HISTORICAL OUTLINE OF THE CANNING OF FISHERY PRODUCTS

A number of individuals contributed to the early development of the canning industry. Although national pride with its consequent tendency to bias often places varying emphasis on the importance of these contributions, it is generally agreed that the original inventor of the art of canning was Nicolas Appert, a Frenchman, and that the basic methods of the industry are the result of his work.

In 1795 the revolutionary French Government was at war on land and sea with most of the other European governments in areas as widely separated as the West and East Indies. Few ports were open to the French, who therefore had to depend largely on dried, smoked and pickled foods brought from France. These products were subject to spoilage and their use resulted in the widespread incidence of deficiency diseases, such as scurvy, which greatly weakened the military forces. The French Government therefore offered a prize of 12,000 francs to anyone who would develop a new method of preserving food so that decomposition would be reduced and more of the original characteristics of fresh food retained.

Nicolas Appert, a confectioner, brewer, distiller and wholesale caterer was interested in this problem. The story of his efforts at solution is well worth reading (Anonymous, 1924, 1937).

Appert worked until 1804 before he attained his first measure of success and not until 1809 was his method finally developed. He was awarded the prize in that year after a thorough investigation of his method, and as required by the terms of the award his results were published in 1810 (Collins, 1924).

The house of Appert is still in operation under the management of the fourth generation of the family. Appert never became a great commercial success as he was interested in improving his products and processes to the exclusion of almost everything else, and devoted most of his time and money to this end.

Peter Durand, an Englishman, in 1810 obtained a patent on a process for preserving "animal, vegetable and other perishable foods in vessels of glass, pottery, tin or any fit materials." This was the first mention of tin as a container for sterilized foods, although tin containers had been in use before 1800 for packing salt and kippered fish. Durand is said to have obtained his patent

NOTE.—[FL–78. This section is reprinted from Research Report 7, Fish and Wildlife Service, U. S. Department of the Interior. The complete report (366 pp.) relates to commercial canning of fishery products and is obtainable from the Superintendent of Documents, Washington 25, D. C. Price 50 cents a copy].

through knowledge imparted by a foreigner who is believed to have been Appert. Durand's method came into extensive use only after 1820 when Pierre Antoine Angilbert invented a tin container less subject to leakage, and which could be made more rapidly than formerly.

Canning was first developed on an extensive commercial scale in the United States and most of our pioneer canners were primarily packers of fish and seafoods; packing fruits, vegetables and preserves as secondary or incidental items. Strangely enough, the packing of fishery products presents more difficulties than processing other types of foods.

Canning is said to have been introduced into the United States by Ezra Daggett and Thomas Kensett in 1819 when they packed oysters and other seafoods in New York (Cobb, 1919). William Underwood is credited with establishing a plant in Boston in 1820, packing lobster and fruit in glass. It is understood that these men learned the art in England before emigrating to this country. The Underwood plant was later reorganized into the firm of Wm. Underwood's Sons and is still in existence, the oldest in the United States.

Thomas Kensett was the first to break away from home kitchen methods and deserves credit for the development of the first canned product to receive wide distribution; namely, the oyster. The pioneer development of the industry in the Chesapeake Bay area, the first important canning center, is due to his efforts. Others are said to have engaged in the industry in the Baltimore area before Kensett and as stated above it is believed that oyster were canned as early as 1819. The first systematic effort at the large scale development of a product was made by Kensett in 1844, when he began packing oysters in Baltimore. Collins (1924) reported:

> Oysters and seafood were the first products that became popular. Inland cities could get fresh Baltimore oysters packed in ice through the winter; but folks in smaller places seldom enjoyed such a luxury—the countryman's greatest treat when he went to town was an oyster stew. Baltimore and Boston canned oysters so they would keep for months, and could be bought at any country grocery store by people who had never eaten a fresh oyster.

