

TECHNOLOGICAL RESEARCH IN SERVICE LABORATORIES

JANUARY 1947

Ketchikan, Alaska

The 64-page book, Alaskan Seafood Recipes, was completed; and a booklet, How to Cook Fish, was mimeographed. Many copies of these publications were distributed

at the Alaskan Arts and Crafts Exhibit in Juneau. Requests for copies were received from all over the Territory. A display of marine products useful in arts and crafts was shown at the exhibit.



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Over two hundred cans of various products prepared from Alaska salmon cannery trimmings were opened and tested. Assays are being made of vitamins A, B₁, and B₂, of the contents.

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Clam samples were obtained from Ham and Carlton Islands and shipped to the College Park, Md., laboratory to be tested for toxicity.



Boston, Mass.

Work was begun on the development of new methods of curing and smoking pollock fillets.

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A lecture on fishery technology was presented at the Quartermaster Food and Container Institute in Chicago during the week of January 20, and discussions were held with its Technical Director relative to additional cooperative research.

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In further experiments on electrostatic smoking at Eastport, Maine, it was found that the dehumidifier improved the smoke by removing acrid components at the same time that the water was removed.



College Park, Md.

After 10 months in frozen storage, the oysters in most of the wrappers had lost but negligible amounts of moisture. In two wrappers, however, oysters showed

considerable freezer burn. Average pH values for all the packages had not changed appreciably during the past 4 months and had decreased less than 0.1 since the first month of storage. The results of these tests were written up for publication in a trade journal. Fillets of sea trout and Spanish mackerel wrapped in various films were not noticeably changed in flavor and appearance after 3 months in frozen storage.

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Twenty-five recipes and various sauces were prepared and tested for palatability. Nine species of fish and shellfish were used.

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At the request of various interested organizations, the following canned products were examined: sardine fillets, carp, lake herring, California mackerel, and smoked salmon.

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A staff technologist served as consultant to the fish-canning section at the National Cannery Association Convention in Atlantic City, assisting at a cutting of imported canned fishery products and conferring with fish and shellfish canners on industry problems.

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Several materials which might be used as insulation in containers for the shipment of fish by air were tested in the laboratory.

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Test feeding of kelp products to rats, mice, and guinea pigs was continued.

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Chick assays were started to determine the vitamin D content of certain seal oil products. Biological tests were carried out to determine the amount of protein needed from various fishery products to produce optimum growth.

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Further toxicity determinations with mice were run on 54 extracts from Alaska clams, and the rat-growth bioassay for thiamine in canned tuna fish was nearly completed.

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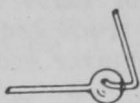
Over 270 samples of clams, water, and mud from the Parker River Refuge and adjacent areas in Massachusetts were bacteriologically examined in the trailer laboratory.

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A series of fish-cookery classes was conducted at the Quartermaster Subsistence School in Chicago from January 21 through 24.

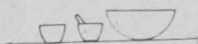
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Further experiments were carried out on the inhibition of lactose fermentation of coliform bacteria by filtrates of Pseudomonas cultures.



Mayaguez, P. R.

As a result of efforts of the laboratory staff, a much-needed new firm, with modern refrigeration facilities, was established in Mayaguez for the sale of fresh fishery products. The laboratory staff supplied considerable information on the handling, storage, and preparation of fishery products and on trade practices and seasonal variations in sales.



Seattle, Wash.

Through cooperation with a commercial firm, a fairly large sample of Alaska king crab meat was obtained, and extensive tests were begun on the refrigerated storage of this product in cellophane, pliofilm, foil, and tin cans. Tanner crab meat is being similarly tested in cellophane and in tin cans.

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Inspections of samples of various other fishery products previously placed in refrigerated storage yielded the following data: Steelhead steaks stored 6 weeks with and without N.D.G.A. showed no signs of rancidity; silver salmon held 4 months at -5° F. held up about as well in aluminum foil as in cellophane, but not as well as in evacuated tin cans; whole grayfish livers stored 3 months at 32° F. had not lost any appreciable amount of their vitamin A potency.

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Recipes for the following dishes were tested: broiled kippered salmon with egg sauce, kedgeree, salmon bechamel, king crab legs broiled on toast, clam chowder, and fish chowder. Taste tests were conducted on six samples of canned Maine sardines, cooked dishes prepared from frozen Pacific rockfish or frozen oysters, rockfish cocktail, hard-smoked salmon, and a commercial pack of frozen creamed salmon.

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Two lecture classes and a laboratory class on prevention of fish spoilage were held at the University of Washington School of Fisheries on January 20.

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The addition of 0.1 percent N.D.G.A. to halibut liver oil lessened slightly the destruction of the vitamin A content by oxidation. The simultaneous addition of 0.1 percent citric acid produced a synergistic protective effect. Higher concentrations of N.D.G.A., up to 0.5 percent, were tested and found to give increased

protection; but concentrations of 0.3 percent or more darkened the oil during the oxidative treatment.

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Assays of samples of fur-seal carcass oil, produced in the Government reduction plant in the Pribilof Islands, showed a vitamin A content of not more than 600 units per gram. Plans were submitted for the improvement of this product in future seasons.

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The State of Idaho was assisted in the planning of a portable plant for the reduction of rough fishes removed from Idaho waters.

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The factory ship Pacific Explorer reached Costa Rica about January 15. A staff technologist was on board as an observer.

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A Florida firm developing a composite fertilizer containing fish offal submitted test samples for inspection. Suggestions were made for improvement of the product.



OILS AND FATS

The nutritive value of fish oils depends on composition, energy value, digestibility and vitamin content. The composition of fish fats is about the same as that of animal or vegetable fats except that fish fats are liquid at ordinary temperatures. Also, the fats of fresh fish oxidize and become rancid more readily than animal or vegetable fats. However, the fat of canned fishery products is even less liable to rancidity than fresh meat fats, because air is excluded from the can.

Fat is important in the diet to supply energy and a certain minimum is needed for the proper functioning of the body. The energy value of fish fats has been estimated as equal to most animal and vegetable fats and about one-fourth greater than that of butter or margarine. From such evidence as is available, the digestibility of fishery products fats as a class appears to be equal to that of other fats.

--Fishery Leaflet 90