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ADDRESSES, AND  
TRANSLATIONS - 1962**

**BUREAU OF COMMERCIAL FISHERIES  
BRANCHES OF ECONOMICS  
AND TECHNOLOGY**

by

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# PUBLICATIONS

1961

Abrahamson, John D., and Carl P. Hoffman, Jr.

Exempt trucking of fresh and frozen fish and shellfish in interstate commerce. U.S. Fish and Wildlife Service, Circular 133, iv + 55 p. [Not reported in 1961.]

1962

Anonymous (Frederick L. Cheever, Jr.).

Fish get v. i. p. treatment at Gloucester Laboratory. Fishing Gazette, vol. 79, no. 4 (April), p. 38-41.

Bethea, Sammie, and Mary E. Ambrose.

Comparison of pH, trimethylamine content, and picric acid turbidity as indices of iced shrimp quality. U.S. Fish and Wildlife Service, Commercial Fisheries Review, vol. 24, no. 3 (March), p. 7-10. [Also as Separate No. 643.]

Eird, H. R., F. H. Steinke, and T. D. Runnels.

The unidentified growth factor activity and supplemental feeding value of commercial fish meals of known processing history. Poultry Science, vol. 41, no. 6 (November), p. 1740-1744.

Brooke, Richard O.

New frontiers in seafood preservation. In Seafood for Health and Nutrition, 2 p. [U.S.] Bureau of Commercial Fisheries, Special Fisheries Marketing Bulletin No. 62-5A.

Brooke, Richard O., Elinor M. Ravesi, and Maynard A. Steinberg.

Composition of commercially important fish taken from New England waters. Part II. Proximate analyses of butterfish, flounder, pollock, and hake, and their seasonal variation. Journal of Food Science, vol. 27, no. 1 (January), p. 73-76.

Butler, Charles, and Joseph W. Slavin.

Frozen fishery products. ASHRAE Guide and Data Book. Applications Volume. Published by the American Society of Heating, Refrigerating, and Air-conditioning Engineers, Inc., 345 East 47th Street, New York 17, N.Y., p. 435-444.

Charm, Stanley, and Joseph W. Slavin.

A method for calculating freezing time of rectangular packages of food. Annexe 1962-1, Supplement au Bulletin de l'Institut International du Froid.

Childs, G. R., G. F. Combs, and E. H. Bossard.

Effect of dietar, protein and amino acid levels on performance of laying hens. [Abstract.] Poultry Science, vol. 41, no. 5 (September), p. 1635.

Cohen, Edward H., and John A. Peters.

The effect of storage in refrigerated sea water on the amino acids and other components of fish. In Eirik Heen and Rudolf Kreuzer (editors), Fish in Nutrition, p. 220-221. Fishing News (Books) Ltd., London, England.

Dassow, John A., Lynne G. McKee, and Richard W. Nelson.

Development of an instrument for evaluating texture of fishery products. Food Technology, vol. 16, no. 3 (March), p. 108-110.

Hoffman, Carl P. Jr., and Donald S. Fitzgibbon.

Report on the 1961 transportation research and service activities of the Bureau of Commercial Fisheries. U.S. Fish and Wildlife Service, Fishery Leaflet 544, 5 p.

Karrick, Neva.

Progress in marine oil research conducted and sponsored by the U.S. Bureau of Commercial Fisheries. International Association of Fish Meal Manufacturers News Summary, No. 10 (December), p. 92-104.

Kaunitz, Hans, Donald C. Malins, and Donald G. McKay.

Studies of the generalized Shwartzman reaction produced by diet. II. Feeding of fractions of oxidized cod liver oil. The Journal of Experimental Medicine, vol. 115, no. 6 (June), p. 1127-1136.

King, Frederick J.

Cell damage from excess cutting of fish adversely affects frozen seafood quality. Quick Frozen Foods, vol. 25, no. 5 (December), p. 115-116.

King, Frederick J., Margaret L. Anderson, and Maynard A. Steinberg.

Effect of linoleic and linolenic acids on the solubility of cod actomyosin. In Eirik Heen and Rudolf Kreuzer (editors), Fish in Nutrition, p. 148-149. Fishing News (Books) Ltd., London, England.

