried. Used by the Chinese of California. Collected by Prof. David S. Jordan. 55,409.

## SHRIMPS.

In shell, dried and pounded. Used by the Chinese of California. Collected by Prof. David S. Jordan. 55,413.

## EDIBLE WORMS (Ingattun).

Varieties of worms (*Ephydra* sp.). Eaten raw, boiled, or dried. Found in Owen's Lake. Pinta Indians of Owen's River Valley. 19,713. Collected by Stephen Powers.

## EDIBLE WORMS (Pishawattuh).

Varieties of worms (*Ephydra* sp.) used in soups. Pinta Indians. Owen's River Valley. 19,714. Collected by Stephen Powers.

## DRIED SNAILS (Nowh).

Varieties of snails (*Helix columbiana* and *H. Vancouverensis*) roasted in the ashes or boiled in a basket with hot stones. Indians of Bear River, Placer County, California. 21,424-5. Collected by Stephen Powers.

## MINNOWS.

It is pretended by the Indian doctor that this fish is a cure for diseases. After sucking the affected part a long time he vomits up one of these small fish and assures the patient that he will now recover. Indians of Bear River, Placer County, California. 21,423. Collected by Stephen Powers.

## DRIED CLAMS (Cheetuk).

Prepared as food by the Indians of Northwest coast. Washington Territory. 55,396. Collected by J. G. Swan.

## DRIED CUTTLE-FISH.

Prepared as food by the Chinese. California, 1880. 55,400. Collected by Prof. D. S. Jordan.

PRESSED SEA-WEED (*Porphyra vulgaris*).

Used as food by the Indians. Sitka, Alaska. 21,164. Collected by James G. Swan.

## SMOKED PREPARATIONS.

(See also Canned smoked products.)

## SMOKED SALMON.

The flesh of quinnat salmon (*Oncorhynchus chouicha*), prepared by the McCloud River Indians. Shasta County, California. 11,608. Collected by Livingston Stone.

## SMOKED STURGEON.

The flesh of Lake Erie sturgeon (*Acipenser rubicundus*) as prepared for Western markets. Sandusky, Ohio. 12,122. Schacht & Brothers.

## SMOKED HALIBUT.

The flesh of halibut (*Hippoglossus vulgaris*) cut into fitches, salted and smoked. Gloucester, Mass. U. S. Fish Commission. These fish are taken off the Greenland coast and on the Grand Bank; are fitched on the vessel and smoked in Gloucester. Packed in boxes of 40 pounds each.

## SMOKED HALIBUT.

The flesh of halibut (*Hippoglossus vulgaris*) salted, cut into strips and rolled into one-pound packages, covered with thin paper, and smoked. Gloucester, Mass. U. S. Fish Commission. Packed in 5-pound boxes.

## SMOKED HALIBUT.

Flesh of halibut (*Hippoglossus vulgaris*) salted, smoked, and cut into small pieces; packed in tin cans. Boston, Mass. Potter & Wrightington.

**BONELESS HERRING.**

Common sea-herring (*Clupea harengus*) salted and smoked and stripped of skin and bones. Packed in small wooden and tin boxes. Boston, Mass. U. S. Fish Commission.

**BONELESS HERRING.**

Star brand, common sea-herring (*Clupea harengus*), salted and smoked and stripped of skin and bones; packed in small wooden and tin boxes. New York. J. W. Beardsley's Sons, 179 West street.

**BONELESS HERRING.**

Blackwood's Mount Desert brand. Smoked herring (*Clupea harengus*) stripped of skin and bones. Half-dozen small wooden boxes. Boston, Mass. L. Pickert & Co.

**SMOKED HERRING.**

Common sea-herring (*Clupea harengus*) salted and smoked. Packed in wooden boxes. Branded as follows: (1) Lengthwise, (2) tucks, (3) number 1, (4) number 2, (5) scaled. Eastport, Me. S. B. Hume.

**SMOKED WHITEFISH.**

Lake whitefish (*Coregonus clupeiformis*), salted and smoked, for Western markets. Sandusky, Ohio. 12,121. Schacht & Brothers.

**15. FOOD PRESERVED BY BRINE-SALTING.**

(See also Canned products.)

**MULLET.**

Southern mullet (*Mugil albula*), brine-salted. Packed in wooden kits. Wilmington, N. C. Hall & Pearsall.

**MACKEREL.**

Prize mess, lion and unicorn mess, and other brands of brine-salted mackerel put up in cans. (See canned goods.)

**16. FOOD PRESERVED IN CANS.****PLAIN BOILED.****FRESH COD (*Gadus morrhua*).**

Two cases, each four dozen 1-pound cans. Boston, Mass. Potter & Wrightington.

**FRESH HERRING (*Clupea harengus*).**

Two cases, each four dozen 1-pound cans. Boston, Mass. Potter & Wrightington.

FRESH "OCEAN TROUT" OR SEA-HERRING (*Clupea harengus*).

Two cases, each four dozen 1-pound cans. Boston, Mass. Potter & Wrightington.

"BROOK-TROUT" OR SEA-HERRING (*Clupea harengus*).

Half dozen 3-pound cans. Boston, Mass. L. Pickert & Co.

FRESH MACKEREL (*Scomber scombrus*).

In 1-pound and 2-pound cans. Boston, Mass. Henry Mayo & Co.

FRESH MACKEREL (*Scomber scombrus*).

Two cases, each 4 dozen 1-pound and 2-pound cans. Boston, Mass. Potter & Wrightington.

FRESH MACKEREL (*Scomber scombrus*).

Three samples 1-pound round cans. Boston, Mass. A. H. Bailey & Co.

FRESH MACKEREL (*Scomber scombrus*).

One dozen 1-pound round cans. Portland, Me. Burnham & Morrill.

FRESH MACKEREL (*Scomber scombrus*).

In 1-pound and 2-pound cans. Boston, Mass. W. K. Lewis & Bros.

FRESH BLUEFISH (*Pomatomus saltatrix*).

Three 1-pound round cans. Boston, Mass. A. H. Bailey & Co.

FRESH SEA-BASS (*Centropristis atrarius*).

Three 1-pound cans. Boston, Mass. A. H. Bailey & Co.

FRESH SMELTS (*Osmerus mordax*).

Half dozen 2-pound cans. Boston, Mass. L. Pickert & Co.

CANNED HALIBUT.

Fillet of halibut (*Hippoglossus vulgaris*) à la Italienne. In oval cans. New York. Hine & Co., 13 and 15 Doyer's street.

FRESH "ALBANY BEEF" OR STURGEON (*Acipenser* sp.).

Two dozen 1-pound and one dozen 2-pound cans. New York. Max Ams, 372 and 374 Greenwich street. "After long and constant experiments to preserve the meat of the sturgeon fish I have at last succeeded, and present to the trade a new article, of a fine taste, and being cheaper than salmon and lobster, will doubtless take its place as a strong competitor in the favor of the public." (Max Ams.)

FRESH "ALBANY BEEF" OR STURGEON (*Acipenser* sp.).

Four cases, containing 192 1-pound and 2-pound round cans. New York. Albany Beef Packing Company, 372 Greenwich street. "This article has its name from the fact that it was first brought into the market at the city of Albany, New York, and is the meat of sturgeon. Since a number of years it has been tried to preserve and put it up in some way to make it an article of merchandise, but not until recently has the attempt been rewarded with success, and will without doubt find in this shape a ready market. Being of a fine taste and flavor, cheaper than salmon or lobster, it can be put up in large quantities, and will in the near future prove a very desirable addition derived from the waters of the deep. Patent has been applied for." (*Richard Weinacht*, secretary.)

## CANNED SALMON.

"Salmon à la Chambord." In oval cans. New York. Hine & Co., 13 and 15 Doyers street.

FRESH SALMON (*Oncorhynchus chouicha*).

Oval brand. Two cases of 1-pound cans. Chicago, Ill. Canneries at Astoria, Oregon. A. Booth.

FRESH SALMON (*Oncorhynchus chouicha*).

Oval brand. Two cases of 2-pound cans. Chicago, Ill. Canneries at Astoria, Oregon. A. Booth.

FRESH SALMON (*Oncorhynchus chouicha*).

Oval brand. Two cases 2-pound and 2½-pound cans. Chicago, Ill. Canneries at Astoria, Oregon. A. Booth.

FRESH SALMON (*Oncorhynchus chouicha*).

Two whole fish in fish-shaped cans. Chicago, Ill. Canneries at Astoria, Oregon. A. Booth.

FRESH SALMON (*Oncorhynchus chouicha*).

Six 1-pound cans of Columbia River salmon. Portland, Oregon. 57,137. Oregon Packing Company. J. W. & V. Cook, proprietors.

FRESH SALMON (*Oncorhynchus chouicha*).

Stag brand. Two cases, each four dozen 1-pound cans. Brookfield, Washington Territory. J. G. Megler & Co.

FRESH SALMON (*Oncorhynchus chouicha*).

Saint George brand. One case, two dozen 2½-pound cans. Brookfield, Washington Territory. J. G. Megler & Co.

FRESH SALMON (*Oncorhynchus chouicha*).

Saint George brand. Two cases, each four dozen 1-pound cans. Brookfield, Washington Territory. J. G. Megler & Co.

## FRESH SALMON.

Five cases canned salmon (*Oncorhynchus* sp.). From California, Oregon, and Alaska streams. Five dozen large and small cans. San Francisco, Cal.; Astoria, Oreg.; Kusiloff River, Alaska. Cutting Packing Company. "This exhibit contains Alaska salmon, probably the first ever shipped abroad. One can contains one fish—live weight 86 pounds, dressed 65 pounds—the largest on record on this coast; caught at the company's cannery at the mouth of the Kusiloff River, Alaska, July 22, 1882. We began prospecting for runs for canning purposes in 1881, and, being located as above, found three varieties, called by us, for commercial purposes, 'King Fish,' 'Silver Side Salmon,' and 'Small Red Fish,' all of which are fully equal to the varieties caught by us at our canneries in Oregon and California." (A. D. Cutler, of Cutting Packing Company.)

FRESH DEEP-SEA SALMON (*Salmo salar*).

Three samples in 1-pound round cans. Boston, Mass. A. H. Bailey & Co.

FRESH LOBSTERS (*Homarus americanus*).

Three cases, six dozen 1-pound cans. Portland, Me. Portland Packing Company.

FRESH LOBSTERS (*Homarus americanus*).

Royal brand; one dozen 1-pound cans. Eastport Packing Company. Rosenstein Brothers, 323 Greenwich street, New York.

FRESH LOBSTERS (*Homarus americanus*).

Half dozen 1-pound cans. Boston, Mass. L. Pickert & Co.

FRESH LOBSTERS (*Homarus americanus*).

In 1-pound and 2-pound cans. Boston, Mass. W. K. Lewis & Brothers.

FRESH LOBSTERS (*Homarus americanus*).

One dozen 1-pound tall cans. Portland, Me. Burnham & Morrill.

FRESH LOBSTERS (*Homarus americanus*).

"Homards de La Reine." One dozen 1-pound flat cans. Portland, Me. Burnham & Morrill.

FRESH LOBSTERS (*Homarus americanus*).

Two cases, each four dozen 1-pound cans. Boston, Mass. Potter & Wrightington.

FRESH LOBSTERS (*Homarus americanus*).

In 1-pound cans. Boston, Mass. Henry Mayo & Co.

FRESH CLAMS (*Mya arenaria*).

Half dozen 1-pound cans. Boston, Mass. L. Pickert & Co.

FRESH CLAMS (*Mya arenaria*).

In 1-pound and 2-pound cans. Boston, Mass. W. K. Lewis & Brothers.

FRESH CLAMS (*Mya arenaria*).

One dozen 1-pound round cans. Portland, Me. Burnham & Morrill.

FRESH CLAMS (*Mya arenaria*).

Two cases, each two dozen 1-pound cans. Boston, Mass. Potter & Wrightington.

FRESH CLAMS (*Mya arenaria*).

In 1-pound and 2-pound cans. Boston, Mass. Henry Mayo & Co.

## SCALLOPED OYSTERS.

In oval cans. New York. Hine & Co., 13 and 15 Doyers street.

## LUNCH OYSTERS.

Oval brand. Three cases, twelve dozen cans. Baltimore, Md. A. Booth.

## COVE OYSTERS.

Oval brand. Three cases, six dozen 1-pound cans. Baltimore, Md. A. Booth.

## COVE OYSTERS.

Oval brand. Three cases, six dozen 2-pound cans. Baltimore, Md. A. Booth.

EXTRA COVE OYSTERS (*Ostrea virginica*).

Hampton Roads brand. Two cases of No. 1 and No. 2 cans. Hampton, Va. McMenamin & Co.

LUNCH OYSTERS (*Ostrea virginica*).

Two cases of flat cans. Hampton, Va. McMenamin & Co.

EXTRA SELECTED OYSTERS (*Ostrea virginica*).

Lion brand. Two cases of No. 1 and No. 2 cans. Hampton, Va. McMenamin & Co.

## FRESH CRAB MEAT.

The meats of crabs (*Callinectes hastatus*). Two cases of No. 1 and No. 2 cans. Hampton, Va. McMenamin & Co.



FRESH GREEN TURTLE (*Chelonia mydas*).