Increase in production was gradual over a period of about 20 years beginning in 1844. The first big increase in demand came with the Civil War. Preserved foods were needed for feeding the troops, thus enormously increasing the demand and creating additional consumers for canned seafoods. Men who became acquainted with these products in the Army demanded canned foods on their return home and introduced them among their neighbors.

Our most important fish canning industry, namely salmon, had its beginning during this Civil War period. Salmon is said to have

been canned first in Aberdeen, Scotland, in 1824 and it is claimed that the first salmon canned on the American continent was packed at St. Johns, N. B., in 1839 and in Maine shortly after this time. However, it was never packed on an extensive scale as were lobster and oysters. Neither at that time nor since then has the packing of salmon been of any importance on the Atlantic Coast. The industry had its real beginning in California, first became important on the Columbia River and reached full development when salmon canning spread to British Columbia, Alaska, northern Japan and Siberia in the order named.

George and William Hume with their friend A. S. Hapgood were the creators of the Pacific salmon canning industry (Hume, 1904). The Hume brothers, who had worked as fishermen at their home in Maine, went to California as Forty-niners. They noticed that salmon were plentiful in the Sacramento River and believed that money might be made canning the fish. They went back to Maine on a visit, induced A. S. Hapgood, a lobster canner, to return west with them and the first Pacific salmon pack was made at Sacramento, Calif., in 1864. The pack was a failure the next year, but conditions were reported to be extremely favorable on the Columbia River, so the Hume firm moved their equipment to Eagle Cliff, Wash., about 40 miles up the river from Astoria and made the first pack of Columbia River salmon in 1866.

Canned salmon was introduced to England and Germany where the first large market for this product was established by ships loading wheat and lumber for European ports. Canneries became numerous along the Columbia River and as the sale of canned salmon increased steadily the industry sought new and profitable locations, first at New Westminster on the Fraser River in British Columbia in 1867; then at Mukilteo, on Puget Sound, Washington Territory, in 1877; and while Alaska is today the most important salmon canning area, its first cannery was not built until 1878 at Klawak, on Prince of Wales Island.

Salmon is said to have been canned as early as 1877 in northern Japan, but commercial operations date from 1890 in that area (Anonymous, N. D.). The salmon canning industry was established in Siberia about 1906. The largest pack of canned salmon was made in 1936, when production amounted to a world total of 13,720,423 cases of 48 one pound cans.

Sardines were first packed at Nantes, France, in 1834, and by 1860 a fairly good market had been created for French sardines in this country. Efforts were made to establish an American industry in 1871, utilizing young menhaden as raw material. In 1877 Julius Wolff began canning small herring at Eastport, Me., and is credited with starting the first really successful American sardine

cannery. In a few years a large number of sardine canners were operating in northern Maine and nearby Canada.

Several efforts were made during the 1890's to establish sardine canning on Puget Sound or in Alaska where large quantities of herring were available, but all of these operations were short-lived. The first successful Pacific Coast sardine cannery was established at San Pedro, Calif., in 1896 (Bitting, 1937). The industry developed slowly until 1917 when the pack was suddenly increased to a large amount by war demands. After the war, production was maintained and increased by extensive cultivation of the export trade. When the depression of the 1930's destroyed the export market, a slump in production occurred but this has been largely overcome by development of the domestic market. The Pacific sardine industry is centered almost entirely in California where it originated. A small pack is canned on the Columbia River and in British Columbia.

Shrimp were first packed in the Gulf of Mexico area. G. W. Dunbar of New Orleans, canned shrimp as early as 1867 but had difficulty with blackening and discoloration. He solved this problem in 1875 with the invention of a can lining which aided greatly in overcoming blackening. Shrimp packing soon became and remains today the principal fishery canning industry of the Gulf coast. Shrimp are also canned on the Atlantic Coast in Florida, Georgia, and South Carolina, but the amount packed on the Atlantic Coast is much smaller than on the Gulf Coast.

