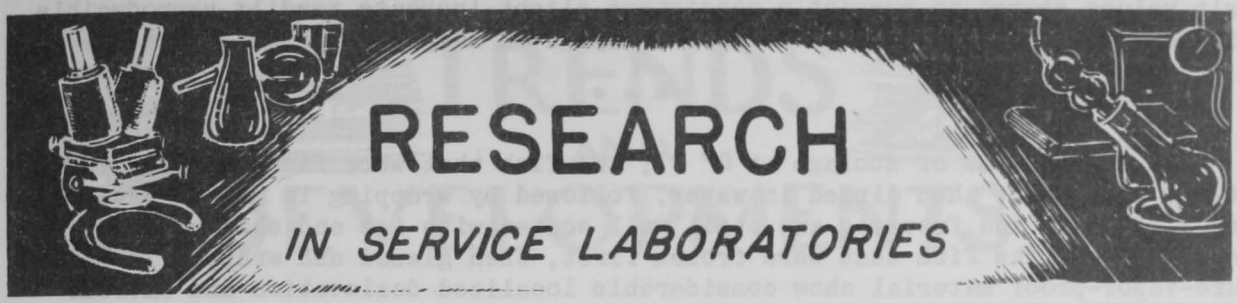

December 1949

ANALYSIS: Samples of Mexican shark liver oil, halibut liver oil, Japanese shark liver oil, and Canadian whale liver oil were procured from various producers. The whole oils and the nonsaponifiable residues were assayed by the ultraviolet spectrophotometric, antimony trichloride colorimetric, and the glycerol-dichlorhydrin colorimetric methods of assay. Ultraviolet absorption curves of the spectrophotometric data were prepared for all of the oils using both the hydrogen discharge and the Wolfram light sources. It has been observed that with most oils the use of the hydrogen discharge light source gives slightly higher values for all readings made below 310 millimicrons. However, the average increase in the reading at 310 mm., one of the fixation points used in the Morton-Stubbs correction procedure and also in the new proposed U.S.P. Vitamin A Assay, is approximately 0.5 percent. Generally, the U.S.P assay gives the lowest vitamin A potency for the sample under test, while the antimony trichloride value is somewhat higher, and the glycerol-dichlorhydrin method gives a potency value somewhere between the U.S.P. and the antimony trichloride values.

* * *

Good results were obtained on microbiological biotin assay. Further work is being carried out to determine the best method of extraction of biotin from the fishery products. In results obtained so far no method of hydrolysis has proved superior to any other in giving better subsequent extraction. A comparison has been made of results using two bacteria for this estimation. Lacto bacillus arabinosus gives higher and better results than Lactobacillus casei which is contrary to some published reports.

PROCESSING: Six quaternary ammonium compounds have been tested and found to be ineffective as salmon egg preservatives. Other compounds tried during the month, which also gave little or no significant preservative action, included penicillin, streptomycin, and several other antibiotics and several substituted phenols. Work is still proceeding on sulfites and sulfites with added sodium chloride which continue to give promising results. These tests, limited in the past to short-time accelerated tests at elevated temperatures, are now being extended to include long-term experiments at 50° F.

REFRIGERATION: Frozen fillet samples from the fish-frozen-at-sea project were examined following two months of storage. In the cod series was included a sample of a commercial pack, which was in storage for one month at the time of examination. Organoleptic judgment based primarily on color, odor, and taste established preference for the fillet samples from frozen round fish over the fillets from iced gutted fish. Free drip values were erratic, some being higher and others lower than those of the previous month; however, the press

drip values seemed to present a consistent slight increase readily reproducible with small error. The salt content for any given samples remained constant.

* * *

After 9 months of storage at 0° F., the fish that were first wrapped in vegetable parchment, then dipped in water, followed by wrapping in moisture-vapor-proof material and freezing are still well coated with ice and show no signs of desiccation. The fish that were frozen first, then glazed and wrapped in moisture-vapor-proof material show considerable localized desiccation and extreme drying of the skin.

* * *

The third month organoleptic examination of frozen pink salmon fillets was concluded. The average scores on flavor of both pink flesh (over-all) and dark flesh (rancidity) indicated at this stage that:

1. Fillets glazed in water produced the best packages.
2. Fillets glazed in ascorbic acid showed no marked improvement over those glazed in plain water.
3. Fillets dipped in ascorbic acid showed a marked improvement over undipped fillets.
4. Fillets dipped in ascorbyl palmitate showed no marked improvement over undipped fillets.
5. Skinned fillets are a markedly poorer product than unskinned fillets.

* * *

The pH determinations were made on a large number of oyster samples at the shucking house and during storage at the Laboratory. Samples of oysters taken at the packing table showed a range in pH varying between 6.56 and 6.60 for selects, and 6.50 and 6.62 for standards. This was true for oysters taken singly and for several ground together. The pH of the liquor showed practically no variation, with several samples being 6.80 and one 6.82.

Several lots of strictly fresh oysters were brought to the Laboratory for storage studies. After three days at ice temperature there was a variation in pH between 6.30 and 6.50; five days, 6.20 and 6.32; 10 days, 6.08 and 6.22; 12 days, 5.92 and 6.08; and after 18 days, between 5.62 and 5.66. The samples were sour at the last examination.

NUTRITION: Results of an assay of vitamin B_{12} content of pilchard meal, using chicks, indicated that 2-percent pilchard meal added to the experimental diet, the lowest level fed, permitted maximum gain in weight during the four-week period.