Put up in 1-pound cans. New York. 26,751. Alden Sea-Food Company. Collected by E. G. Blackford, 1876.

## GREEN TURTLE.

Filet of green turtle (*Chelonia mydas*), purée of mushrooms. In oval cans. New York. Hine & Co.

## BOILED WITH VEGETABLES.

## GREEN-TURTLE SOUP.

Prepared from green turtle (*Chelonia mydas*). In oval cans. New York. Hine & Co., 13 and 15 Doyers street.

## GREEN-TURTLE STEW.

Prepared from green turtle (*Chelonia mydas*). In oval cans. New York. Hine & Co., 13 and 15 Doyers street.

## TERRAPIN SOUP.

Prepared from diamond-back terrapin (*Malacoclemmys palustris*). In oval cans. New York. Hine & Co., 13 and 15 Doyers street.

## TERRAPIN STEW.

Prepared from diamond-back terrapin (*Malacoclemmys palustris*). In oval cans. New York. Hine & Co., 13 and 15 Doyers street.

## FISH CHOWDER.

Prepared from cod (*Gadus morrhua*), potatoes, &c. In 3-pound cans. Boston, Mass. Henry Mayo & Co.

## FISH CHOWDER.

Prepared from fresh cod or haddock and potatoes. In 3-pound cans. Boston, Mass. W. K. Lewis & Brothers.

## CLAM CHOWDER.

Soup made from clams (*Mya arenaria*), potatoes, &c. In 3-pound cans. Boston, Mass. Henry Mayo & Co.

## CLAM CHOWDER.

Soup prepared from clams (*Mya arenaria*), potatoes, &c. Two cases, each two dozen 2-pound cans, and two cases, two dozen 3-pound cans. Boston, Mass. Potter & Wrightington.

## CLAM CHOWDER.

Prepared from clams (*Mya arenaria*) and potatoes. In 3-pound cans. Boston, Mass. W. K. Lewis & Brothers.

**CLAM CHOWDER.**

Soup prepared from clams (*Mya arenaria*), potatoes, &c. Half-dozen 3-pound cans. Boston, Mass. L. Pickert & Co.

**CODFISH BALLS.**

Prepared from cod (*Gadus morrhua*), potatoes, &c. In 2-pound cans. Boston, Mass. Henry Mayo & Co.

CANNED IN BRINE, WITH HEAT.

**AMERICAN CAVIARE.**

Prepared from roe of sturgeon (*Acipenser* sp.). One case, in  $\frac{1}{2}$ -pound and 1-pound cans. New York. S. Schmidt & Brother, 150 and 152 West Nineteenth street.

**RUSSIAN CAVIARE.**

Prepared from roe of sturgeon (*Acipenser* sp.). Two dozen 1-pound cans; one dozen 2-pound cans; one dozen  $\frac{1}{4}$ -kilogram cans; one dozen  $\frac{1}{2}$ -kilogram cans. New York. Max Ams, 372 and 374 Greenwich street. "Caviare in gilt-varnished cans is of medium-sized fish-roe, and in taste and appearance like the caviare procured in Germany and the Netherlands. Caviare in red cans (*caviare russe*) is from sturgeon caught in the Lakes Erie, Ontario, Superior, and Michigan, is of an excellent taste and very large, and in every respect equal to Russian caviare. The canning process used in putting up this caviare was patented November 9, 1875, and by it this caviare can be guaranteed to keep in any climate or season." (*Max Ams.*)

CANNED IN BRINE, WITHOUT HEAT.

**MESS MACKEREL.**

Lion and Unicorn brand. Brine-salted mackerel (*Scomber scombrus*); split; heads and tails removed. Two cases, each one dozen 1-pound cans. Boston, Mass. Potter & Wrightington.

**PRIZE MESS MACKEREL.**

Brine-salted mackerel (*Scomber scombrus*); split; heads and tails removed. Two cases, each one dozen 5-pound cans. Boston, Mass. Potter & Wrightington.

**MINOT'S LIGHT BREAKFAST MESS MACKEREL.**

Brine-salted mackerel (*Scomber scombrus*); split; heads and tails removed. Two cases, each one dozen 5-pound cans. Boston, Mass. Potter & Wrightington.

CANNED IN SPICES, MUSTARD SEED, MUSTARD SAUCE, TOMATO SAUCE, MARINATED, &c.

**SPICED "SARDINES."**

Royal brand. Small sea-herring (*Clupea harengus*) preserved in spices. Camden, Me.; office, 323 Greenwich street, New York. Rosenstein Brothers.

## MUSTARD "SARDINES."

Small sea-herring (*Clupea harengus*) in mustard seed. One dozen half-cans and one dozen quarter-cans. Camden, Me.; office, 323 Greenwich street, New York. Rosenstein Brothers.

## MUSTARD "SARDINES."

Small herring (*Clupea harengus*) preserved in mustard seed. One dozen quarter-cans. Eastport, Me. Wolff & Riesing.

## "OCEAN TROUT."

Sea-herring (*Clupea harengus*) in mustard sauce. In 2-pound oval cans. Boston, Mass. A. H. Bailey & Co.

MACKEREL (*Scomber scombrus*).

In mustard sauce. In 2-pound oval cans. Boston, Mass. A. H. Bailey & Co.

MACKEREL (*Scomber scombrus*).

In mustard sauce. In 2-pound and 3-pound cans. Boston, Mass. Henry Mayo & Co.

FRESH MACKEREL (*Scomber scombrus*).

In tomato sauce. In 2-pound and 3-pound cans. Boston, Mass. Henry Mayo & Co.

MACKEREL (*Scomber scombrus*).

In tomato sauce. In 2-pound oval cans. Boston, Mass. A. H. Bailey & Co.

"OCEAN TROUT," OR SEA-HERRING (*Clupea harengus*).

In tomato sauce. In 4-pound oval cans. Boston, Mass. A. H. Bailey & Co.

"OCEAN TROUT," OR SEA-HERRING (*Clupea harengus*).

In tomato sauce. One case, four dozen square cans. Boston, Mass. Potter & Wrightington.

"OCEAN TROUT," OR SEA-HERRING (*Clupea harengus*).

In tomato sauce. One case, one dozen 3-pound cans. Boston, Mass. Potter & Wrightington.

FRESH HERRING (*Clupea harengus*).

In tomato sauce. One case, one dozen 3-pound cans. Boston, Mass. Potter & Wrightington.

FRESH SEA-BASS (*Centropristis atrarius*).

In tomato sauce. Two cases, each two dozen 2-pound cans. Boston, Mass. Potter & Wrightington.

AMERICAN EELS (*Anguilla rostrata*).

In jelly. Two dozen 1-pound round cans; one dozen 2-pound cans. New York. Max Ams, 372 and 374 Greenwich Street. "This article has in a very short time acquired the fame as being a favorite in every household, and the daily increasing demand for it shows clearly that it is everywhere appreciated as a splendid relish for the table." (*Max Ams.*)

## MARINÉE "SARDINES."

Small herring (*Clupea harengus*) preserved in spices. One dozen quarter-cans. Eastport, Me. Wolff & Riesing.

SOUSED MACKEREL (*Scomber scombrus*).

Half dozen 1-pound and 3-pound cans. Boston, Mass. L. Pickert & Co.

SOUSED "OCEAN TROUT," OR SEA-HERRING (*Clupea harengus*).

One case, one dozen 3-pound cans. Boston, Mass. Potter & Wrightington.

SOUSED HERRING (*Clupea harengus*).

One case, one dozen 3-pound cans. Boston, Mass. Potter & Wrightington.

SOUSED MACKEREL (*Scomber scombrus*).

One case, two dozen 2-pound cans. Boston, Mass. Potter & Wrightington.

SOUSED MACKEREL (*Scomber scombrus*).

In 1-pound, 2-pound, 3-pound, and 4-pound cans. Boston, Mass. Henry Mayo & Co.

FRESH DEVILED CRABS (*Callinectes hastatus*).

Two cases of No. 1 and No. 2 cans. Hampton, Va. McMenamin & Co. "This is the meat of the crab carefully picked, seasoned, and packed in cans as above. The carapace or top shell of the crab accompanies each case of cans—a case of shells to each case of cans. These are filled from the cans, baked in a quick oven until nicely browned, and eaten from the shell; or the shells may be dispensed with, and the meat may be eaten from the can, or prepared into a variety of dishes. We are the pioneers in the packing of canned crabs. So far as we are able to learn, the idea was first conceived and put into execution by ourselves. Other similar establishments started afterwards, but to-day we are the only packers of canned crabs in America." (*McMenamin & Co.*)

FRIED HERRING (*Clupea harengus*).

In spiced vinegar. Two cases, in cans. New York. S. Schmidt & Brother, 150 and 152 West Nineteenth street.

HAMBURGER EELS (*Anguilla rostrata*).

In jelly. One dozen each, 1-pound and 2-pound cans. New York. Max Ams, 372 and 374 Greenwich street.

## CANNED IN VINEGAR.

PICKLED EELS (*Anguilla rostrata*).

In jelly. In 2-pound cans. New York. S. Schmidt & Brother, 150 and 152 West Nineteenth street.

PICKLED EELS (*Anguilla rostrata*).

One case, in 1-pound, 2-pound, and 5-pound cans. New York. S. Schmidt & Brother, 150 and 152 West Nineteenth street.

## PICKLED OYSTERS.

- Two cases, two dozen bottles. Baltimore, Md. A. Booth.

## CANNED IN OIL.

## OIL "SARDINES."

Small herring (*Clupea harengus*) preserved in oil. One dozen quarter-cans. Eastport, Me. Wolff & Riesing.

## OIL "SARDINES."

Alfred Elienne brand. Small sea-herring (*Clupea harengus*) preserved in oil. One dozen half-cans. Camden, Me.; office, 323 Greenwich street, New York. Rosenstein Brothers.

## OIL "SARDINES."

Dubois brand. Small sea-herring (*Clupea harengus*) preserved in oil. One dozen quarter-cans. Office, 323 Greenwich street, New York. Rosenstein Brothers.

## OIL "SARDINES."

Louis Philippe brand. Small sea-herring (*Clupea harengus*) preserved in oil. One dozen quarter-cans. Camden, Me.; office, 323 Greenwich street, New York. Rosenstein Brothers.

## CANNED DRY; SMOKED AND DRY-SALTED.

SMOKED SALMON (*Salmo salar*).

Lion and Unicorn brand. One case, four dozen 1-pound cans. Boston, Mass. Potter & Wrightington.

SMOKED SALMON (*Salmo salar*).

Lion and Unicorn brand. One-half case, two dozen 1-pound flat cans. Boston, Mass. Potter & Wrightington.

FRESH SMOKED SALMON (*Salmo salar*).

One case, in cans. New York. S. Schmidt & Brother, 150 and 152 West Nineteenth street.

FRESH SMOKED SMELTS (*Osmerus mordax*).

One case, in cans. New York. S. Schmidt & Brother, 150 and 152 West Nineteenth street.

FRESH SMOKED EELS (*Anguilla rostrata*).

One case, in cans. New York. S. Schmidt & Brother, 150 and 152 West Nineteenth street.

SMOKED HALIBUT (*Hippoglossus vulgaris*).

Lion and Unicorn brand. One-half case, two dozen one-pound flat cans. Boston, Mass. Potter & Wrightington.

FRESH SMOKED STURGEON (*Acipenser* sp.).

One case, in cans. New York. S. Schmidt & Brother, 150 and 152 West Nineteenth street.

FRESH SMOKED FLOUNDERS (*Pseudopleuronectes americanus* and *Paralichthys* sp.).

Two cases, in cans. New York. S. Schmidt & Brother, 150 and 152 West Nineteenth street.

FRESH SMOKED BUCKLING (*Clupea harengus*).

One case, in cans. New York. S. Schmidt & Brother, 150 and 152 West Nineteenth street.

KIPPERED HERRING (*Clupea harengus*).

Three samples in one-pound oval cans. Boston, Mass. A. H. Bailey & Co.

## BONELESS HERRING.

Blackwood's English boned brand. Smoked herring (*Clupea harengus*) stripped of skin and bones. Half dozen small tin boxes. Boston, Mass. L. Pickert & Co.

## FINNAN HADDIES.

Smoked haddock (*Melanogrammus aeglefinus*). Half dozen 1-pound cans. Boston, Mass. L. Pickert & Co.

## FINNAN HADDIES.

Smoked haddock (*Melanogrammus aeglefinus*). Three samples in 1-pound oval cans. Boston, Mass. A. H. Bailey & Co.

## FINNAN HADDIES.

Smoked haddock (*Melanogrammus aeglefinus*). One dozen 1-pound round cans. Portland, Me. Burnham & Morrill.

MINCED COD (*Gadus morrhua*).

Lion and Unicorn brand. Two cases, each two dozen 1-pound cans. Boston, Mass. Potter & Wrightington.

## BONELESS COD.

Dry-salted cod (*Gadus morrhua*) stripped of skin and bones, cut into pieces, rolled, and packed in cylinder-shaped cans. Boston, Mass. L. Pickert & Co.

## CANNED FISH-EXTRACTS.

## STURGEON EXTRACT.

From sturgeon (*Acipenser* sp.). One case, containing twenty-four small cans. New York. Albany Beef Packing Company, 372 Greenwich street. "This is a novelty, and is what its name indicates, the extract of sturgeon meat, intended to be used for meat or fish sauces, soups, &c." (*Richard Weinacht*, secretary.)