- King, Frederick J., Margaret L. Anderson, and Maynard A. Steinberg--Con.  
Reaction of cod actomyosin with linoleic and linolenic acids. *Journal of Food Science*, vol. 27, no. 4 (July-August), p. 363-366.
- Knobl, George M., Jr., and Charles F. Lee.  
Technological problems of the blue crab industry. Minutes of the 21st Annual Meeting, Atlantic States Marine Fisheries Commission, September 26-28. Appendixes SA2 and CB5, p. 1-4.
- Knobl, G. M., Jr., and E. R. Pariser.  
The importance of fish flour--economic, political, sociological. *Fishing Gazette*, Annual Review Number, vol. 79, no. 13, p. 120-123, 135-138.
- Kramer, Amihud, B. H. Willier, Richard Edge, H. R. Smith, A. W. Tubman, C. F. Lee, and Charles Toompas.  
The Government-industry cooperative oyster research program. Part 1, History and methodology. *Journal of the Association of Official Agricultural Chemists*, vol. 25, no. 2 (May), p. 262-275.
- The Government-industry cooperative oyster research program. Part 2, Native oyster studies. *Journal of the Association of Official Agricultural Chemists*, vol. 45, no. 3 (August), p. 565-577.
- The Government-industry cooperative oyster research program. Part 3, Processing studies. *Journal of the Association of Official Agricultural Chemists*, vol. 25, no. 4 (November), p. 1011-1037.
- The Government-industry cooperative oyster research program. Part 4, Procedure for determining solids change. *Journal of the Association of Official Agricultural Chemists*, vol. 25, no. 4 (November), p. 1037-1050.
- Kurtzman, Caroline H., Robert R. Kifer, and Donald G. Snyder.  
Rat-feeding studies to determine presence of antimetabolites, water-soluble vitamins, and essential minerals in ravenhaden as compared with raw haddock and beef. *U.S. Fish and Wildlife Service, Commercial Fisheries Review*, vol. 24, no. 5 (May), p. 6-10. [Also as Separate No. 648.]
- Kurtzman, C. H., D. G. Snyder, L. E. Ousterhout, F. T. Piskur, and P. F. Braucher.  
Effect of several processing variables on the protein content and quality of fish flour. In Eirik Heen and Rudolf Kreuzer (editors), *Fish in Nutrition*, p. 228-229. Fishing News (Books) Ltd., London, England.
- Lee, Charles F., and F. Bruce Sanford.  
Soft-crab industry. *U.S. Fish and Wildlife Service, Commercial Fisheries Review*, vol. 24, no. 1 (January), p. 10-12. [Also as Separate No. 637.]
- Machines solve handling problems in oyster plants. *U.S. Fish and Wildlife Service, Commercial Fisheries Review*, vol. 24, no. 4 (April), p. 1-4. [Also as Separate No. 644.]
- Leong, K. C., D. Miller, D. G. Snyder, G. M. Knobl, and E. Gruger.  
Feeding of fish oil and ethyl ester fractions of fish oil to broilers. [Abstract.] *Poultry Science*, vol. 41, no. 5 (September), p. 1658.
- Mangold, Helmut K., and Rudolf Kammereck.  
New methods of analyzing industrial aliphatic lipids. *Journal of American Oil Chemists' Society*, vol. 39, no. 4 (April), p. 201-206.
- Mangold, Helmut K., Rudolf Kammereck, and Donald C. Malins.  
Thin-layer chromatography as an analytical and preparative tool in lipid radiochemistry. 1961 International Symposium on Microchemical Techniques, Symposium, vol. 2, p. 697-714.
- McKee, Lynne G., and Richard W. Nelson.  
Hydraulic press for laboratory preparation of fish press cake. *U.S. Fish and Wildlife Service, Commercial Fisheries Review*, vol. 24, no. 12, p. 14-16. [Also as Separate No. 663.]
- Mendelsohn, Joseph M., and Maynard A. Steinberg.  
Development of volatile carbonyls in haddock (*Melanogrammus aeglefinus*) flesh during storage at 2°C. *Journal of Food Technology*, vol. 16, no. 6 (June), p. 113-115.

Miyauchi, David.

Application of centrifugal method for measuring shrinkage during the thawing and heating of frozen cod fillets. *Food Technology*, vol. 16, no. 1 (January), p. 70-72.

Nelson, Philip R., and Charles F. Lee.

The fisheries of Egypt. Prepared for the General Organization for Aquatic Resources, Ministry of Supply, United Arab Republic (June), 64 p.

Olcott, H. S., J. Froines, and C. Y. Shuster.

Muscle lipids of tuna. In Eirik Heen and Rudolf Kreuzer (editors), *Fish in Nutrition*, p. 146-147. Fishing News (Books) Ltd., London, England.

Ousterhout, L. E., and D. G. Snyder.

Effects of processing on the nutritive value of fish products in animal nutrition. In Eirik Heen and Rudolf Kreuzer (editors), *Fish in Nutrition*, p. 303-309. Fishing News (Books) Ltd., London, England.