While Baltimore was the center of the oyster canning industry for a long period, oysters are packed there today only occasionally. The catch of the Chesapeake Bay region has decreased greatly and the oysters of this area are now more profitably marketed in the fresh state. The greater portion of the oyster pack is now prepared on the Gulf Coast, the industry centering around Biloxi, Miss. The most recent development in the oyster industry is the establishment of oyster canning on the Pacific Coast. The introduction of the Japanese or "Pacific" oyster created a surplus, unmarketable in the raw condition. After several years of experimental work, this oyster was canned commercially in 1931. The pack in that year was 7,930 cases, increasing to 118,853 cases in 1936.

Burnham and Morrill are credited with establishing the first clam cannery in the United States in 1878 at Pine Point, Me. (Stevenson, 1899). The pack of canned clam products was small for some years as considerable difficulty was experienced with discoloration but production slowly increased when this difficulty was overcome. P. F. Halferty developed a method for canning minced razor clams about 1900, building up a commercial clam canning

industry in Oregon, Washington and Alaska. The inclusion of minced clams, broth and clam chowder in the list of clam products increased the value of canned clam products until they are now fifth in order of importance of the canned fishery products, thereby displacing oysters.

Crab was first canned in this country by James McMenamin of Norfolk, Va., in 1878. The canning of crab meat has never become important on the Atlantic Coast and the quality of the pack has been variable. The greatest obstacle has been discoloration. In 1936, a method to overcome discoloration was developed by Fellers and Harris and in 1938 Harris packed the common or blue crab of the Atlantic coast commercially. The principal obstacle to a greater development is believed to be the competition offered by imported crab meat.

Canned crab is in considerable demand in the United States but most of the supply originates in Japan. Indeed, this country is the most important market for Japanese canned crab, which is a different species from the common American varieties.

While the crab canning process is said to have been developed in 1892, the Japanese industry was not established on a commercial scale until 1908 (Anonymous, N. D.). Japanese canned crab began to enter the United States markets in appreciable quantities during the World War years, until in 1931 imports amounted to almost double the domestic production of fresh and canned crab meat (U. S. Tariff Commission, 1933).

A domestic crab canning industry has been developed during the past 10 years in Alaska, Oregon and Washington. Processing and other technical difficulties have been overcome and a market has been developed in the Pacific Coast States. It is not believed that the Pacific Coast crab canning industry can be expanded sufficiently to supply the domestic demand for canned crab.

The large supply of groundfish in the North Atlantic has been the basis of numerous attempts to develop a canning industry, which have not been particularly successful because of competition with other canned fishery products or insufficient advertising. Cod and haddock products such as fish flakes, fish cakes or balls and finnan haddie have not found a wide market outside the New England area and are packed on a limited scale. Fish cakes were first packed in Boston in 1878. Finnan haddie (smoked haddock) was first packed about 1890, and a steady but not large demand exists today. Fish flakes, or "salad fish," the flaked meat of cod and haddock, are believed to have been developed by Burnham and Morrill of Portland, Me., in 1898.

At the turn of the century, the industry was experimenting with a variety of products. A number of articles were sold com-

mercially that are not found on the market today such as pickled sturgeon, smoked lake trout, carp, shark meat, menhaden, and a variety of specialty or delicatessen products. Some of these packs did not make a good product, others were not in sufficient demand, while in other instances the cost of raw material became too great for profitable operation. About 1900, the annual pack of canned fishery products was less than half of the amount produced today, and it was thought that production could not be increased greatly or even maintained. The lobster canning industry, once almost exclusively confined to the United States, passed almost entirely over to Canada after 1896. (Cobb, 1919.) While these gloomy predictions were being made the canning industry of fishery products was on the threshold of its greatest development. Production of the standard varieties has been greatly increased and new products have been developed on a considerable scale.