## VI.—MARINE PRODUCTS USED FOR CLOTHING.

## 17. FURS.

## MAMMAL FURS.

SEA-OTTER (*Enhydra marina*).

Used for muffs, gloves, collars, cuffs, and trimmings. Dressed skin. Saint Paul's Island, Alaska. 12,262. Collected by H. W. Elliott.

OTTER (*Lutra canadensis*).

Used for muffs, trimmings, &c.

Dressed skin. Lake Superior. Value, \$9.

Dressed skin, unplucked. Lake Superior. Value, \$10.

Dressed skin. Western States. Value, \$7.

Dressed skin, unplucked. Western States. Value, \$8.

Dressed skin, unplucked. Florida. Value, \$5.

B. H. Stinemetz & Son, Washington, D. C.

OTTER (*Lutra canadensis*).

Used for muffs, trimmings, &c. Dressed skin. White River, Puget Sound. 2,803. Collected by Dr. George Suckley.

BEAVER (*Castor canadensis*).

Used for linings and muffs.

Raw skin. Utah. Value, \$6.50.

Dressed skin. Utah. Value, \$7.

Raw skin. Lake Superior. Value, \$8.

Dressed skin. Lake Superior. Value, \$9.

B. H. Stinemetz & Son, Washington, D. C.

BEAVER (*Castor canadensis*).

Used for linings and muffs.

Dressed skin, light color, spotted. Bristol Bay, Alaska. M. 12,311.

Collected by H. W. Elliott.

BEAVER (*Castor canadensis*).

Used for linings and muffs.

Dressed skin. Albino. M. 12,506. U. S. National Museum.

BEAVER (*Castor canadensis*).

Used for linings and muffs.

Dressed skin. M. 12,748. Collected by Dr. F. V. Hayden.

FUR-SEAL (*Callorhinus ursinus*).

Used for cloaks, hats, gloves, &c.

Three skins, in the hair, washed and dried.

Three skins, plucked and dressed, natural color.

Three skins, dressed and dyed light color.

Three skins, dressed and dyed dark color.

From Prybilov Islands, Alaska. Alaska Commercial Company, San Francisco, Cal.

FUR SEAL (*Callorhinus ursinus*).

Used for cloaks, hats, &c.

One skin, unplucked, washed and dried.

One skin, plucked, undressed.

One skin, plucked and dressed.

From Alaska. Prepared by G. C. Treadwell & Co., Albany, N. Y.

ANTARCTIC FUR-SEAL (*Arctocephalus aucklandicus*).

Used for cloaks, hats, &c.

One skin, plucked, dressed and dyed. Staten Island, near Cape Horn. 25,759.

One skin, plucked, dressed, and dyed. South Georgia Islands, South Atlantic. 25,760.

One skin, plucked, dressed, and dyed. Islos de Diego Ramires, near Cape Horn. 25,762. Dressed and dyed by G. C. Treadwell & Co., Albany, N. Y.

MUSQUASH OR MUSKRAT (*Fiber zibethicus*).

Used for muffs, capes, caps, and linings, and imitations of beaver fur.

Raw skin. Brown. Eastern States. Value, 20 cents.

Raw skin. Black. Eastern States. Value, 25 cents.

B. H. Stinemetz & Son, Washington, D. C.



FISHER OR PEKAN (*Mustela Pennanti*).

Used for linings. Dressed skin. Fort Steilacoom, Washington Territory. 2,000. Collected by Dr. George Suckley.

MINK (*Putorius vison*).

Used for cloaks and muffs. Dressed skin. Cape Flattery, Washington Territory. 2,387. Collected by Dr. George Suckley.

MINK (*Putorius vison*).

Used for cloaks and muffs.

Dressed skin, unplucked. Eastern States. Value, \$1.25.

Dressed skin, unplucked. Western States. Value, 65 cents.

Dressed skin, unplucked. Middle States. Value, 75 cents.

B. H. Stinemetz & Son. Washington, District of Columbia.

## BIRD FURS.

## CAPE OR ROBE.

Made from down of the loon (*Colymbus torquatus*). Made by Makah Indians. Neah Bay, Washington Territory. 1,296. Collected by J. G. Swan.

## ROBE.

Made from skins of the brown pelican (*Pelecanus juscus*). Worn by females. Tiburon Islands, Sonora. 9,559. Collected by Dr. E. Palmer.

## 18. LEATHERS.

(Embracing the hides in a rough state, in the various stages of dressing, and manufactured into shoe-leather, satchels, shoes, &c.)

## PREPARED FROM MAMMAL-SKINS.

## LEATHER.

Made from skin of sea-lion (*Eumetopias Stelleri*), and used by Aleutian Islanders for covering canoes. Alaska. 11,371. Collected by Vincent Colyer.

## BAG.

Made from skin of banded seal (*Histriophoca fasciata*). Cape Romanzoff, Alaska. 7,580. Collected by W. H. Dall.

## PACKING BAG.

Made of entire skin of saddle-back seal. Alaska. 38,876. Collected by E. W. Nelson.

## SEAL-SKIN BAG.

Made of whole seal-skin, with lacings of raw hide. Anvik, Alaska. 38,796. Collected by E. W. Nelson.

## HARPOON LINE.

Made of strips of seal-skin. Alaska. 19,376. Collected by Rev. James Curley.

## QUIVER.

Made of seal-skin. Length,  $28\frac{3}{4}$  inches; width, 6 inches. Ooglaamie, Point Barrow, Alaska, 1882. 72,788. Collected by Lieut. P. H. Ray, U. S. A.

## INTESTINE OF SEAL.

Prepared by the natives and used for waterproof clothing. Yukon River, Alaska. 5,570. Collected by Dr. W. H. Dall.

## HARPOON LINE.

Made of Walrus hide. Alaska. 15,617. Collected by H. W. Elliott. Walrus leather is used by Eskimos for harness, thongs, seal nets, and for other purposes.

## PREPARED FROM REPTILE-SKINS.

## ALLIGATOR LEATHER GOODS.

Exhibited by Tiffany & Co., Union Square, New York.

2. Skin. Extra Large. Natural color. Value, \$10.
3. Skin. Medium size. Natural color. Value, \$6.
4. Skin. Medium size. Black. Value, \$6.
5. Skin. Extra large. Black. Value, \$12.
6. Skin. Large. Green. Value, \$8.
7. Skin. Medium size. Brown. Value, \$6.
8. Skin. Medium size. Red. Value, \$6.
9. Skin. Medium size. Cream color. Value, \$6.
10. Skin. Medium size. Yellow. Value, \$6.
11. Skin. Medium size. White. Value, \$7.
12. Student's bag. Natural color. Value, \$28.
13. Shopping bag. Natural color. Value, \$13.
14. Ladies' bag. Small. Natural color. Value, \$14.
15. Ladies' bag. Large. Natural color. Value, \$24.
16. Railroad bag. Natural color. Value, \$36.
17. Gent's bag. Natural color. Value, \$45.
18. Dress suit bag. Natural color. Value, \$56.
19. Carriage reticule. Natural color. Value, \$28.
20. Photograph case. Carte de Visite. Natural color. Value, \$5.
21. Photograph case. Imperial. 4 pictures. Natural color. Value, \$15.
22. Photograph screen. Imperial. 2 pictures. Natural color. Value, \$14.
23. Photograph screen. Imperial. 3 pictures. Natural color. Value, \$20.

## ALLIGATOR LEATHER GOODS—Continued.

24. Photograph screen. Imperial. 4 pictures. Natural color. Value, \$28.
25. Music roll. Black. Value, \$12.
26. Shawl strap. Natural color. Value, \$15.
27. Court-plaster case. Natural color. Value, \$3.
28. Court-plaster case. Black. Value, \$3.
29. Bill book. Natural color. Value, \$13.
30. Bill book. Natural color. Value, \$13.50.
31. Cigar case. Natural color. Value, \$4.
32. Jewel box. Natural color. Value, \$20.
33. Traveling mirror. Natural color. Value, \$11.
34. Traveling mirror. Green. Value, \$11.
35. Traveling mirror. Black. Value, \$11.
36. Traveling mirror. Red. Value, \$11.
37. Belt with silver buckle. Natural color. With silver smelling-bottle and silver chatelaine. Value, \$39.75.
38. Bag with silver mountings. Natural color. Belt with silver buckle. Natural color. Chatelaine attached. Value, \$76.
39. Cigarette case. Natural color. Value, \$2.50.
40. Cigarette case. Black. Value, \$2.50.
41. Cigarette case. Red. Value, \$2.50.
42. Cigarette case. Brown. Value, \$2.50.
43. Cigarette case. White. Value, \$2.50.
44. Cigarette case. Natural color. Value, \$2.50.
45. Pocket-book. Natural color. Value, \$11.
46. Pocket-book. Black. Value, \$11.
47. Pocket-book. White. Value, \$10.
48. Envelope. Natural color. Contains 2 razors, button hook, glove hook, nail file, pocket knife, 2 pairs scissors. Value, \$28.
49. Envelope. Natural color. Contains button-hook, glove-hook, nail-file, pocket-knife, nail-brush, nail-powder box, and two pairs scissors. Value, \$20.
50. Card case. Red. Value, \$6.50.
51. Card case. Brown. Value, \$6.50.
52. Card case. White. Value, \$5.50.
53. Card case. Black. Value, \$5.50.
54. Card case. Green. Value, \$5.50.
55. Card case. Natural color. Value, \$5.50.
56. Belt with silver buckle. Natural color. Also, bag with silver mountings, natural color. Silver chatelaine. Value, \$105.
57. Cigarette case. Brown. Value, \$7.50.
58. Cigarette case. Black. Value, \$7.50.
59. Cigarette case. Natural color. Value, \$7.50.
60. Cigarette case. White. Value, \$7.50.
61. Cigarette case. Red. Value, \$8.50.

## ALLIGATOR LEATHER GOODS—Continued.

62. Cigarette case. Green. Value, \$8.50.
63. Card case. Black. Value, \$20.
64. Card case. Natural color. Value, \$30.
65. Card case. Red. Value, \$17.
66. Card case. Natural color. Value, \$9.50.
67. Card case. White. Value, \$17.
68. Card case. Natural color. Value, \$10.50.
69. Cigar case. White. Value, \$14.
70. Cigar case. Red. Value, \$14.
71. Cigar case. Natural color. Value, \$14.
72. Cigar case. Black. Value, \$14.
73. Cigar case. Green. Value, \$14.
74. Cigar case. Brown. Value, \$14.
75. Cigar case. Natural color. Value, \$30.
76. Cigar case. Black. Value, \$30.
77. Cigar case. Brown. Value, \$27.
78. Cigar case. Red. Value, \$24.
79. Cigar case. White. Value, \$24.
80. Cigar case. Green. Value, \$30.
81. Cigar case. Brown. Value, \$30.
82. Cigar case. White. Value, \$35.
83. Visiting book. Natural color. Value, \$6.
84. Visiting book. Natural color. Value, \$24.
85. Cigar case. Natural color. Value, \$10.
86. Cigar case. Black. Value, \$10.
87. Cigar case. White. Value, \$10.
88. Cigar case. Red. Value, \$11.50.
89. Cigar case. Brown. Value, \$11.50.
90. Cigar case. Natural color. Value, \$11.50.
91. Cigar case. Natural color. Value, \$10.
92. Cigar case. Black. Value, \$10.
93. Cigar case. Brown. Value, \$13.50.
94. Cigar case. White. Value, \$13.50.
95. Cigar case. Green. Value, \$11.
96. Cigar case. Red. Value, \$11.
97. Shawl strap. Natural color. Value, \$35.
98. Prescription book. Natural color. Value, \$5.
99. Prescription book. Natural color. Value, \$5.
100. Pocket-book. Natural color. Value, \$10.
101. Pocket-book. Black. Value, \$10.
102. Pocket-book. Natural color. Value, \$20.
103. Pocket-book. Natural color. Value, \$24.
104. Pocket-book. Natural color. Value, \$18.
105. Pocket-book. Natural color. Value, \$18.
106. Pocket-book. Natural color. Value, \$30.