Nutritional evaluation of fish meals using four short term chick tests. *Poultry Science*, vol. 41, no. 6 (November), p. 1753-1757.

Pariser, E. R.

Fish protein concentrate. *Congressional Record*, vol. 108, no. 23 (February), p. 2216-2217.

Fish protein concentrate--a high quality animal protein. U.S. Fish and Wildlife Service, *Commercial Fisheries Review*, vol. 24, no. 5 (May), p. 1-5. [Also as Separate No. 647.]

(FPC) Technological developments in the United States of America. In Eirik Heen and Rudolf Kreuzer (editors), *Fish in Nutrition*, p. 432-434. Fishing News (Books) Ltd., London, England.

Patashnik, Max.

Accuracy of net-weight determinations for frozen glazed halibut steaks. U.S. Fish and Wildlife Service, *Commercial Fisheries Review*, vol. 24, no. 10 (October), p. 5-8. [Also as Separate No. 658]; also in *Frosted Food Field*, vol. 35, no. 5 (November), p. 38-39.

Patashnik, Max, Anthony J. Frascatore, Jr., and Morris Rafn.

U.S. Standards for grades of frozen sole and flounder fillets. *Federal Register*, vol. 27, no. 62 (March), p. 2680-2681.

Peifer, James J.

Comparative effects of marine oils, marine oil fractions, and whole fish meals on hypercholesteremic rats. In Eirik Heen and Rudolf Kreuzer (editors), *Fish in Nutrition*, p. 150-152. Fishing News (Books) Ltd., London, England.

Peifer, James J., F. Janssen, R. Uesing, and W. O. Lundberg.

The lipid depressant activities of whole fish and their component oils. *Journal of the American Oil Chemists' Society*, vol. 39, no. 6 (June), p. 292-296.

Peters, John A., and Joseph W. Slavin.

Time-temperature tolerance of frozen seafood: Influence of storage time, packaging, and humidity on the keeping quality of fish blocks and sticks. *Annexe 1962-1, Supplement au Bulletin de l'Institute International du Froid*.

Potter, L. M., W. J. Pudelkiewicz, L. Webster, and L. D. Matterson.

Metabolizable energy and digestibility evaluation of fish meal for chickens. In Eirik Heen and Rudolf Kreuzer (editors), *Fish in Nutrition*, p. 364-365. Fishing News (Books) Ltd., London, England. Also in *Poultry Science*, vol. 41, no. 6 (November), p. 1745-1752.

Privett, O. S., and Christance Nickell.

Determination of the structure of unsaturated fatty acids via reductive ozonolysis. *Journal of the American Oil Chemists' Society*, vol. 39, no. 9 (September), p. 414-419.

Richardson, Thomas, and A. L. Tappel.

Swelling of fish mitochondria. *The Journal of Cell Biology*, vol. 13, no. 1, p. 43-54.

Richardson, T., A. L. Tappel, and E. H. Gruger.

Polyunsaturated fatty acids in fish mitochondria. In Eirik Heen and Rudolf Kreuzer (editors), *Fish in Nutrition*, p. 150-152. Fishing News (Books) Ltd., London, England.

Richardson, T., A. L. Tappel, L. M. Smith, and C. R. Houle.

Polyunsaturated fatty acids in mitochondria. *Journal of Lipid Research*, vol. 3, no. 3 (July), p. 344-350.

Runnels, T. D., and D. G. Snyder.

Unidentified growth factors in broiler diets. Delaware Agricultural Experiment Station, Misc. Paper No. 370, 10 p.

Protein requirements of broilers as influenced by fish products. In Eirik Heen and Rudolf Kreuzer (editors), *Fish in Nutrition*, p. 370-372. Fishing News (Books) Ltd., London, England.

Slavin, Joseph W.

Annual report of the Gloucester Technological Laboratory - Fiscal Year 1961. Bureau of Commercial Fisheries Circular 139, ii + 11 p.

Better frozen seafoods through more research. *Quick Frozen Foods*, vol. 24, no. 9 (April), p. 170-171, 183.

Review of commercial methods of freezing fish. *Fishing Gazette - Annual Review Number*, vol. 79, no. 13 (May), p. 113-118.

Slavin, Joseph W., and Maynard A. Steinberg.

The radiation-preservation program at the Bureau of Commercial Fisheries Technological Laboratory, Gloucester, Massachusetts. Minutes of the 21st Annual Meeting of the Atlantic States Marine Fisheries Commission, September 26-28, Appendix 16.