Canned tuna is one of the more recently developed canned fishery products, first packed commercially in 1909. O. W. Lang states:

> According to those who are intimately connected with California fisheries, the packing of tuna had its inception in the Southern California Fish Co. * * * This company, between its date of incorporation in 1892 and until 1905, was interested only in the production and marketing of one-quarter and one-half pound square cans of sardines in oil and the one pound oval pack of the larger sardines. Serious foreign competition, principally from Norway, encroached upon the business, and it was through the resourcefulness and ingenuity of one of its officers that experiments were conducted during 1905, 1906, and 1907 on the canning of tuna. The tests were conducted under the direction of Mr. Lapham, the president, with Wilbur F. Wood and James McMann a[s] the active investigators. Their source of raw material was albacore, which when cooked, they all agreed, resembled chicken in taste and flavor. This characteristic flavor, no doubt, added impetus to their experiments, but it was not until 1907 that their efforts were rewarded. * * *
>
> * * * The first successful pack was produced in 1909 when 2,000 cases were packed which were marketed by Sigmund Seeman, Seeman Brothers, New York.

Mackerel was canned in small quantities in New England as early as 1843. The introduction of mackerel into the general canned food market occurred in 1927 when George Ogawa put up a pack of 10,725 cases of California mackerel "salmon style" which was sold at a price to compete with the cheaper varieties of salmon. Production of Pacific mackerel increased to 388,500 cases in 1928, and rapidly reached a peak of 1,795,700 cases of 48 one-pound cans in 1935.

The most recently developed canned fishery product is not intended for human consumption, but is prepared for feeding pets and fur animals and for use in fish hatcheries. In 1938, 413,434 cases of pet food made from fishery products were packed. Production is divided between California, where mackerel or whale

meat is utilized as the basic ingredient, and in New England where pet food is a byproduct in the packing of fish fillets.

Are there possibilities of further expansion in the fish canning industry? Yes, if world trade conditions improve, and the products are scientifically developed and properly marketed. New products may be marketed profitably only if the canner has a grasp of the required technical data, operates on an economical basis, and the article is of acceptable quality and can compete successfully with established products on the market.

STATISTICS ON PRODUCTION OF CANNED FISHERY PRODUCTS

The canning of fishery products is the most important factor in the fishery industry today; indeed, canned fish and fishery products hold an important place in the general food canning industry, exceeding canned meat and meat products both in quantity packed and value to the packer. The total market value of all fish and fishery products to primary handlers in 1938 was estimated at about $214,000,000 (Fiedler, 1939). The fish canning industry accounted for $83,446,000, or 39 percent of this total.

About 160 species of fish are utilized regularly for food in the United States. Fifteen are canned regularly on a large commercial scale, while a number of others are packed occasionally or in quantities too small to merit separate record in statistical reports. The record domestic pack of canned fishery products was produced in 1936 and amounted to 794,707,014 lbs., valued at $94,564,254.

Salmon is the most important canned fishery product, its value in 1938 amounting to 50.8 percent of the total value of all canned fishery products. Next in importance are tuna and tunalike fishes, sardines, shrimp, clam products, mackerel, and oysters, in the order named. The seven varieties listed above account for 96 percent of the value of the total pack. While canned sardines ranked second in value in 1929 and oysters fifth, these products had dropped to third and seventh places, respectively, in 1938.

NUMBER OF PLANTS AND DISTRIBUTION ACCORDING TO PRODUCTS

A total of 382 food packing establishments was engaged in canning fishery products in the United States and Alaska during the year 1938. In comparison with 1929, this represents a decrease of 23 percent; 497 canneries were reported in operation that year. The data presented in table 1 show that 33 percent of the canneries were engaged in packing salmon, 16 percent packed clam products, 15 percent sardines, and 13 percent packed shrimp.