## ALLIGATOR LEATHER GOODS—Continued.

107. Pocket-book. Natural color. Value, \$30.
108. Steamer bag. Natural color. Contains button-hook, glove-hook, pair scissors, nail-file, nail-cleaner, and pocket knife. Value, \$26.
109. Steamer bag. Natural color. Contains pocket knife, nail-file, nail-cleaner, button hook, pair scissors, xyphometer, and mirror. Value, \$40.
110. Steamer bag. Natural color. Contains nail-file, pair scissors, glove-buttoner, mirror, paper-knife, and fruit-knife. Value, \$125.
111. Dog-collar, with silver mountings. Brown. Value, \$13.
112. Dog-collar, with silver mountings. Black. Value, \$15.
113. Dog-collar, with silver mountings. Natural color. Value, \$17.
114. Belt, with silver buckle. Natural color. Also, bag with silver mountings. Natural color. Silver chatelaine. Value, \$63.50.
115. Belt with silver buckle. Natural color. Also, bag with silver mountings, and chatelaine. Natural color. Value, \$56.
116. Belt, with silver buckle. Natural color. Also, bag with silver mountings, and chatelaine. Natural color. Value, \$76.
117. Belt, with silver buckle. Natural color. Also, bag with silver mountings, and chatelaine. Natural color. Value, \$72.
118. Belt, with silver buckle. Natural color. Silver chatelaine and silver smelling-bottle. Value, \$68.
119. Dog-collar, with silver mountings. Natural color. Value, \$10.
120. Dog-collar, with silver mountings. Red. Value, \$12.
121. Dog-collar, with silver mountings. White. Value, \$14.
122. Ladies' dressing case. Natural color. Contains 2 powder boxes, 2 soap boxes, 2 pomatum boxes, tooth-brush bottle, hair-pin bottle, long cologne bottle, short cologne bottle, inkstand, tooth-powder box, matchbox, mirror, shoe-lift, hair-brush, clothes-brush, bonnet-brush, comb, 3 pairs scissors, 2 xyphometers, nail-file, nail-cleaner, button-hook, stiletto, tweezers, corkscrew, corn-knife, and pocket-knife. Value, \$500.
123. Gent's dressing case. Natural color. Contains soap box, powder box, tooth-brush box, tooth-powder box, 2 pomatum boxes, long cologne bottle, short cologne bottle, soap box, powder box, shaving-brush, shoe-lift, mirror, inkstand, paper-knife, 2 razors, razor-strop, comb, hair-brush, hat-brush, clothes-brush, nail-file, corkscrew, tweezers, stiletto, nail-cleaner, 2 corn-knives, xyphometer, 2 pairs scissors. Value, \$650.
124. Dressing case, "Compact." Natural color. Contains cologne bottle, pomatum bottle, soap box, shaving-brush, razor, razor-strop, comb, hair-brush, mirror, pair scissors, pocket-knife, button-hook, and nail-cleaner. Value, \$155.
125. Pocket-book. Green. Value, \$11.

## ALLIGATOR LEATHER GOODS—Continued.

126. Pocket-book. Natural color. Value, \$20.
127. Pocket-book. Natural color. Value, \$20.
128. Pocket-book. Natural color. Value, \$20.
129. Pocket-book. Natural color. Value, \$18.
130. Pocket-book. Natural color. Value, \$18.
131. Pocket-book. Natural color. Value, \$18.
132. Cigar case. Natural color. Value, \$6.50.
133. Cigar case. White. Value, \$6.50.
134. Cigar case. Brown. Value, \$6.50.
135. Cigar case. Natural color. Value, \$6.50.
136. Cigar case. Red. Value, \$6.50.
137. Cigar case. Black. Value, \$6.50.
138. Cigarette case. Black. Value, \$22.
139. Cigarette case. Green. Value, \$23.
140. Cigarette case. Red. Value, \$23.
141. Cigarette case. Brown. Value, \$24.
142. Cigarette case. White. Value, \$23.
143. Cigarette case. Natural color. Value, \$23.
144. Card case. Natural color. Value, \$30.
145. Card case. Natural color. Value, \$38.
146. Card case. Natural color. Value, \$20.
147. Card case. Natural color. Value, \$22.
148. Card case. Natural color. Value, \$16.
149. Card case. Natural color. Value, \$22.
150. Pocket-book. Natural color. Value, \$100.
151. Belt with silver buckle. Natural color. Silver chatelaine and silver bottle. Value, \$69.50.
152. Belt with silver buckle. Natural color. Silver chatelaine and silver bottle. Value, \$73.
153. Belt with silver buckle. Brown. Silver chatelaine and silver bottle. Value, \$80.50.
154. Belt with silver buckle. Natural color. Silver chatelaine and silver bottle. Value, \$39.50.
155. Belt with silver buckle. Natural color. Silver chatelaine and silver bottle. Value, \$39.50.
156. Card case. Natural color. Value, \$75.
157. Card case. Natural color. Value, \$75.
158. Cigar case. Natural color. Value, \$18.
159. Cigar case. Natural color. Value, \$22.
160. Blotter. Red. Value, \$22.
161. Blotter. Natural color. Value, \$22.
162. Blotter. Brown. Value, \$22.
163. Blotter. Black. Value, \$22.
164. Blotter. Brown. Value, \$35.
165. Blotter. Natural color. Value, \$30.

## ALLIGATOR LEATHER GOODS—Continued.

166. Blotter. Red. Value, \$65.
167. Blotter. Natural color. Value, \$60.
168. Blotter. Black. Value, \$80.
169. Railroad bag; fitted. Natural color. Contains tooth-brush bottle, shaving-brush bottle, long cologne bottle, short cologne bottle, flat cologne bottle, pomatum-jar, tooth-powder jar, soap-box, flask, shaving brush, soap-box, two pairs scissors, corkscrew, nail-file, cigar case, xyphometer, jewel-box, nail-cleaner, memorandum-book, comb, court-plaster case, two razors, razor strop, corn-knife, hair-brush, two pocket-knives, cloth-brush, button-hook, hat-brush, tweezers, and mirror. Value, \$875.
170. Bag; fitted. Natural color. Contains tooth-brush bottle, hair-pin bottle, soap-box, pomatum-jar, long cologne bottle, short cologne bottle, flat cologne bottle, salts bottle, inkstand, tooth-powder box, jewel-box, needle-case, paper-cutter, comb, hair-brush, cloth-brush, bonnet-brush, shoe-horn, mirror, button-hook, nail-file, stiletto, tweezers, corkscrew, xyphometer, pocket-knife, two pairs scissors, corn-knife, and nail-cleaner. Value, \$575.
171. Skin, medium size. Natural color. Value, \$6.

## ALLIGATOR LEATHER GOODS.

Exhibited by H. J. Mahrenholz, 1125 Broadway, New York.

1. Gondola slippers. Green. One pair, 1-14, 7½ D. Value, \$8.50.
2. Gondola slippers. Red. One pair, 3-12, 4½ C. Value, \$8.50.
3. Russet alligator slippers. One pair, 2-13, 6½ Q. Value, \$7.50.
4. Gondola slippers. Green. One pair, 5-10, 4½ D. Value, \$8.50.
5. House slippers. One pair, 4-11, 6½ 3. Value, \$7.50.
6. Ladies' Oxford ties. Dark red. One pair, 21-36, 3 C. Value, \$12.50.
7. Ladies' Creoles slippers. One pair, 34-35, 3½ B. Value, \$7.50.
8. Men's Oxford ties. One pair, 6-9, 6 C. Value, \$14.
9. Balmorals. White duck tops. One pair, 23-24, 7 C. Value, \$16.
10. Hunting boots. One pair, 7-8, 7½ D. Value, \$50.
11. Hunting shoes. One pair, 31-32, 8 E. Value, \$20.
12. Riding boots. One pair, 30-33, 8 C. Value, \$30.
13. Lady D'Orsey shoes. Black, satin-lined. One pair, 26-27, 4 A. Value, \$12.
14. Lady D'Orsey shoes. Red, satin-lined. One pair, 37-38, 4½ C. Value, \$12.
15. Ladies' Oxford ties. Blue, satin-lined. One pair, 15-20, 4 B. Value, \$14.
16. Oxford ties. Russet color, satin-lined. One pair, 16-19, 4 C. Value, \$14.

## ALLIGATOR LEATHER GOODS—Continued.

17. Ladies' Oxford ties. Red, satin-lined. One pair, 17-18, 4 C. Value, \$14.
18. Lady D'Orsey shoes. Red, satin-lined. One pair, 24-29, 4½ C. Value, \$12.
19. Lady D'Orsey shoes. Russet color, satin-lined. One pair, 25-28, 3 C. Value, \$12.

## LEATHER PREPARED FROM FISH SKINS.

## SALMON SKINS.

Dressed as leather and used in making water-proof shirts and boots by Magemut Eskimo. Nunivak Island, Alaska. 16,091. Collected by Dr. W. H. Dall.

## PARKY.

An upper garment made from the skin of codfish (?). Nunivak Island, Alaska. 10,347. Collected by Mr. W. H. Dall.

## EEL SKINS.

Highly esteemed by the Virginia negroes as a cure for rheumatism. Washington, D. C. 25,285. Collected by G. Brown Goode.

## STURGEON LEATHER.

Tanned skin of lake sturgeon (*Acipenser rubicundus*). Waukegan, Ill. 26,013. Wernich & Wandel.

## FISH SKINS.

Tanned skins of fish. Used by Eskimo for making boots. Anvik, Alaska. 38,795. Collected by E. W. Nelson.

## BOOTS.

Made of tanned fish skins. Anvik, Alaska. 38,794. Collected by E. W. Nelson.

## OVERALL-DRESS.

Made of tanned fish skins. Lower Yukon River, Alaska. 38,817. Collected by E. W. Nelson.

## FISH-SKIN.

Skin of dogfish (*Squalus americanus*). Used for polishing mackerel jigs, &c. Gloucester, Mass. U. S. Fish Commission.

## LEATHER.

Made from skins of cod (*Gadus morrhua*) Gloucester, Mass., 1882. Gloucester Isinglass and Glue Company.

## LEATHER.

Made from skins of cusk (*Brosmius brosme*). Gloucester, Mass., 1882. Gloucester Isinglass and Glue Company.



## SHOES.

Pair of "Newport ties," made from skins of cusk (*Brosmus brosme*). Gloucester, Mass., 1882. Gloucester Isinglass and Glue Company.

## VII.—MATERIALS EMPLOYED IN THE ARTS AND MANUFACTURES.

## 19. IVORY AND BONE.

## IVORY OF MAMMALS.

PAIR OF TUSKS OF WALRUS (*Rosmarus*).

One tusk is 41 inches long and weighs  $12\frac{1}{4}$  pounds; the other is the same length and weighs  $12\frac{1}{2}$  pounds. Alaska. Loan of Alaska Commercial Company, San Francisco, Cal.

## MANUFACTURED IVORY OF WALRUS.

Ivory in rough state. 24,819. Cane handles. 24,815-6. Chain and cross. 24,812. Knobs of ivory. 24,814. Scarf-slide. 24,813. Sword-handles. 24,817-8. Knife-handles. 24,820-2. Crochet-handles. 24,823. New York. U. S. Fish Commission.

## TUSKS OF WALRUS.

Scrimshawed with female figures and made into a picture frame. Noank, Conn. Capt. H. C. Chester.

IVORY OF NARWHAL (*Monodon monoceros*).

Specimen of tusk. New Bedford, Mass. Collected by J. T. Brown.

TEETH OF SPERM-WHALE (*Physeter macrocephalus*).

Rough. New Bedford, Mass. 15,290. Gift of G. J. Nickerson.

TEETH OF SPERM-WHALE (*Physeter macrocephalus*).

Polished. Newport, R. I. 24,906-8. Gift of J. H. Clark.

TOOTH OF SPERM-WHALE (*Physeter macrocephalus*).

Scrimshawed and mounted as watch case; figure of American eagle. Newport, R. I. 24,905. Gift of J. H. Clark.

TOOTH OF SPERM-WHALE (*Physeter macrocephalus*).

Scrimshawed with figure of crucifix and flowers. Newport, R. I. 24,904. Gift of J. H. Clark.

TOOTH OF SPERM-WHALE (*Physeter macrocephalus*).

Scrimshawed with figure of whaling ship. Newport, R. I. 24,901. Gift of J. H. Clark.

TOOTH OF SPERM-WHALE (*Physeter macrocephalus*).

Scrimshawed with figure of America in colors. Newport, R. I. 24,902. Gift of J. H. Clark.

TOOTH OF SPERM-WHALE (*Physeter macrocephalus*).

Scrimshawed with this legend: "Taken by the ship Montreal, of London, in the Pacific ocean from a one-hundred barrel whale, — \* —, 1835." Washington, D. C. 7,659. Gift of Mrs. Dove.

TOOTH OF SPERM-WHALE (*Physeter macrocephalus*).

Scrimshawed with figure of General Washington and American eagle. New Bedford, Mass. 24,888. Gift of George J. Nickerson.

## IVORY BALLS.

Turned from teeth of sperm-whale. New York. 24,836. Joseph Shardlow.

## IVORY OF REPTILES.

## JEWELRY.

Various articles of jewelry made from teeth of alligator (*Alligator mississippiensis*). Jacksonville, Fla. 26,895. E. F. Gilbert. Alligator teeth are extensively used for jewelry, whistles, cane handles, buttons, &c.

## BONE OF MAMMALS.

## "OS MIRABILIS" OF WALRUS.

Alaska. 9,476. Gift of General George H. Thomas, U. S. A.

## JAW-BONE OF A SPERM-WHALE.

In a crade state. 29,374. U. S. National Museum.

## PARASOL-HANDLES.

Made from sperm-whale's jaw. Philadelphia. 29,232-5. Harvey & Ford.

## CHOPPING-KNIFE.

Made from sperm-whale's jaw. 24,909. Prof. S. F. Baird.

## SAIL-THIMBLE.

Made from bone of whale. Beverly, Mass. 25,791. Gift of J. W. Foster.

## SEAM RUBBER.

Made from the jaw-bone of sperm-whale. Used by sail-makers to rub along seams. Beverly, Mass. 25,793. Gift of Frank Westerberger.

## SAIL-MAKER'S HAND-FID.

Made at sea from jaw-bone of sperm-whale. Middletown, Conn.  
25,650. Gift of A. R. Crittenden.

