



COLD-STORAGE LIFE OF FROZEN FISH IMPROVED BY BETTER HANDLING PRACTICES

The advantage of using the best possible handling procedures to gain the maximum cold-storage life of frozen fish was forcefully demonstrated by a recent experiment completed in December 1956 and carried out at the Service's Fishery Technological Laboratory. Some pink salmon, which with normal commercial handling procedures have a frozen storage life of six months or less, were kept in good condition for 14 months. The methods employed were not laboratory procedures but rather practical methods which could be adopted commercially and which consisted merely of using low-storage temperature and extra-careful glazing and packaging.

A batch of pink salmon (a species with a short storage life because of great susceptibility to oxidation) was procured in October 1955. These fish were frozen and stored for future laboratory tests. Because it was realized that oxidation would be a problem, special precautions were taken. An extra heavy ice glaze was applied and the individual, whole, glazed fish were stored in polyethylene bags to prevent the loss of the ice glaze. The fish were then stored at -20° F. In December 1956 after 14 months in cold storage, several of the fish which remained were removed, examined, cooked, and eaten. Although some slight discoloration had developed, the fish were still in good marketable condition.

This demonstrates the importance of using low (at least -20° F.) storage temperatures for frozen fish and of protecting whole fish against oxidation by use of a thick ice glaze with precautions against loss of glaze, or for renewal of the glaze at appropriate intervals.



IDENTIFICATION OF TUNA PIGMENTS

Development of off-colors of various shades (such as green or brown) in canned tuna during processing has long been a matter of concern to tuna processors. Nothing has been known as to the chemical nature of either the naturally-occurring pigments, or those which form during canning and which result in the normal desirable pink color or undesirable green or brown colors. U. S. Fish and Wildlife Service chemists and staff members of the Food Technology Department of the University of California, working in a collaborative program at Davis, Calif., have now identified the chemical nature of the normal pink pigment which forms during the canning operation, and have found means for insuring that it will develop when tuna is canned. Work is continuing toward identification of the abnormal undesirable colored pigments which sometimes develop.

When tuna is canned, the neutral grayish shade of the raw tuna meat normally is converted to a light pink color which is considered desirable by the consumer.

It is the pigment responsible for this color which has been identified as a hemochrome, a compound related to blood pigments. When exposed to air, the pink color fades rapidly to an undesirable tan color. With knowledge as to the chemistry of these changes, it may be possible to stabilize this desirable pink pigment when the contents of the can are exposed to air.



REVISED FEDERAL SPECIFICATIONS FOR BREADED SHRIMP PROPOSED

Copies of the proposed Federal Specification for "Shrimp, Frozen, Raw; Breaded," PP-S-315 dated January 21, 1957, were distributed to members of the industry for review and comment. This specification supersedes Interim Federal Specification PP-S-00315 dated July 12, 1956. This draft was prepared by the Quartermaster Corps Food and Container Institute for the Armed Forces, Chicago, Ill., and Fishery Technological Laboratory, U. S. Fish and Wildlife Service, East Boston, Mass. It is based on information which the Institute and the Service have obtained through technological research and through consultation with the industry.

As a result of industry and Armed Forces comments on the Interim Specification, certain revisions were made in the proposed draft of the Federal specification. For this reason further industry coordination is being carried out.

Pertinent revisions concern redesignation of coating content range; classification by types of inspection procedures; addition of classes; redefinition and clarification of defects; and readjustment in tolerances for defects such as black spots, fragments, damaged and broken shrimp, and loose crumbs.

Single copies of the proposed draft were mailed to approximately 200 packers, brokers, and distributors of breaded shrimp, to members of related industries, and to trade and research organizations for comment.



USE OF X-RAY FLUOROSCOPY FOR FISH BONE DETECTION SHOW PROMISE

Fish bones, long a problem to the fishing industry, may be detected in processed fishery products on the production line by means of fluoroscopy or X-rays. Preliminary research at the Service's Boston Fishing Technological Laboratory, using the latest methods and equipment in X-ray analysis, has shown very promising results for the detection of bones, cartilage, and foreign objects such as metal, stones, etc., that, as in all foods, are occasionally found in fishery products.

Approximately 50 packages of commercially-packed frozen precooked fish sticks were examined under a fluoroscope screen. Eighteen of these packages proved to be positive, i. e., bones or foreign objects were seen on the screen. These 18 packages were later examined by crushing the sticks by hand and feeling for the bones. Fifteen of these packages were found by this method of examination to contain bone or cartilage, two had pieces of metal present, and the remaining package contained what appeared to be a small stone. All of the other 32 packages that were negative by fluoroscopic examination, i. e., showed no evidence of bones or foreign matter, were also found to be free of such material when examined by hand. These preliminary results thus show considerable promise for successful fluoroscopic detection of bones and other extraneous material that might be present in fish sticks.

The research into this problem will be intensified by full-scale commercial tests to determine if fluoroscopy can be successfully applied by the fish processor as a tool in helping to maintain the highest quality in fish and fishery products.

Note: See Commercial Fisheries Review, November 1955, p. 1.



FREEDOM OF THE SEAS AND SOVEREIGNTY OVER THE SEAS

"Freedom of the seas and sovereignty over the seas by adjacent countries are simply incompatible doctrines," Senator Leverett Saltonstall (Republican-Massachusetts) told members of the National Fisheries Institute on April 16, 1956, at their Eleventh Annual Convention at Miami Beach, Fla.

Senator Saltonstall was speaking of the failure of the Inter-American Council of Jurists at their Mexico City meeting to study and discuss adequately conservation problems. "Responsible officials of our government," he said, "are most disturbed about the actions taken, with no study and little discussion."

"The United States," he said, "second to Japan, is the largest fishing country of the world. We harvest close to five billion pounds of food from the sea each year. While most of this comes from off our own shores, our fishermen fish in the high seas off the coasts of many other countries, and the fishermen of a good many other countries fish in the high seas off our coasts, too."

Since we are a leader in conserving natural resources, the Senator went on to say, we have found peaceful means of protecting the harvest of the seas without detriment to the "freedom of the seas" doctrine, and we cannot afford to injure that doctrine.

Treaties are now in effect with other nations on the seal, halibut and salmon fisheries of the North Pacific; Great Lakes fisheries; Southeast Pacific tuna fisheries; Northwest Atlantic fisheries; and world whale fisheries.

"Friendship with our good neighbors to the south has long been a keystone in our foreign policy," he reminded his audience. "International cooperation, mutual study of mutual problems, calm discussion and debate of ideas, and multilateral approach to the solution of political, economic, judicial, security, social and defense questions has made the relations between the nations of the Americas a model for the rest of the world."

Senator Saltonstall also reported on the money spent under the Saltonstall-Kennedy Act, which provides the Fish and Wildlife Service \$3 million a year for three years. ...

--Excerpt from address at
National Fisheries Institute
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