TABLE 1.—*Canned fishery products of the United States and Alaska, 1938.*

[Summary of production by commodities]

Product	Number of plants	Standard cases	Pounds	Value
Salmon				
United States	27	472,721	22,690,608	$ 5,728,892
Alaska	98	6,806,998	326,735,904	36,636,897
Sardines:				
Maine	25	671,635	16,790,875	2,367,045
California	31	2,261,678	108,560,544	7,102,358
Tuna and tunalike fishes	20	2,754,143	66,099,432	15,183,636
Mackerel	24	965,629	46,350,192	2,896,220
Alewives	10	52,826	2,535,648	143,558
Alewife roe	29	37,641	1,806,768	165,711
Shad	8	10,845	520,560	29,950
Shad roe	10	3,915	144,720	95,909
Cat and dog food	9	413,434	19,844,832	888,399
Fish flakes	4	45,721	2,194,608	291,426
Finnan haddie	3	488	23,424	7,518
Fish cakes, balls, etc.	6	97,263	4,668,624	665,307
Fish paste	3	3,987	191,376	143,147
Sturgeon caviar	4	2,491	119,568	307,298
Whitefish roe and caviar	5	1,052	50,496	36,478
Salmon roe and caviar (for food)	4	1,563	75,024	28,077
Salmon eggs (for bait)	8	4,656	223,488	85,348
Miscellaneous fish and roe	14	19,792	950,016	182,729
Clam products	60	[1]769,665	19,312,005	3,189,628
Oysters	42	482,441	7,236,615	1,886,476
Shrimp	50	1,077,003	18,113,297	4,872,393
Crabs	21	13,699	657,552	260,134
Turtle products	4	7,410	355,680	80,869
Miscellaneous shellfish	14	26,583	1,275,984	170,486
Total	[2]382	17,004,379	667,527,840	83,445,889

[1] "Cut-out" or "drained" weights of can contents are included for whole or minced clams and gross can contents for other clam products.
[2] Exclusive of duplication.

GEOGRAPHICAL DISTRIBUTION OF THE INDUSTRY

During 1938, fishery products were canned in 22 states and Alaska. Alaska alone accounted for 44 percent of the total value of the pack in that year, while the Pacific Coast States of Washington, Oregon and California accounted for 40 percent. Therefore, the Pacific Coast including Alaska contributed 84 percent in value of the total pack of canned fishery products in the United States. The New England and Gulf Areas were about equal in importance, each accounting for 6 and 8 percent, respectively, of the total value of the pack. Most of the remainder was canned in the Middle and South Atlantic States, with a small amount of specialty products packed in the Great Lakes Area.

Alaska ranked first in value of canned products because of its productive salmon fishery. California was second with 30 percent due to its sardine, tuna and mackerel fisheries. Washington, with 5 percent, was in third place, owing its rank largely to salmon, clam and oyster products. Oregon and Maine each accounted for 4 percent, the first because of its production of salmon and albacore, the latter due to its important sardine industry.

The geographical distribution of the fish canning industry in Canada parallels that of the United States in that the industry is centered on the Pacific Coast. The total value of the pack in

Canada in 1938 amounted to $16,297,611. In that year British Columbia, the only province of Canada bordering on the Pacific, was credited with $12,747,172 of the value of the production of canned fish and shellfish, or 78 percent of the total. Salmon accounted for $12,267,465 or 96 percent of this amount. British Columbia is exceeded only by Alaska in the canning of salmon on this continent.