## SAW-FRAME.

Made at sea from bone of sperm whale. New Bedford, Mass.  
25,655. Gift of I. H. Bartlett & Sons.

## PULLEY.

Made from jaw-bone of sperm-whale. Provincetown, Mass. 25,801.  
Gift of E. H. Cook.

## PULLEY BLOCK.

Made at sea from jaw-bone of sperm-whale. Middletown, Conn.  
25,649. Gift of A. R. Crittenden.

## SEINE NEEDLE.

Made from jaw-bone of sperm-whale. Wellfleet, Mass. 25,713.  
Gift of N. H. Payne.

## COG-WHEEL.

A ratchet-wheel made of ivory (pan of sperm-whale jaw). Length,  
 $4\frac{3}{4}$  inches. New Bedford, Mass., 1882. 57,064. Gift of Daniel  
Kelleher. Scrimshaw work, made at sea by a whaleman for  
some mechanical device.

## 20. BALEEN.

## WHALEBONE IN A CRUDE STATE.

## WHALEBONE.

Bunch of long strips prepared by the Eskimo. Mackenzie River  
District, 1863. 1,116. Collected by Robert MacFarlane.

## WHALEBONE.

Bunch of long strips prepared by the Eskimo. Mackenzie River  
District, 1863. 1,108. Collected by Robert MacFarlane.

## ATLANTIC FINBACK WHALEBONE.

Slab of baleen or whalebone from jaw of finback whale (*Sibbaldius  
tectirostris*). Provincetown, Mass., 1882. 57,197. Collected  
by J. T. Brown.

## PACIFIC FINBACK WHALEBONE.

Slabs of baleen or whalebone from jaw of finback whale of Cali-  
fornia. Coast of California. 12,312. Collected by Capt. C.  
M. Scammon. This entire series of slabs are from one side of  
the whale's jaw.

## SULPHUR-BOTTOM WHALEBONE.

Slab of baleen or whalebone from jaw of Pacific sulphur-bottom whale (*Sibbaldius sulfureus*.) Port Townsend, Washington Territory. 72,692. Collected by J. G. Swan.

## CALIFORNIA GRAY WHALEBONE.

Slabs of baleen or whalebone from jaw of California gray whale (*Rhachianectes glaucus*). Coast of California. 12,052. Collected by Capt. C. M. Scammon.

## ATLANTIC HUMPBACK WHALEBONE.

Slab of baleen or whalebone from jaw of humpback whale of the Atlantic Ocean. Length, 7 feet 5 inches. New Bedford, Mass., 1883. 57,136. Gift of I. H. Bartlett & Sons.

## PACIFIC HUMPBACK WHALEBONE.

Slabs of baleen or whalebone from jaw of Pacific humpback whale (*Megaptera versabilis*). Coast of California. 12,311. Collected by Capt. C. M. Scammon.

## SOUTH SEA WHALEBONE.

Slab of baleen or whalebone from jaw of South Sea right whale. Length, 6 feet 3 inches. New Bedford, Mass., 1883. 57,132. U. S. Fish Commission.

## NORTHWEST WHALEBONE.

Slab of baleen or whalebone from jaw of Northwest coast, or Pacific right whale (*Balæna Sieboldii*). Length, 7 feet 2 inches. New Bedford, Mass., 1883. 57,134. U. S. Fish Commission.

## JAPAN WHALEBONE.

Slab of baleen or whalebone from jaw of right whale. Length, 8 feet 4 inches. New Bedford, Mass., 1883. 57,135.

## NORTHWEST WHALEBONE.

Slabs of baleen or whalebone from jaw of Pacific right whale (*Eubalæna Sieboldii*) taken in the North Pacific Ocean. Collected by Capt. C. M. Scammon. 15,402.

## ARCTIC WHALEBONE.

Slab of baleen or whalebone from jaw of Bowhead whale (*Balæna mysticetus*), taken in Pacific Arctic Ocean by bark Fleetwing, in May, 1882. Length, 10 feet 4 inches. New Bedford, Mass., 1882. 57,575. Gift of J. & W. R. Wing.

## ARCTIC WHALEBONE.

Slab of baleen or whalebone from jaw of Arctic or Bowhead whale (*Balæna mysticetus*). Length, 9 feet 5 inches. New Bedford, Mass., 1883. 57,133. Gift of I. H. Bartlett & Sons.

## WHALEBONE IN A MANUFACTURED STATE.

## WHALEBONE, STEAMED, SPLIT, AND POLISHED.

1. Dress-bone. Whalebone prepared for dress-maker's use. 24,950.
2. Whalebone. Prepared for suspender-maker's use. 24,946.
3. Whalebone. Prepared for bonnet-maker's use. 24,945.
4. Whalebone. Prepared for umbrella-maker's use. 24,941.
5. Whalebone. Prepared for parasol-maker's use. 24,940.
6. Gross dress-bone. Whalebone prepared for dress maker's use. 24,951.
7. White dress-bone. Whalebone (white) prepared for dress-maker's use. 24,948.
8. Whalebone. Prepared for brush-maker's use. 24,978.
9. Whalebone. Prepared for ribbon-weaver's use. 24,942.
10. Whalebone. Prepared for hat-maker's use. 24,943.
11. Whalebone. Prepared for cap-maker's use. 24,944.
12. Whalebone. Prepared for neck-stock-maker's use. 24,947.
13. Whalebone. Prepared for corset-maker's use. 24,952.
14. Round dress-bone. Whalebone prepared for dress-maker's use. 24,949.
15. Whalebone cane, plain. 24,937.
16. Whalebone cane, twisted. 24,936.
17. Whalebone cane. Black and white, twisted. 24,938.
18. Whalebone boot-shanks. 24,973.
19. Whalebone tongue-scrapers. 24,967.
20. Whalebone probang. 24,966.
21. Whalebone riding-whip. Made of black and white whalebone, twisted. 24,935.
22. Whalebone riding-whip. 24,934.
23. Whalebone graining-comb. Used by painters. 24,972.
24. Whalebone caterpillar brush. 24,980.
25. Whalebone shavings. Used by upholsterers. 24,981.
26. Whalebone back supporter. 24,963.
27. Whalebone flue-brush. 24,979.
28. Sample whalebone. 24,983.
29. Whalebone divining-rod. 24,959.
30. Whalebone hip busk-bone. 24,954.
31. Whalebone. Price list, samples. 24,984.
32. Whalebone busk. 24,961.
33. Whalebone. Prepared for artificial fore-arms. 24,964.
34. Whalebone plait-raiser. 24,968.
35. Whalebone pen-holder. 24,969.
36. Whalebone corset-clasps. 24,953.
37. Whalebone drill-bow. 24,960.
38. Whalebone billiard-cushion springs. 24,957.
39. Whalebone paper-cutter. 24,971.

WHALEBONE, STEAMED, SPLIT, AND POLISHED—Continued.

40. Whalebone rule. 24,985.

41. Whalebone. Prepared for whip-maker's use (patent). 24,982.  
Boston, Mass. Prepared at factory of J. A. Sevey.

WHIP-STALK.

Whalebone and rattan; finished, ready for covering. 24,960.  
U. S. Fish Commission.

WHALEBONE AND RATTAN.

Fitted, ready for sticking together for whip-stalk. 24,859. Pre-  
pared by American Whip Company. Westfield, Mass.

CANE.

Walking-stick, made of whalebone (baleen), by a whaler at sea  
(schrimshaw work). Heart, several pieces, wrapped spirally  
with strips of baleen and wormed with cord of the same ma-  
terial; three Turk's-heads (baleen) at top, bottom, and center.  
Length, 33 inches. Edgartown, Mass., 1882. Gift of J. W.  
Coffin. 56,897.

21. PLATES AND SCALES.

TORTOISE-SHELL.

TORTOISE-SHELL.

Pacific hawk's-bill turtle (*Eretmochelys squamata*.) Pacific coast.  
12,387-90. U. S. Fish Commission.

COMMERCIAL TORTOISE-SHELL.

New Bedford, Mass., 1875. 24,890. Gift of George Y. Nickerson.

SCALES OF FISHES.

SCALES OF SHEEPSHEAD (*Archosargus probatocephalus*). Cape Cod to  
Florida; Gulf of Mexico.

1. Crude scales. 25,480.

2. Scales cleaned and prepared for use. 25,481.

3. Brooch and ear-rings. 25,482.

4. Sprays of flowers. 25,483-6.

5. Sprays of flowers, dyed. 25,487.

6. Necklace and cross. 25,488.

7. Brooch and ear-rings. 25,489.

8. Brooch and ear-rings, dyed. 25,490.

Philadelphia, Pa. Received from F. C. Keergaard & Co.

SCALES OF SHEEPSHEAD (*Archosargus probatocephalus*).

Frame containing wreath of fish-scale ornaments. Jacksonville,  
Fla. Mrs. George W. Frazier.

SCALES OF STURGEON (*Acipenser* sp.).

Dried and prepared for bric-a-brac, buttons, &c. New York. Albany Beef Packing Company. 372 Greenwich street.

## 22. PEARLS AND SHELLS.

## PEARLS AND NACRE.

Embracing the pearl-yielding shells, with the pearls and the mother-of-pearl in the rough state, with the manufactured buttons, handles, and jewelry, pearl-powder, inlaid work, and *papier-maché*, ornamented with mother-of-pearl; ear-shells (*Haliotidæ*) used in manufacture of buttons, handles, inlaid work, and pearl-powder; pearl oysters (*Aviculidæ*), with pearls and nacre; river mussels (*Unionidæ*), with pearls and nacre, crude and polished.

(For list of specimens, see Section D, "Catalogue of the Economic Mollusca, &c.")

## SHELLS.

Cameo shell and shells of *Cypræa*, *Rotella*, *Oliva*, *Turritella*, &c., mounted as buttons and jewelry, composition shell work for box covers and frames, made by gluing shells in mosaic; cuttle-fish bone from *Sepia officinalis*, used as a pounce, as a dentifrice, as polishing powders, for taking fine impressions in counterfeiting, and as food for birds; concretions from the stomach of *Astacus*, known as "crab's-eyes" and "crab-stones," and used as antacids; shell of king-crab (*Limulus polyphemus*), used as a boat-bailer.

(For list of specimens, see Section D, "Catalogue of Economic Mollusca," and Section B, Catalogue of Economic Crustaceans, &c.)

## 23. FISH GLUE AND ISINGLASS.

## AIR-BLADDERS, OR SOUNDS OF FISH, AND FISH TONGUES, USED IN THE MANUFACTURE OF RIBBON ISINGLASS AND GLUE.

## COD SOUND.

Air-bladders of cod (*Gadus morrhua*) dried. Used in the manufacture of ribbon isinglass. George's Bank. Cape Ann Isinglass and Glue Company. Rockport, Mass. 12,126.

## COD SOUNDS.

Air-bladders of cod (*Gadus morrhua*), used for manufacture of fibrous isinglass. Liquid isinglass can also be made from these sounds. Value, 17 cents per pound, dry. Gloucester, Mass. Gloucester Isinglass and Glue Company.

## HAKE SOUND.

Air-bladder of hake (*Phycis chuss*), split and dried. Used in manufacture of ribbon isinglass. Bay of Fundy. Cape Ann Isinglass and Glue Company. Rockport, Mass. 12,125.

## HAKE SOUNDS.

Air-bladders of hake (*Phycis chuss*), split and dried, for manufacture of fibrous isinglass. Liquid isinglass can also be made from these sounds. George's Banks. Value, 75 cents per pound, dry. Gloucester, Mass. Gloucester Isinglass and Glue Company.

## SQUETEAGUE SOUND.

Air-bladder of sea-trout, weak fish, or squeteague (*Cynoscion regalis*), used in manufacture of ribbon isinglass. Also used in dried state for clarifying cider. Long Island Sound to South Carolina. Cape Ann Isinglass and Glue Company. Rockport, Mass. 25,267.

## "CRAB" SOUND.

Air-bladder of "foreign crab" (species unknown), used in manufacture of ribbon isinglass. Cape Ann Isinglass and Glue Company. Rockport, Mass. 25,268.

## "TROUT" SOUND.

Air-bladder of foreign "sea-trout" (an unknown fish), used in manufacture of ribbon isinglass. East Indies. Cape Ann Isinglass and Glue Company. Rockport, Mass.

## BOOK SOUND.

Air-bladder of beluga or sturgeon, used in the manufacture of ribbon isinglass. Russia. Cape Ann Isinglass and Glue Company. Rockport, Mass.

## TONGUE SOUND.

Air-bladder of an unknown sciaenoid fish. Used in the manufacture of ribbon isinglass. Venezuela. Cape Ann Isinglass and Glue Company. Rockport, Mass.

## PURSE SOUND.

Air-bladder of an unknown fish. Used in manufacture of ribbon isinglass. Cape Ann Isinglass and Glue Company. Rockport, Mass.



## RIBBON ISINGLASS FROM FISH SOUNDS.

(Made by soaking and rolling the sounds.)

## RIBBON ISINGLASS.

First quality. Made from sounds or air-bladders of hake (*Phycis chuss* and *P. tenuis*). Rockport, Mass., 1880. 39,162. Cape Ann Isinglass and Glue Company.

