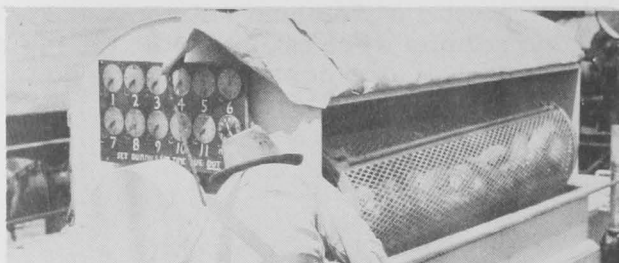




FREEZING-FISH-AT-SEA OPERATIONS OF THE DELAWARE - (JUNE 29 TO AUGUST 24)

The Service's research trawler Delaware, operating out of East Boston, Mass., started its initial cruise of the season on June 29. This was its first trip since completion of repairs and restoration of the galley and after crew's quarters necessitated by the fire on the vessel last October. The purpose of the cruise was (a) to brine freeze in-the-round and store in the frozen-fish hold all commercial varieties of fish taken in the Georges Bank area; (b) to further test the operation of the freezing equipment, particularly in relation to certain automatic control valves that had been recently installed; and (c) to prepare sample lots of iced gutted fish of various species for use in projects under way in the laboratory.



Operating the brine freezer aboard the research trawler Delaware.

replacements were made in the equipment prior to making the second cruise.

The Delaware again went to sea on July 14. The purpose of this cruise was essentially the same as that for the first one. The vessel returned to the laboratory on July 27, after about 13 days. Fishing was done mostly in the Georges Bank area. The catch totaled approximately 50,000 pounds of fish, made up largely of haddock and scrod haddock, with the remainder being cod, whiting, ocean perch, and other mixed fish. About 43,000 pounds of this total were brine frozen in-the-round, and the remaining 7,000 pounds were gutted and iced.

The third test cruise began on August 9. It was made to obtain and freeze ocean perch for evaluation and storage tests and to prepare certain special lots of other varieties of fish. Some fishing was done in the Georges Bank area but because of a scarcity of fish of the species desired for experimental purposes the vessel proceeded to Browns Bank, off Nova Scotia. Fishing was continued in that area for the balance of the trip.

The vessel returned to Boston on August 24 after being at sea for a period of about 15 days. The catch totaled approximately 32,000 pounds of fish made up largely of ocean perch, haddock, and pollock. Cod, whiting, and mixed varieties made up the remainder of the catch. Approximately 22,000 pounds of the total were frozen at

The vessel returned to the East Boston laboratory on July 4. The catch totaled 11,500 pounds of fish, principally haddock, cod, and yellowtails. Approximately 2,500 pounds of this total were frozen.

While fishing was being carried out, mechanical equipment that was replaced or overhauled during the winter was tested under full operating loads. As a result of these sea trials, certain adjustments and

sea and maintained in a frozen condition in the vessel's cold-storage hold until unloaded. Recently-installed automatic controls on the freezing plant aboard the vessel operated quite satisfactorily, permitting the machinery to function with a minimum of attention by the plant operator.

The vessel crew consisted of about a two-thirds complement; therefore, the fishing operations were carried out only during the daylight hours. The proportionate catches, however, were considered satisfactory.

When landed, all of the brine-frozen fish were in excellent condition, whereas the iced fish, which were caught during the first part of each of the trips, were not of the best quality.

The second and third cruises demonstrated the feasibility of holding the fish aboard vessel in a frozen state for relatively long periods and landing the entire lot in excellent condition. By holding the fish in a frozen state, the vessel moved from areas of poor fishing to those in which fish were more plentiful, and still maintained the high quality of the entire catch.

A technologist from the Army Quartermaster Corps Food and Container Institute, Chicago, Illinois, was aboard the vessel during the three cruises for the purpose of preparing part of the catch of both iced and frozen fish for later use in the preparation of frozen fillets, fish squares, and fish sticks for consumer acceptance tests under the direction of the Institute. The laboratory staff assisted in handling the fish upon the arrival of the vessel at East Boston and in the processing of the fish into the desired types of samples.

On the first two cruises, lobsters were caught incidental to the trawling operations about 200 miles at sea and were placed in a tank of circulating sea water. Thirty-five lobsters, weighing up to 12 pounds each, were brought in alive. They were delivered to the Division of Marine Fisheries, Massachusetts Department of Natural Resources, Boston, Massachusetts, for tagging and releasing in inshore waters for studies on migratory habits and survival rates.

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KEEPING QUALITY OF FRESH SHRIMP

Fresh shrimp will have lost their characteristic sweet flavor after storage in ice for 7 days. During the next 9 days the progress of spoilage continues without development of marked off-flavors. Measurement of amino-nitrogen gives at this stage an indication of the extent of decline in quality of the shrimp.

--The Refrigeration Research Foundation
Information Bulletin, May 15, 1953.