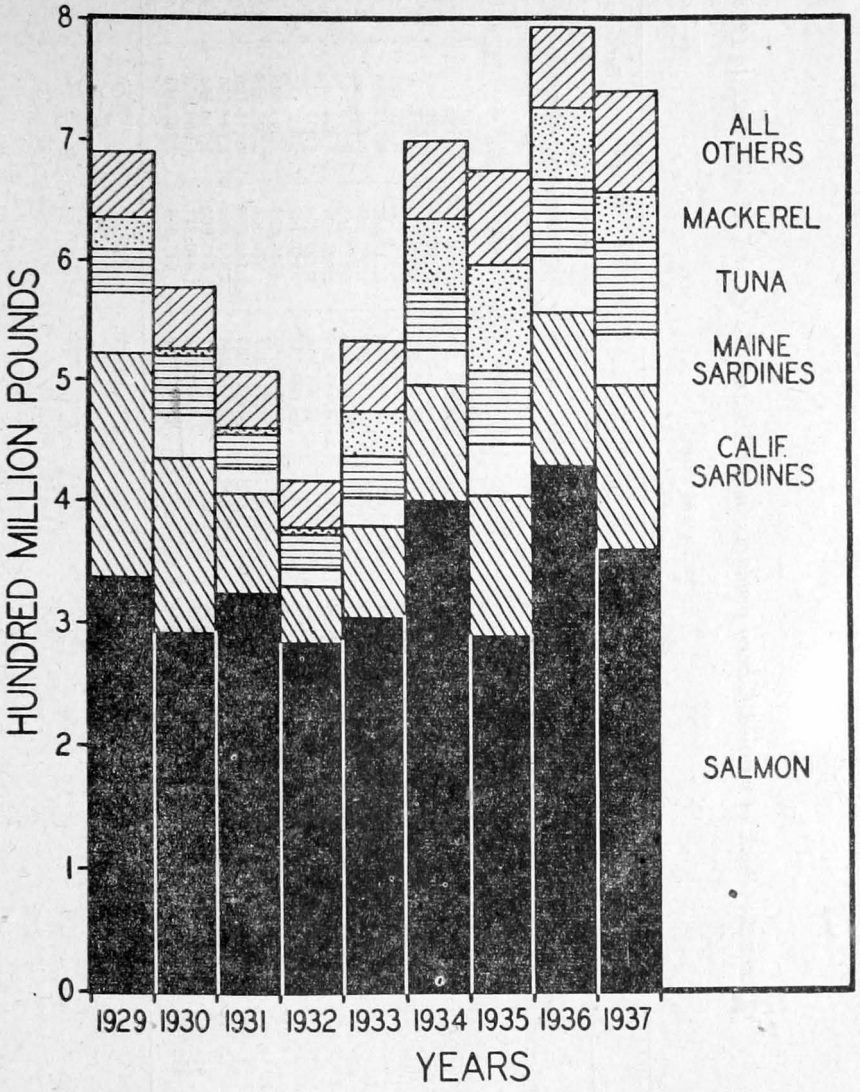

FIGURE 1.—Production of canned fishery products 1929-1937.

Detailed statistical data on the fish-canning industry in the United States are given in Tables 1, 2 and 3. Figure 1 illustrates graphically the production of the more important species utilized by canning, and a comparison of the quantity canned in various years.

TABLE 2.—*Pack of canned fishery products in the United States and Alaska, 1921 to 1938*

[Standard cases]