## RIBBON ISINGLASS.

Second quality. Made from sounds or air-bladders of hake (*Phycis chuss*) and cod (*Gadus morrhua*). Rockport, Mass., 1880. 39,163. Cape Ann Isinglass and Glue Company.

## RIBBON ISINGLASS.

Third quality. Made from sounds or air-bladders of hake (*Phycis chuss*) and of other fish. Rockport, Mass., 1880. 39,164. Cape Ann Isinglass and Glue Company.

## ISINGLASS.

Made from sounds of Lake sturgeon (*Acipenser rubicundus*). Lake Erie. 12,120. Sandusky, Ohio. Schacht Brothers.

## ISINGLASS.

Prepared from air-bladder of sturgeon (*Acipenser* sp.). New York. S. Schmidt & Bro.

## ISINGLASS.

Prepared from sturgeon (*Acipenser* sp.). One pint bottle. New York. Albany Beef Packing Company, 372 Greenwich street. "The use of this article is well known for clarifying purposes by confectioners, brewers, among twine dealers, and also for cement and manufacture of laces, &c."

## INDIAN GLUE.

## FISH TONGUES.

Dried tongues of fish (probably cod). Prepared and used by the Sitka Indians in making glue. Sitka, Alaska. 20,744. Collected by J. G. Swan.

## GLUE FROM FISH HEADS AND BONES.

## FISH GLUE.

Made from heads of cod (*Gadus morrhua*), cusk (*Brosmius brosme*), and other *Gadidæ*. This glue is not so strong as that made from fish-skins. Gloucester Isinglass and Glue Company. Gloucester, Mass.

BONE DUST OF STURGEON (*Acipenser* sp.).

Mixed with certain chemicals this dust is said to produce a very fine and durable cement for chinaware, &c. Albany Beef Packing Company, 372 Greenwich street. New York.

## GLUE FROM FISH-SKINS.

Liquid isinglass for adhesive paper, labels, and envelopes; isinglass for court-plasters; pure fish glues (hard and liquid, free from salt), for leather belting, roll cots, card felting, &c. Exhibit of Gloucester Isinglass and Glue Company, Gloucester, Mass.

1. Sample of the stock selected for making glue just as it comes from the salt fish. "The cod (*Gadus morrhua*) and cusk (*Brosmius brosme*) skins are preferred to any others as they contain a larger percentage of glue or isinglass. Last year there were about 1,500 tons of this kind of stock used in Gloucester for glue and isinglass, at a value of \$15 per ton."
2. Cod skins, after being cleaned and the salt removed, ready to be made into isinglass or liquid glue.
3. Cusk skins, after being cleaned and the salt removed, ready to be made into glue.
4. Hake (*Phycis chuss*) skins, after the salt has been removed and cleaned. The percentage of glue is small in these skins.
5. Haddock (*Melanogrammus aeglefinus*) skins prepared for glue. The percentage of glue is small.
6. Pollock (*Pollachus carbonarius*) skins, after being cleaned and salt removed. The percentage of glue is small.
7. Show case or frame, with rolls of colored isinglass made from the skins of cod and cusk.
- 8, 9. Cod and cusk isinglass made from the skins. "It is used in very large quantities in the United States for the manufacture of court-plaster. The manufacturers produce yearly about \$50,000 worth of goods."
10. Dry fish-glue made from haddock, hake, and pollock skins.
11. Liquid isinglass or glue used for gummed paper labels and envelopes, from cod skins.
12. Liquid isinglass, for the same use, made from cusk skins.
13. Liquid isinglass made from hake skins.
14. Liquid isinglass made from haddock skins.
15. Liquid isinglass made from pollock skins.
16. Mucilage made from fish-skins, for office and express uses.
17. Sample book of gummed paper from the Dennison Manufacturing Company, of Boston, Mass. "This was gummed with liquid isinglass; 10,000 reams of paper were used in the United States last year. The isinglass and labor on same would amount to

\$25,000, and the paper would cost as much more. After this it goes to the printer and is worked up into all kinds of labels, &c. E. W. Dennison, president Dennison Manufacturing Company, No. 19 Milk street, Boston, says: 'We have used the liquid glue manufactured by the Gloucester Isinglass and Glue Company for the past six or seven years, and have found it constantly improving. We do not know of any substitute equal to it.'

18. Scrap book wherein liquid isinglass is used; from D. Slote & Co., of New York. "They say: 'Gentlemen: We take pleasure in bearing testimony to the excellent quality of the liquid isinglass manufactured under John S. Rogers' patent process. We have used it extensively and find it a very superior article.'" (Daniel Slote & Co., Blank Book Manufacturers, William street, New York.)"
19. Leather belting wherein dry isinglass or glue is used. "Messrs. I. B. Williams & Son, of Dover, N. H., say: 'We have used your isinglass in cement for our leather belting for the last five or six years, and find it superior to anything we ever used.'"
20. Sheet glue, dried in pans, used in the manufacture of leather belting.
21. Card belting, prepared with liquid isinglass.
22. Isinglass made from fish-skins and used in the manufacture of adhesive plaster, corn and bunion plasters, gummed paper, and numerous other articles.
23. Samples of court-plaster, adhesive plasters, and corn and bunion plasters, made with liquid isinglass.
24. Spurr's paper veneer, put on wood with liquid glue; also, samples of same from Charles W. Spurr, of Boston, Mass.
25. Box-work where fish-glue is used for putting on velvet and plush, from George W. Brooks, Boston, Mass.
26. Liquid glue, in bottles, from fish-skins, for family use.
27. Glues and isinglass, put up in boxes for the trade.
28. Mechanics' liquid glue, for all kinds of wood-work, boots and shoes, paper boxes, &c., in cans.
29. Sample of "frozen" fish-glue.

#### FISH-GLUE AND ITS APPLICATIONS.

Exhibit by the Russia Cement Company, Gloucester, Mass., of liquid fish-glue, the skins used in its manufacture, and illustrations of its use in various industries.

1. Skins of cod (*Gadus morrhua*) and cusk (*Brosmius brosme*), desalted and ready for cooking and pressing to extract the glue. 56,905.

2. Residuum left in the bags after the glue has been pressed from the cooked skins. To be ground as fish guano. 56,906.
3. Le Page's mucilage. The crude glue from the cooking tanks and bags condensed to suitable consistency and preserved from decomposition by the addition of chemicals. 56,913.
4. Russia belting cement. Condensed more than mucilage and specially prepared for belting, card clothing, and top-roll manufacturers. 56,910.
5. Le Page's carriage glue. Of suitable consistency for fine wood-work. 56,911.
6. Le Page's liquid glue in bottles and cans. Adapted for general use at home. 56,912.
7. Le Page's fish-glue, No. 12, in cans. Adapted for ordinary wood-work. 56,914.
8. Le Page's fish-glue, No. 16, in cans. Prepared for boot and shoe manufacture. 56,915.
9. Le Page's fish-glue, No. 20 F, in cans. Prepared for manufacture of gum labels and similar uses. 56,916.
10. Le Page's fish-glue, No. 20 X, in cans. Prepared for sizing woolens and carpets. 56,917.
11. Le Page's fish-glue, No. O. C, in cans. Prepared for manufacture of table and floor oil-cloths. 56,918.
12. Le Page's bleaching glue, No. S. S., in cans. Prepared for sale to straw goods manufacturers. 56,919.
13. Le Page's bleaching glue, No. S. S., in cans. Reduced to suitable consistency, for use by manufacturers of straw hats, &c. 56,920.
14. Hard glue. Made from skins of cod and cusk. For general use. 56,922.
15. "Frozen glue." A preparation of white fibrous glue. Made from skins of cod and cusk. Adapted for brewers' use. 56,922.
16. Gummed paper. Prepared with glue from fish-skins. 56,931.
17. Calendars. Prepared with glue from skins of cod and cusk. 56,928.
18. Table oil-cloths. Samples of oil-cloth, fish-glue being used on the back to prevent the oil soaking through. 56,927.
19. Ladies' boot-heel. Built with fish glue, without the use of nails. 56,930.
20. Ladies' shoe. Cemented with glue from fish skins. The glue is used for attaching the linings to the uppers previous to sewing. Called by the trade "gumming"; for cementing the lap over the channel where the sole is sewed to the upper; for coating between the soles to prevent the oil from the upper leather from striking through and discoloring the sole. Called by the trade "oil proofing"; for building heels without the use

of nails or pegs; for "waxing" the thread with which the sole is sewed, making the thread run smoothly and glueing every stitch so that the boot will not rip. 56,925.

21. WOOD AND FELT.

Cemented with glue made from fish skins. Used by organ and piano makers. 56,903.

22. PARQUET FLOORING.

Model. Scale,  $1\frac{1}{2}$  inches to foot; constructed with glue from fish skins. 56,902.

23. PIECE OF PACKING-CASE.

Sample showing the manner in which fish-glue is used for sealing the joints of packing-cases (for exporting organs and pianos) for the purpose of excluding the moisture. 56,904.

24. SCRAP-BOOK.

Showing the use of fish-glue in the manufacture of Mark Twain's Scrap-Book. 56,926.

25. LEATHER BELTING.

Cemented with glue from fish skins. 56,924.

26. STRAW HATS.

Two colored and two bleached with glue or sizing from fish skins. 56,929.

27. FISH-SIGN.

Small pieces of wood glued together in shape of fish. 56,923.

28. CARRIAGE-AXLE.

Iron and wood cemented with glue from fish skins. "The iron axle is firmly glued to its wooden bed, making a perfect finish, excluding moisture from the joint, and greatly increasing its strength." 56,901.

29. QUILL.

This quill has a ferrule of hard wood, with the grain running spirally, let into an annular groove in the head and cemented with glue from fish skins. A sample of the quill is also shown. 56,899.

30. AGATE-EDGE SPOOL.

Made with felt cloth and glue from fish skins. 56,900.

"The fact that fish-glue, or isinglass, as it is generally called, is very much stronger and more flexible than glue made from the skins of animals, has long been known, but until within a few

## USES OF FISH-GLUE—Continued.

years the high cost of the raw material and the great amount of labor involved in its manufacture have precluded its general adoption for mechanical purposes. It was known to the ancients by the name of *ichthyocolla*, or fish-glue, and is often alluded to by Dioscorides and Pliny. In different parts of the world it is obtained from the swimming bladders, or sounds, of different kinds of fish, and the isinglass of commerce is consequently of various qualities. The best is found among the varieties imported from Russia, particularly that which is brought to St. Petersburg from Astrakan, and said to be obtained from the sturgeon, called the beluga, of the Caspian Sea and the rivers flowing into it. These sounds, after being cleaned and dried, are called Russia isinglass, and were until within a few years largely used in the manufacture of cement for leather belting, also in other industries where adhesives of the greatest possible strength and flexibility are required. They are dissolved in water by boiling, and are generally used mixed with other glues.

“In America the sounds of hake and other fish, after being softened in water, are rolled by powerful machinery into very thin ribbons and dried, forming what is known as ribbon isinglass. This is used principally for the fining of beer.

“The Turks use a fish-glue for fastening precious stones in their settings, and the Laplanders join together the pieces of wood of which their bows are made with glue extracted from the skins of perch. This glue, which was made only in small quantities, owed a considerable portion of its wonderful tenacity to the fact that the *first time it dried was upon the article cemented*. But, though it has long been known that glue is much stronger when freshly made than after it has been dried and redissolved, it has been the custom, from time immemorial, to dry all glue into hard sheets or cakes, in order that it might thus be preserved from putrefaction until wanted for use. This is a tedious and expensive operation, involving great risk to both the manufacturer and consumer, as sudden changes in the weather while the glue is drying will often cause the total loss of a whole batch; or, what is worse for the consumer, may so taint the glue that, though saved to the manufacturer by subsequent drying, the injury which it has sustained will appear whenever it is dissolved for use. The evils of this method of making glue are so great that many attempts have been made to overcome them, and thousands of dollars have been expended by many large manufacturers in unsuccessful efforts to find some means of preserving glue in a liquid form without injury to its adhesive qualities. It was found, however, that

## USES OF FISH-GLUE—Continued.

though glue could be preserved from decomposition, the acids employed for that purpose not only injured the material upon which the glue was used, but caused slow chemical changes in the glue itself, greatly impairing, and after a time completely destroying, its adhesiveness. The attempt was, therefore, abandoned, and, except in the preparation of glue for use in small quantities, where convenience was of more importance than strength or durability, the old method continued to be universally employed. This was the state of the art when the inventor of liquid fish glue began his experiments. His attention was first called to the practical difficulties to be encountered in the working of glue while engaged in the business of manufacturing furniture. Becoming convinced that there ought to be some way to avoid these difficulties, he commenced a long series of careful experiments, which, carried on through many discouragements and repeated failures, finally resulted in the discovery of a new method of manufacturing glue, by which it may be preserved in liquid form so as to retain its original strength for years in any climate.

“Careful experiment showed what kind of raw material possessed the qualities of strength and flexibility in the highest degree, and resulted in the production of the Russia Belting Cement, so called because it has proved to be superior to, and is largely used in place of, Russia isinglass. This cement, which is a liquid isinglass of great purity, specially prepared for use upon leather, is used by nearly all the large manufacturers of leather-belted in the United States, and is now being introduced in foreign countries.

