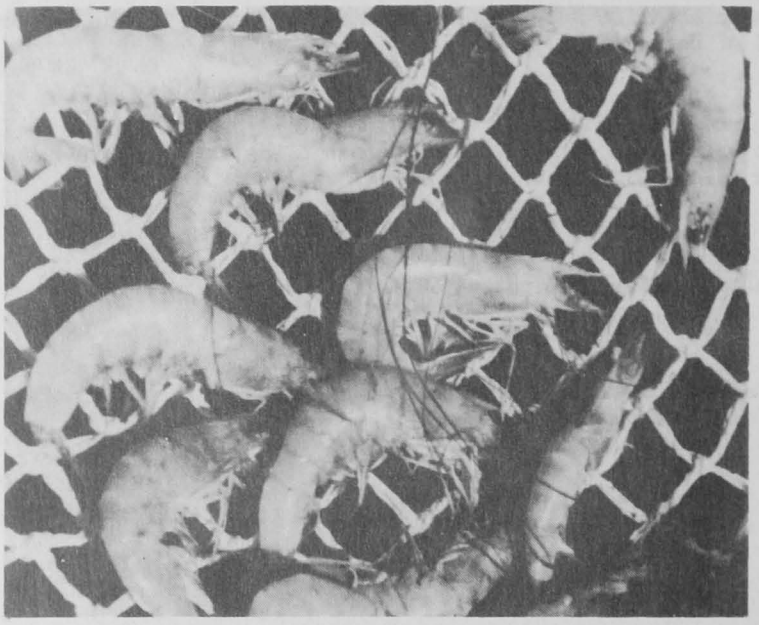
RESEARCH
IN SERVICE LABORATORIES

September 1948

Beaufort, N. C.

During the last week in September, the special shrimp trawling net for testing the new-type shrimp tail bag was completed and used in the ocean waters off Beaufort Inlet. This trawl has an opening of 30 feet between the otter boards and collects the catches of fish and shrimp into either the new-type bag or the large, regular tail bag of 1 inch mesh which surrounds it. When the end of the new-type bag is closed, the fish which escape are caught in the regular tail bag or "test bag" which also operates as the end of a standard trawl net when the new-type net is left open.



In four experimental hauls, a total of 356 pounds of young fish and 8½ pounds of shrimp were collected. These fish consisted of 582 croakers, 440 spot, 54 gray trout, 72 sea mullets, 108 hogfish, 1,656 butterfish, and 1,420 miscellaneous species such as sea robbins, pinfish, spadefish, anchovies, moonfish, lizzardfish, etc. In the entire catch of 4,332 fish, a total of 2,912 specimens were young food fish of commercial importance having a length of 4 to 9 inches with the exception of numerous and small butterfish which were 3 to 4 inches long or 40 specimens per pound.

The escapement of young food fish through the new-type tail bag amounted to 1,805 specimens or a weight of 156 pounds. Though many of the butterfish were able to go through the 2-1/2 inch stretched mesh of the new-type net, most of these small fish appear to be too weak to escape. The gray sea trout were of larger size than last fall and only those which were 7-1/2 inches long or less were able to escape. The total catch of shrimp were large specimens of Penaeus setiferus, averaging 25 per pound, all of which were retained by the new-type net.

Boston, Mass.

One trip was made on the Service research vessel, Albatross III, and five lots of trawl-caught fish composed of large and scrod haddock and rosefish were frozen round. When these frozen lots were received at the laboratory, they were defrosted, filleted, packaged, and refrozen for storage and examination.

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Bacteriological examination was made of the lots of frozen fish above for an indication of the particular strains present in the fish holds which may cause early deterioration of commercially-caught fish.

College Park, Md.

Large scale packs of fish sandwich spreads were prepared from pollock, rosefish, and mackerel for actual tests in school lunch rooms. The reactions of the school children to sandwiches made from these packs will be recorded and the data analyzed and used as a guide in preparation of future packs.

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Discussions at a conference of the Vitamin Advisory Committee of the U. S. Pharmaceutical Association, attended by a Service pharmacologist, centered on possible changes in the methods of assaying vitamin A in fish liver oils and concentrates. No decision was reached as to whether or not the present system of evaluation should be revised. Study and comparison of methods will be continued, with the technologists of both the Seattle and College Park laboratories collaborating.

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After 10 months in storage at 0° F., sea trout fillets cut from fresh fish and frozen immediately, and those frozen after being cut from fish which had been frozen and thawed, showed no appreciable differences between lots as based on palatability scores. Although the amount of "drip" upon thawing remained fairly constant during the entire storage period, the quantity obtained from frozen fillets cut from frozen fish that had been thawed was about twice that for frozen fillets cut from fresh fish.

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Frozen Boston mackerel fillets held under various conditions of fluctuating storage temperatures showed no marked changes as judged by palatability scores and amount of "drip" after one month of storage. Lots are being held at constant temperatures of -10° F., 0° F., and +15° F., and at temperatures fluctuating between -10° F. and 0° F., and 0° F. and + 15° F.

Ketchikan, Alaska

A special summer season project of the Fisheries Experimental Commission, an analysis of classified pink salmon cannery trimmings collected in 1946, 1947, and 1948, was completed and a report prepared. The protein, oil, ash, and moisture contents of each of the following parts were determined: heads, collars, fins, tails, livers, eggs, milt, and viscera. The heads contained the highest percentage

of oil--averaging 13.4 percent, and the milt the lowest--1.8 percent. The eggs were by far the richest in protein with approximately 24.8 percent. A special detailed analysis of milt demonstrated that the protein:nitrogen factor for the material should be close to 5.5 rather than the customary 6.25.

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Further studies of the usual biological method for determining the toxicity of shellfish--the mouse test--demonstrated the importance of a precise definition of the term "time of death." The time from the "last normal breath and last coordinated action" to the "last noticeable reflex" may vary from 0 to over 100 seconds. This difference in time averages about 20 to 25 seconds and appears to be independent of the toxicity of the injected solution. The effect of this difference, of course, increases in importance as the total time becomes small, that is, as the toxicity increases. In tests on toxic clam-siphon extracts, the unitage--"last reflex time" relation for the range between 1 and 4 units per ml.--compares very closely with the relation determined by Hermann Sommer using toxic mussel extracts. Above 4 units the relationships may continue to compare closely, but below 1 unit per ml. the old table is not satisfactory.

Seattle, Wash.

In a study of the A. O. A. C. method for determining of fat in fish meal, it was found that improper functioning of extraction equipment often leads to low results. Some equipment siphons solvent at lower rates than others and give reduced precision.

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Work on frozen split rockfish fillets was resumed. Tests were begun to determine the effect of splitting on surface bacterial counts.

CURRIED SHRIMP

1	pound, cooked, cleaned shrimp	1/8	teaspoon pepper
1/4	cup onion, chopped	1	teaspoon curry
3	tablespoons butter or other fat	1/4	teaspoon ginger
3	tablespoons flour	2	cups milk
1	teaspoon salt	3	cups cooked rice

Cut shrimp in half if they are large. Cook the onion in the fat until slightly brown. Blend in the flour and seasoning. Add the milk and cook until thick, stirring constantly. Add shrimp and heat thoroughly. Serve in rice ring. Serves 6.