Year	Salmon						Sardines			
	Pacific Coast States		Alaska		Total		*Maine and Massachusetts*		*California*	
	Cases	*Value*	*Cases*	*Value*	*Cases*	*Value*	*Cases*	*Value*	*Cases*	*Value*
1921	1,002,948	$ 9,234,425	2,596,826	$19,632,744	3,599,774	$28,867,169	1,399,507	$3,960,916	398,668	$ 2,346,446
1922	733,246	8,633,524	4,501,652	29,787,193	5,234,898	38,420,717	1,869,719	5,750,109	715,364	3,361,480
1923	1,367,263	12,660,566	5,035,697	32,873,007	6,402,960	45,533,573	1,272,277	5,288,865	1,100,162	4,607,931
1924	958,662	9,394,467	5,294,915	33,007,135	6,253,577	42,401,602	1,899,925	7,191,026	1,367,139	5,445,573
1925	1,558,613	15,379,976	4,459,937	31,989,531	6,018,550	47,369,507	1,870,786	6,716,701	1,714,913	6,380,617
1926	835,738	10,139,302	6,652,882	46,080,004	7,488,620	56,219,306	1,717,537	6,727,388	2,093,278	7,807,404
1927	1,504,451	15,712,497	3,572,128	30,016,264	5,076,579	45,728,761	1,262,124	5,249,030	2,563,146	9,268,784
1928	842,903	9,254,258	6,083,903	45,383,885	6,926,806	54,638,143	2,055,763	8,076,546	2,771,527	9,658,822
1929	1,620,523	15,616,312	5,370,159	40,469,385	6,990,682	56,085,697	2,025,801	6,897,946	3,831,215	11,996,997
1930	1,054,001	13,140,081	5,032,478	29,695,872	6,086,479	42,835,953	1,399,212	4,459,071	2,979,333	8,741,928
1931	1,336,234	8,986,308	5,403,811	29,096,868	6,740,045	38,083,176	885,408	2,647,187	1,713,407	4,715,089
1932	654,460	4,744,162	5,254,509	21,715,918	5,908,969	26,460,080	545,697	1,370,050	953,981	2,358,399
1933	1,136,861	7,865,903	5,225,604	28,376,014	6,362,465	36,241,917	980,906	2,397,348	1,539,446	3,805,168
1934	901,206	8,205,947	7,481,830	37,611,950	8,383,036	45,817,897	1,142,730	3,315,190	1,970,047	5,481,391
1935	894,768	6,707,130	5,133,122	25,768,136	6,027,890	32,475,266	1,655,839	5,142,750	2,420,055	6,237,262
1936	527,574	5,309,438	8,437,603	44,751,633	8,965,177	50,061,071	1,845,860	5,740,454	2,616,530	7,302,273
1937	885,372	8,386,165	6,669,665	44,547,769	7,555,037	52,933,934	1,680,241	4,998,373	2,812,456	8,592,117
1938	472,721	5,728,892	6,806,998	36,636,897	7,279,719	42,365,789	671,635	2,367,045	2,261,678	7,102,358

TABLE 2.—*Pack of canned fishery products in the United States and Alaska, 1921 to 1938*—Continued

Year	Tuna and tunalike fishes		*Oysters*		*Shrimp*		*Clam products*	
	Cases	*Value*	*Cases*	*Value*	*Cases*	*Value*	*Cases*	*Value*
1921	549,150	$ 3,074,626	442,086	$2,179,271	655,364	$3,804,781	(1)	$1,166,507
1922	672,321	4,511,873	505,973	2,423,616	579,797	3,064,087	(1)	1,716,365
1923	817,836	6,914,760	524,544	2,720,073	700,429	4,381,534	(1)	1,710,616
1924	652,416	5,756,586	447,481	2,478,044	718,517	4,608,950	(1)	2,161,389
1925	1,102,471	8,499,080	654,755	3,721,159	735,714	3,782,819	(1)	1,850,378
1926	851,199	5,282,283	413,834	2,026,569	732,365	4,122,092	(1)	2,004,650
1927	1,255,818	8,368,227	447,297	2,367,949	852,764	5,321,652	525,286	2,744,954
1928	1,216,222	8,374,030	503,952	2,760,576	851,831	5,181,547	531,640	2,623,598
1929	1,504,306	9,873,453	519,145	2,732,478	909,949	5,528,792	554,639	2,548,472
1930	2,010,640	13,055,876	396,174	1,836,862	818,491	4,960,542	558,884	2,666,045
1931	1,216,976	7,279,392	306,278	963,525	821,375	3,982,247	500,040	2,256,909
1932	1,206,177	6,183,019	392,664	1,007,624	758,106	2,594,980	371,288	1,797,002
1933	1,443,133	6,934,485	348,130	1,076,318	860,462	3,479,477	434,500	1,766,406
1934	1,966,943	10,009,542	438,542	1,871,060	1,021,822	4,403,077	633,055	2,713,228
1935	2,510,828	12,823,729	500,885	2,044,903	1,086,345	4,721,872	666,981	2,680,935
1936	2,680,734	14,715,391	528,705	2,180,869	917,440	4,672,198	754,334	2,976,297
1937	3,144,501	18,995,779	708,950	2,932,681	1,286,406	7,130,747	773,448	3,013,446
1938	2,754,143	15,183,636	482,441	1,886,476	1,077,003	4,872,393	769,665	3,189,628