“The isinglass, after being separated from the raw material by steam extractors, which allow the shortest possible exposure to heat, is passed through a refining process, by which any impurities contained in the liquid are removed. It is then brought down to the proper density by evaporators, designed expressly for this purpose, which perform their work without heating the liquid any hotter than can be comfortably borne by the naked hand. After being evaporated to the proper consistency the liquid isinglass is subjected to chemical treatment and run into cooling tanks, from which it is drawn into barrels ready for shipment.

“The business of preparing dried codfish for the market by stripping off the skins and bones and packing the fish in small boxes, which was commenced in the year 1872, had at this time grown to such magnitude that nearly 3,000 tons of skins and bones were produced annually in the city of Gloucester alone. A very small portion of this material was used in the manufact-

## USES OF FISH-GLUE—Continued.

ure of hard glue, but all attempts to preserve the glue in a liquid form, for any length of time, had proved complete failures.

- “The same process of treatment which had proved so successful in preserving the liquid isinglass before referred to was, however, found to be equally capable of preserving glue made from this material, and its manufacture was therefore immediately commenced.
- “Further experiments developed the fact that certain chemicals, when combined with liquid glue so prepared, were protected from oxidation, so that when the glue was thinned down for sizing purposes the chemicals were in the best possible condition for action.
- “One of the most valuable of the special preparations resulting from this discovery is bleaching glue for the sizing of straw goods. By the use of this glue the process of sulphur bleaching is entirely dispensed with, as the sizing itself bleaches the goods so perfectly that not only is half the work saved, but straw and chip goods sized with it, instead of turning yellow, *grow whiter with age*, and possess a gloss unattainable by the use of any other glue.
- “For sizing textile fabrics the No. 20 X is found to be specially valuable on account of its flexibility and the extreme smoothness which it gives to the yarn, so that, as a prominent manufacturer remarked, ‘it goes through the looms as if greased.’
- “For the manufacture of table oil-cloths a special grade is prepared called “O. C.” glue, by the use of which the oil and paint is prevented from striking through the cloth, while the smoothness and flexibility of the goods are very greatly improved.
- “For gummed paper and envelopes the No. 20 F is unequalled, being so extremely adhesive that only a very thin coating need be applied to the paper. It is more economical than any other substance used for the purpose; does not curl the paper; can be printed over without injury to the type; is pleasant to taste and smell; and being preserved *without the use of poisonous acids*, will not discolor the paper or make the tongue sore, which is a serious objection to many other glues.
- “For court-plaster it is preferred above all other adhesives, its ingredients making it not only absolutely harmless, but positively beneficial when used as a dressing for wounds.
- “In the manufacture of artificial flowers it is found to give an elastic, glossy finish, and brings out the colors in a manner unattainable by the use of any other glue.
- “In taxidermy it is superior to anything known for sticking in feathers and resisting the action of moths and insects.



## USES OF FISH-GLUE—Continued.

“For family and office use the bottle glue for general repairing, and the mucilage for gumming paper, are considered very convenient. Not only articles of wood, but crockery, glass, and even cast iron can be repaired with it so as to bear the rough handling of daily use. A little tissue paper, applied with either the family glue or the mucilage, makes an excellent dressing for flesh wounds, as it holds the parts in perfect position, and causes rapid healing, being composed of the same substances as the best court-plaster, and having no deleterious ingredient whatever.

“For wood-work it possesses properties of such peculiar value that in some branches of this industry operations are now easily performed which would be exceedingly difficult, if not impossible, with any other glue.

“Le Page’s carriage glue is specially designed for use upon fine wood-work, and is largely used by house joiners and other workers in fancy woods, for whose convenience it is put up in tin cans ready for use. Its points of advantage over other glues are—

1. “Being a liquid it is always ready for use, and can be applied as easily as paint.
2. “It is very much stronger than any other glue.
3. “Being very fine grained it will ‘go further’ than any other glue, spreading out better and making a closer joint.
4. “If the parts do not come together properly the glue itself will make strong work, even in a very open joint, only it will take longer for it to dry.
5. “Work glued with it will stand exposure to moisture and heat better than that done with any other glue.
6. “It will glue iron to wood, and is used for that purpose in the manufacture of light buggies, the iron or steel axles being glued to their wooden beds so perfectly that the joint cannot be detected by the eye.
7. “Having great penetrating power it will take firm hold of very close-grained woods, or ivory, upon which other glues would have but little or no effect.
8. “It can be easily mixed with white lead for water-proof work, or with cattle glue for the purpose of improving the strength of the latter.
9. “Articles glued with it may be turned in a lathe, or otherwise worked, without dulling the tools, practical experiments having shown its superiority to cattle-glue in this respect to be as nine to one.
10. “But perhaps its most important peculiarity is that it does not set as quickly as cattle-glue, so that *work done with it can be*

## USES OF FISH-GLUE—Continued.

*carefully and deliberately adjusted to position without the necessity of heating the stock.* Hence many kinds of work which were formerly extremely difficult if not impossible to perform perfectly are by the use of this glue rendered as easy and certain as ordinary painting. This property is found to be of special importance in the gluing of articles which cannot be heated, as the reed-boards of cabinet organs, large panels in the bodies of carriages, and in the interior finish of buildings and railway cars, and in all other places where cattle-glue would be likely to chill before the work could be got into position." (Circular of Russia Cement Company.)

## 24. SPONGES.

## AMERICAN COMMERCIAL SPONGES.

Collection of Florida sponges: Glove sponge (*Spongia graminea*); sheep's-wool sponge (*Spongia equina*, subspecies *gossypina*); boat sponge (*Spongia equina*, subspecies *meandriniformis*); grass sponge (*Spongia equina*, subspecies *cerebriiformis*); and yellow sponge (*Spongia agaricina*, subspecies *corlosia*, *dura*, and *punctata*).

(For list of specimens and information about the Florida sponge fishery, see Section B, "Collection of Economic Crustaceans Worms, Echinoderms, and Sponges.")

## 25. GELATINE.

PREPARED FROM IRISH MOSS (*Chondrus crispus*).

## SPECIMENS OF IRISH MOSS (COMMERCIAL).

(a) Moss as it comes from the rocks; (b) moss partly bleached; (c) moss bleached for market. Scituate, Mass. 32,722. U. S. Geol. Surv. Geol. Surv. Cole.

## 26. OILS AND FATS.

## MAMMAL OILS.

## CRUDE SPERM OIL.

From sperm whale (*Physeter macrocephalus*). New York. 57,105. Collected by Jasper Pryer.

## NATURAL SPERM OIL.

New York. 57,106. Collected by Jasper Pryer.

## NATURAL "WINTER" SPERM OIL.

New Bedford, Mass. 35,546. I. H. Bartlett & Sons.

## BLEACHED SPERM OIL.

New York. 57,107. Collected by Jasper Pryer.

## BLEACHED "WINTER" SPERM OIL.

New Bedford, Mass. 24,895. George Delano & Co.

## SPERMACETI.

Crude, black cake. New York. 57,110.

## SPERMACETI, REFINED.

New York. 57,111. Collected by Jasper Pryer.

## SPERMACETI CANDLES (size 4).

New York. 57,112. Collected by Jasper Pryer.

## SPERM-OIL SOAP.

New York. 57,128. Collected by Jasper Pryer.

OIL OF RIGHT-WHALE (*Balæna* sp.).

New London, Conn. 25,055. Gift of Haven, Williams & Co.

OIL OF HUMPBACK WHALE (*Megaptera* sp.).

New York. 57,099. Collected by Jasper Pryer.

CRUDE ARCTIC WHALE OIL FROM BOWHEAD WHALE (*Balæna mysticetus*).

New York. 57,100. Collected by Jasper Pryer.

CRUDE SOUTHERN WHALE OIL FROM SOUTHERN RIGHT-WHALE (*Balæna* sp.).

New York. 57,101. Collected by Jasper Pryer.

## NATURAL WHALE OIL.

New York. 57,102. Collected by Jasper Pryer.

## NATURAL "WINTER" WHALE OIL.

New Bedford, Mass. 35,550. I. H. Bartlett & Sons.

## BLEACHED WHALE OIL.

New York. 57,103. Collected by Jasper Pryer.

## BLEACHED "WINTER" WHALE OIL.

New Bedford, Mass. 39,220. I. H. Bartlett & Sons.

## EXTRA-BLEACHED WHALE OIL.

New York. 57,104. Collected by Jasper Pryer.

## WHALE-OIL "FOOTS."

New York. 57,108. Collected by Jasper Pryer.

## WHALE-OIL SOAP.

New York. 57,127. Collected by Jasper Pryer.

OIL OF SULPHUR-BOTTOM WHALE (*Sibbaldius* sp.).

New London, Conn. 25,056. Haven, Williams & Co.

OIL OF HARBOR SEAL (*Phoca vitulina*).

Provincetown, Mass. 25,979. Gift of Capt. N. E. Atwood. Used for lubricating.

OIL OF SEA-ELEPHANT (*Macrorhinus leonina*).

South Georgia Island, South Atlantic Ocean. 25,058. Gift of Haven, Williams & Co. Used for lubricating and for illumination.

BLEACHED SEA-ELEPHANT OIL (*Macrorhinus leonina*).

New York. 39,274. Collected by Jasper Pryer. Used for lubricating and for illumination.

NATURAL "WINTER" SEA-ELEPHANT OIL (*Macrorhinus leonina*).

New Bedford, Mass. 35,548. U. S. Fish Commission. For lubricating and illumination.

BLEACHED "WINTER" SEA-ELEPHANT OIL (*Macrorhinus leonina*).

New Bedford, Mass. 35,549. U. S. Fish Commission. For lubricating and illumination.

OIL FROM HEAD OF GRAMPUS (*Grampus griseus*).

Extracted by exposure to the sun. Provincetown, Mass. 25,733. Gift of E. E. Small. Used for lubricating fine machinery.

PRESSED OIL OF GRAMPUS (*Grampus griseus*).

Provincetown, Mass. 25,737. Gift of E. E. Small. Used for lubricating fine machinery.

OIL OF BELUGA (*Delphinapterus catodon*).

New Bedford, Mass. 26,038. U. S. Fish Commission.

OIL OF PORPOISE (*Lagenorhynchus leucopleurus*).

Extracted by exposure to the sun. Provincetown, Mass. 25,738. Gift of E. E. Small.

## OIL OF COWFISH.

Provincetown, Mass. 25,967. Gift of Capt. N. E. Atwood.

JAW-OIL OF BLACKFISH (*Globicephalus melas*).

Provincetown, Mass. 26,066. Gift of Capt. Caleb Cook. For lubricating fine machinery.

HEAD-OIL OF BLACKFISH (*Globicephalus melas*).

Sold as "Porpoise jaw oil." Provincetown, Mass. 25,984. Gift of Capt. N. E. Atwood.

REFINED OIL OF BLACKFISH (*Globicephalus melas*).

New York. 57,109. Collected by Jasper Pryer.

OIL OF BLACKFISH (*Globicephalus melas*).

Refined, for preparing morocco. Gloucester, Mass. A. W. Dodd & Co.

WATCH-OIL.

Provincetown, Mass. 39,458. Gift of Capt. Caleb Cook.

CLOCK-OIL.

Provincetown, Mass. 39,459. Gift of Capt. Caleb Cook.

OIL OF SNUFFER (*Phocaena americana*).

Extracted by exposure to the sun. Provincetown, Mass. 25,739. Gift of E. E. Small.

OIL OF HARBOR PORPOISE (*Phocaena americana*).

Eastport, Me. 26,037. Gift of George H. Peabody.

#### REPTILE OILS.

OIL OF ALLIGATOR (*Alligator mississippiensis*).

Harden, Jacksonville, Fla. 24,898. Gift of Dr. W. H. Babcock.

#### MOLLUSK OILS.

OIL OF SQUID (*Ommastrephes illecebrosa*).

Provincetown, Mass. 25,972. Gift of Capt. N. E. Atwood.

#### FISH OILS.

##### MENHADEN OIL AND ITS PRODUCTS.

(Prepared from menhaden (*Brevoortia tyrannus*) and used in currying leather, in rope-making, for lubricating, for adulterating linseed-oil, as a paint-oil, and exported to Europe for use in the manufacture of soap and for smearing sheep.)

OIL OF MENHADEN.

Samples of pure menhaden oil. Milford, Conn. The George W. Miles Company.

OIL OF MENHADEN.

Two qualities of menhaden oil. Baltimore, Md. Winfield S. Duran.

OIL OF MENHADEN.

Cold-pressed for tanners' and curriers' use. Gloucester, Mass. A. W. Dodd & Co.

## CRUDE MENHADEN OIL.

Brown-colored. New York. 57,118. Collected by Jasper Pryer.

## CRUDE MENHADEN OIL.

Light-colored. New York. 57,116. Collected by Jasper Pryer.

## CRUDE MENHADEN OIL.

Extra light-colored. New York. 57,122. Collected by Jasper Pryer.

## PRESSED MENHADEN OIL.

Brown-colored. New York. 57,119. Collected by Jasper Pryer.

## PRESSED MENHADEN OIL.

Light-colored. New York. 57,117. Collected by Jasper Pryer.

## PRESSED MENHADEN OIL.

Extra light-colored. New York. 57,123. Collected by Jasper Pryer.

## BLEACHED MENHADEN OIL.

New York. 57,120. Collected by Jasper Pryer.