TABLE 2.—*Pack of canned fishery products in the United States and Alaska, 1921 to 1938*—Continued

Year	Miscellaneous fishery products								Grand total
	Fish roe, caviar and eggs		Other fish		Other shellfish		Total		
	Cases	*Value*	*Cases*	*Value*	*Cases*	*Value*	*Cases*	*Value*	*Value*
1921	(1)	(1)	(1)	(1)	(1)	(1)	(1)	$1,234,990	$ 46,634,706
1922	(1)	(1)	(1)	(1)	(1)	(1)	(1)	1,216,700	60,464,947
1923	(1)	(1)	(1)	(1)	(1)	(1)	(1)	1,287,853	72,445,205
1924	(1)	(1)	(1)	(1)	(1)	(1)	(1)	2,121,419	72,164,589
1925	(1)	(1)	(1)	(1)	(1)	(1)	(1)	2,256,877	80,577,138
1926	(1)	(1)	(1)	(1)	(1)	(1)	(1)	2,003,548	86,193,240
1927	57,586	$ 477,415	236,579	$1,765,888	4,479	$ 91,473	298,644	2,334,776	81,384,133
1928	78,394	681,150	683,255	3,703,918	10,590	173,525	772,239	4,558,593	95,871,855
1929	46,501	502,040	913,088	4,684,879	14,912	214,301	974,501	5,401,220	101,065,055
1930	92,478	1,619,624	402,656	2,399,886	22,839	282,474	517,973	4,301,984	82,858,261
1931	50,871	1,021,701	329,883	1,829,195	16,543	170,370	397,297	3,021,266	62,948,791
1932	39,374	635,720	307,103	1,174,401	11,247	167,907	357,724	1,978,028	43,749,182
1933	42,912	635,549	1,074,524	3,148,941	30,490	314,354	1,147,926	4,098,844	59,799,963
1934	46,852	821,528	1,722,160	5,115,092	53,715	473,337	1,822,727	6,409,957	80,021,342
1935	61,413	960,349	2,446,054	7,464,287	58,786	447,681	2,566,253	8,872,317	74,999,034
1936	59,040	1,028,293	1,669,631	5,434,760	60,525	452,648	1,789,196	6,915,701	94,564,254
1937	69,974	996,169	1,440,597	4,995,890	59,199	585,799	1,569,770	6,577,858	105,174,935
1938	61,337	786,441	1,599,066	5,180,634	47,692	511,489	1,708,095	6,478,564	83,445,889

[1] Not enumerated separately prior to 1927.

Note: "Standard cases" of salmon, California sardines, fish roe, caviar and eggs, other fish, and other shellfish represent the various sized cases converted to the equivalent of forty-eight 1-pound cans; Maine sardines, one hundred ¼-pound cans to the case; tuna and tunalike fishes, forty-eight ½-pound cans to the case; oysters, forty-eight 5-ounce cans to the case; shrimp, forty-eight 5-ounce cans to the case in the dry pack and forty-eight 5¾-ounce cans to the case in the wetpack; and clam products forty-eight No. 1 cans to the case.

TABLE 3.—*Canned fishery products of the United States and Alaska, 1938*

[Value of production by States]

State	Canned products
Maine	$ 3,319,212
Massachusetts } Rhode Island }	1,354,127
New York	564,267
New Jersey } Pennsylvania }	1,215,126
Delaware } Maryland }	506,476
Virginia	104,502
North Carolina	65,028
South Carolina	312,208
Georgia	743,663
Florida	347,914
Alabama and Mississippi	1,917,637
Louisiana	2,776,572
Texas, Illinois and Wisconsin	525,928
Washington	3,762,575
Oregon	3,638,815
California	25,232,688
Alaska	37,059,151
Total	83,445,889