## EXTRA BLEACHED MENHADEN OIL.

New York. 57,121. Collected by Jasper Pryer.

## MENHADEN OIL "FOOTS," UNBLEACHED.

New York. 57,115. Collected by Jasper Pryer.

## BLEACHED MENHADEN OIL PRESSINGS.

New York. 57,124. Collected by Jasper Pryer.

## EXTRA BLEACHED MENHADEN-OIL PRESSINGS.

New York. 57,125. Collected by Jasper Pryer.

## MENHADEN-OIL SOAP.

New York. 57,129. Collected by Jasper Pryer.

## STEARINE.

Prepared from oil of menhaden for tanners' and soapmakers' use.  
Gloucester, Mass. A. W. Dodd & Co.

## OTHER FISH OILS.

OIL OF MACKEREL (*Scomber scombrus*).

Provincetown, Mass. 26,979. Gift of Capt. N. E. Atwood.

OIL FROM LIVER OF MACKEREL-SHARK (*Isuropsis dekayi*).

Provincetown, Mass. 25,980. Gift of Capt. N. E. Atwood.

OIL FROM LIVER OF THRESHER-SHARK (*Alopias vulpes*).

Provincetown, Mass. 25,975. Gift of Capt. N. E. Atwood.

OIL FROM LIVER OF DOG-FISH (*Squalus acanthias*).

New York. 57,126. Collected by Jasper Pryer.

OIL OF SKATE (*Raia* sp.).

Provincetown, Mass. 26,980. Gift of Capt. N. E. Atwood.

OIL FROM LIVERS OF SUN-FISH (*Mola rotunda*).

Extracted by exposure to the sun. Provincetown, Mass. 25,734.  
Gift of E. E. Small.

OIL FROM LIVER OF CRAMP-FISH (*Torpedo occidentalis*).

Provincetown, Mass. 25,976. Gift of Capt. N. E. Atwood.

OIL OF SWORD-FISH (*Xiphias gladius*).

Provincetown, Mass. 26,978. Gift of Capt. N. E. Atwood.

## COD OIL.

Made from livers of cod (*Gadus morrhua*). Prepared for tanners' and curriers' use in dressing leather. (1) Newfoundland brand. (2) Labrador brand. (3) Grand Bank brand. (4) Shore brand. Gloucester, Mass. A. W. Dodd & Co.

## STEARINE.

Made from cod oil for tanners' and soapmakers' use. Gloucester, Mass. A. W. Dodd & Co.

OIL OF HORSE-MACKEREL (*Oreocynus thynnus*).

Provincetown, Mass. 25,973. Gift of Capt. N. E. Atwood.

OIL OF HALIBUT (*Hippoglossus vulgaris*).

Provincetown, Mass. 26,981. Gift of Capt. N. E. Atwood.

## HALIBUT OIL.

Made from heads of halibut (*Hippoglossus vulgaris*). Gloucester, Mass. A. W. Dodd & Co.

## CURRIERS' COD LIVER OIL.

New York. 57,113. Collected by Jasper Pryer.

## COD-LIVER OIL.

Pure cod-liver oil for medicinal use. "This oil is steam-rendered by the best process known, from fresh and healthy cod livers, and warranted perfectly pure." Gloucester, Mass. A. W. Dodd & Co.

## MEDICINAL OIL.

Prepared from livers of cod (*Gadus morrhua*). New York. 57,114.  
Collected by Jasper Pryer.

OIL FROM LIVER OF HADDOCK (*Melanogrammus aeglefinus*).

Provincetown, Mass. 25,978. Gift of Capt. N. E. Atwood.

OIL FROM LIVER OF HAKE (*Phycis chuss*).

Extracted by exposure to the sun. Provincetown, Mass. 25,736.  
Gift of E. E. Small.

OIL FROM LIVER OF POLLOCK (*Pollachius carbonarius*).

Extracted by exposure to the sun. Provincetown, Mass. 25,740.  
Gift of E. E. Small.

OIL FROM LIVER OF CUSK (*Brosmius brosme*).

Provincetown, Mass. 25,970. Gift of Capt. N. E. Atwood.

## CRUDE OULACHON OIL.

From oulachon or candle-fish (*Thaleichthys pacificus*). Port Townsend, Washington Territory, 1882. 55,415. Collected by J. G. Swan.

## OULACHON OIL.

From oulachon or candle-fish (*Thaleichthys pacificus*). Port Townsend, Washington Territory, 1879. 32,778. Collected by J. G. Swan.

OIL OF STURGEON (*Acipenser* sp.).

One pint bottle. New York. Albany Beef Packing Company, 372 Greenwich street. "This is made by an entirely new process, which produces it in a very fine and clear state, and is used in large quantities by tanneries, belting-factories, &c." (*Richard Weinacht*, secretary.)

## 27. PERFUMES.

## MAMMAL PERFUMES.

## AMBERGRIS OF SPERM-WHALE.

Commercial ambergris, with specimens of ambreine. Boston, Mass. 39,376. Weeks & Potter.

## 28. CHEMICAL PRODUCTS AND AGENTS EMPLOYED IN THE ARTS AND MEDICINE.

## DERIVED FROM PLANTS.

## BLADDER-WRACK.

Fluid extract sea-wrack (*Fucus vesiculosus*). Used for reducing morbid obesity or excessive fatness. Philadelphia, Pa. John Wyeth & Brother.



## DERIVED FROM FISH.

## ALBUMEN.

Prepared from eggs of cod and other fish. Osterville, Mass. United States Albumen Manufacturing Company. Uno H. Hillman, superintendent.

## 29. FERTILIZERS.

## FISH GUANOS.

## GUANO.

Made from waste skins and bones of cod, cusk, hake, &c.

1. "Guano manufactured from salt fish, and bones, waste that has been removed in preparing boneless fish for the market. In 1882 there were 3,000 tons of this waste; it had a market value of \$12 per ton. According to an analysis by S. P. Sharples, United States assayer, this guano contains: Phosphoric acid, 9.67 per cent.; equal to bone phosphate, 21.10 per cent.; nitrogen, 8.45 per cent.; equal to ammonia, 10.26 per cent.; moisture, 5.30 per cent.
2. "Guano from skins of cod and cusk, after the glue has been removed. According to an analysis by S. P. Sharples, United States assayer, this guano contains: Phosphoric acid, 9.38 per cent.; equal to bone phosphate, 20.47 per cent.; nitrogen, 8.12 per cent.; equal to ammonia, 9.86 per cent.; moisture, 5.23 per cent.
3. "Guano from pollock skins and scales, after the glue has been removed. According to an analysis by S. P. Sharples, United States assayer, this guano contains: Phosphoric acid, 15.82 per cent.; equal to bone phosphate, 34.53 per cent.; nitrogen, 8.65 per cent.; equal to ammonia, 10.50 per cent.; moisture, 6.29 per cent.
4. "Guano from halibut heads, after the oil has been removed. According to an analysis by S. P. Sharples, United States assayer, this guano contains: Phosphoric acid, 12.89 per cent.; equal to bone phosphate, 27.14 per cent.; nitrogen, 5.29 per cent.; equal to ammonia, 6.42 per cent.; moisture, 5.11 per cent.
5. "Guano from fresh fish heads after the glue has been removed. According to an analysis by S. P. Sharples, United States assayer, this guano contains: Phosphoric acid, 20.22 per cent.; equal to bone phosphate, 44.14 per cent.; nitrogen, 6.52 per cent.; equal to ammonia, 7.91 per cent.; moisture, 3.48 per cent." (*J. S. Rogers.*) Gloucester, Mass. Gloucester Isinglass and Glue Company.

## FISH-GUANO.

Prepared from cooked skins of cod and cusk after the glue has been pressed out. Gloucester, Mass., 1882. 56,921. Russia Cement Company.

GUANO FROM MENHADEN (*Brevoortia tyrannus*).

1. "George W. Miles's I. X. L. ammoniated bone superphosphate, containing ammonia 3 to 5 per cent.; available phosphoric acid, 10 to 12 per cent.; potash, 2 to 4 per cent.; ammonia, produced from fish.
  2. "Miles's patented ammoniated superphosphate, containing ammonia,  $2\frac{1}{2}$  to  $3\frac{1}{2}$  per cent.; available phosphoric acid, 8 to 10 per cent.; potash, 1 to 3 per cent.; ammonia, produced from fish.
  3. "George W. Miles's patented acid fish, No. 1, containing ammonia, 10 to 12 per cent.; available phosphoric acid, 4 to 6 per cent. This is fish fresh from the presses, treated with acid.
  4. "Miles's patented acid fish, No. 2, containing ammonia, 9 to 11 per cent.; available phosphoric acid, 4 to 6 per cent. This is fish after passing through a sweating process, treated with acid.
  5. "George W. Miles's patented C. Island guano, No. 1, containing ammonia, 10 to 12 per cent.; bone phosphate of lime, 14 to 17 per cent. This is fish fresh from the presses, dried in steam dryers.
  6. "Miles's C. Island guano, No. 2, ammonia, 8 to 10 per cent.; bone phosphate of lime, 10 to 12 per cent. This is fish dried in steam dryers after passing through a sweating process.
  7. "Pure dried fish, No. 1, containing ammonia, 10 to 12 per cent.; bone phosphate of lime, 9 per cent. This is fish fresh from the presses, dried on platforms and ground.
  8. "Pure dried fish, No. 2, containing ammonia, 10 to 12 per cent.; bone phosphate of lime, 9 per cent. This is fish fresh from the presses, dried on platforms, unground.
  9. "Miles's ammoniated dissolved bone. ammonia, 2 to 3 per cent.; 7 to 9 per cent. phosphoric acid; ammonia, from fish.
  10. "Miles's dissolved black, containing 36 per cent. bone phosphate of lime; burnt bone dissolved in acid.
  11. "Miles's acid phosphate, containing 25 per cent. bone phosphate of lime.
  12. "George W. Miles's ammoniated acid phosphate, containing 3 per cent. of ammonia, 22 per cent. bone phosphate of lime; ammonia, produced from fish.
  13. "Pure rock phosphate, 60 per cent. bone phosphate of lime.
  16. "Miles's fish and potash, No. 1; ammonia, 4 to 6 per cent.; available phosphoric acid, 5 to 8 per cent.; potash, 4 to 6 per cent.
  17. "Miles's fish and potash, No. 2; ammonia, 3 to 5 per cent.; available phosphoric acid, 5 to 8 per cent.; potash, 4 to 6 per cent."
- Milford, Conn. The George W. Miles Company.

GUANO FROM MENHADEN (*Brevoortia tyrannus*).

1. Dry fish-scrap. "Percentages: Ammonia,  $10\frac{1}{2}$  per cent.; bone phosphate of lime, 15 per cent."

## GUANO FROM MENHADEN—Continued.

2. Dry ground fish-guano. "Percentages: Ammonia, 10½ per cent.; bone phosphate of lime, 15 per cent."
3. Fish and potash (ammoniated with fish). "Percentages: Ammonia, 5 per cent.; bone phosphate of lime, 12 per cent.; available phosphoric acid, 5 per cent.; potash, 5 per cent."
4. Superphosphate (ammoniated with fish). "Percentages: Ammonia, 3 per cent.; bone phosphate of lime, 25 per cent.; available phosphoric acid, 10 per cent.; potash, 2½ per cent."

New London, Conn. Quinnipiac Fertilizer Company.

GUANO FROM MENHADEN (*Brevoortia tyrannus*).

1. Unground or crude menhaden scrap; made of fish two years old and over, called large fish.
  2. Ground menhaden scrap; made from the same stock as No. 1.
  3. Unground or crude menhaden scrap; made of fish not over one year old, called small fish.
  4. Ground menhaden scrap; made of same stock as No. 3.
- Baltimore, Md. Winfield S. Dunan.

## MENHADEN SCRAP OR GUANO.

1. Unground or crude scrap.
  2. Fine-ground scrap.
  3. Very fine-ground scrap.
- New Bedford, Mass. W. A. Abbe.

## ARTIFICIAL GUANO.

Series of preparations used in the manufacture of Soluble Pacific Guano:

1. Crude menhaden scrap.
  2. Dried and ground menhaden scrap.
  3. Muriate of potash.
  4. Nitrate of soda.
  5. Crude South Carolina phosphate.
  6. Crushed South Carolina phosphate.
  7. Ground South Carolina phosphate.
  8. Sicily sulphur.
  9. Stassfurth kainite.
  10. Soluble Pacific guano, unscreened.
  11. Soluble Pacific guano, screened.
- Wood's Holl, Mass. Soluble Pacific Guano Company.

## FISH-GUANO.

Made from menhaden (*Brevoortia tyrannus*) after the oil has been extracted. Gloucester, Mass. A. W. Dodd & Co.

## FISH-GUANO.

Made from heads of halibut (*Hippoglossus vulgaris*) after the oil has been extracted. Gloucester, Mass. A. W. Dodd & Co.

## FISH-GUANO.

Made from refuse resulting from the manufacture of fish oils. Gloucester, Mass. A. W. Dodd & Co.

## FISH-GUANO.

Prepared from sturgeon (*Acipenser* sp.). Samples of pure sturgeon guano; also, 50 per cent. and 75 per cent. sturgeon guano mixed with other ingredients. New York. Albany Beef Packing Company, 372 Greenwich street.