Snyder, Donald G.

Fish in nutrition. Gulf and Caribbean Fisheries Institute, Proceedings of the 14th Annual Session, November 1961, p. 42-47.

International conference on fish in nutrition. *Fishing News International*, vol. 1, no. 2 (January), p. 55-57.

(FPC) Fish flour. Technological developments in Iceland, Canada, United States, South Africa, and Scandinavia. In Eirik Heen and Rudolf Kreuzer (editors), *Fish in Nutrition*, p. 411-412. Fishing News (Books) Ltd., London, England.

Snyder, D. G., L. E. Ousterhout, H. W. Titus, K. Morgareidge, and S. Kellenbarger.

The evaluation of the nutritive content of fish meals by chemical methods. *Poultry Science*, vol. 41, no. 6 (November), p. 1736-1740.

Stansby, Maurice E.

Speculations on fishy odors and flavors. *Food Technology*, vol. 16, no. 4 (April), p. 28-32.

Proximate composition of fish. In Eirik Heen and Rudolf Kreuzer (editors), *Fish in Nutrition*, p. 55-60. Fishing News (Books) Ltd., London, England.

Thompson, Mary H.

Effect of butylated hydroxy toluene and potassium sorbate on development of rancidity in smoked mullet. U.S. Fish and Wildlife Service, *Commercial Fisheries Review*, vol. 24, no. 4 (April), p. 5-11. [Also as Separate No. 645.]

Thompson, Mary H., and George McClellan.

The determination of microgram quantities of tin in foods. *Journal of the Association of Official Agricultural Chemists*, vol. 45, no. 4 (November), p. 979-982.

Thurston, Claude E.

Physical characteristics and chemical composition of two subspecies of lake trout. *Journal of Fisheries Research Board of Canada*, vol. 19, no. 1, p. 39-44.

Thurston, Claude E., George Kudo, and S. R. B. Cooke.

Function of tuna oil fatty acids as collectors in the flotation of iron ore. *Transactions of Society of Mining Engineers*, vol. 223, no. 4 (December), p. 350-352.

U. S. Fish and Wildlife Service.

Federal Specification, shrimp, frozen, raw, breaded. PP-S-315c, July 16, 1962, 13 p. Superseding Interim Federal Specification PP-S-00315b (F&WS), April 6, 1961. Prepared by John J. Powell, Joseph W. Slavin, and Richard D. Tenney, *Chemists*, Branch of Technology, Bureau of Commercial Fisheries. [Copies of this specification may be purchased for 10 cents from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.]

U.S. Fish and Wildlife Service--Con.

Interim Federal Specification, clams; canned. PP-C-00400 (INT.-FWS), July 10, 1962, 10 p. Prepared by Richard D. Tenney and Joseph H. Carver, Chemists, Branch of Technology, Bureau of Commercial Fisheries. [Copies available from General Services Administration, Washington, D.C., 20405.]

Interim Federal Specification, fish: chilled and frozen. PP-F-00381f (INT.-F&WS), October 15, 1962, 18 p. Revision of Interim Federal Specification PP-F-00381e (INT.-F&WS), June 4, 1959, and Interim Revision Specification PP-F-381d, September 3, 1954. Prepared by Richard D. Tenney and Joseph H. Carver, Chemists, Branch of Technology, Bureau of Commercial Fisheries. [Copies available from General Services Administration, Washington, D.C., 20405.]

Interim Federal Specification, sardines, canned. PP-S-0051f (INT.-F&WS), December 5, 1962, 18 p. Revision of Interim Federal Specification PP-S-0051e (INT.-F&WS), February 24, 1961, and Federal Specification PP-S-51e, April 11, 1957. Prepared by Richard D. Tenney and Joseph H. Carver, Chemists, Branch of Technology, Bureau of Commercial Fisheries. [Copies available from General Services Administration, Washington, D.C., 20405.]

Interim Federal Specification, tuna fish; canned. PP-T-00771a (INT.-F&WS), June 23, 1962, 16 p. Interim revision of Federal Specification PP-T-771, March 31, 1931. Prepared by Clarence J. Carlson, Richard D. Tenney, and Joseph H. Carver, Chemists, Branch of Technology, Bureau of Commercial Fisheries. [Copies available from General Services Administration, Washington, D.C., 20405.]

Specification for scallops: frozen raw, frozen raw breaded and frozen fried breaded. Bureau of Commercial Fisheries Technological Laboratory, Gloucester, Mass., NASPO Fish Specification No. 3, 11 p. Prepared by Richard D. Tenney and Joseph H. Carver, Chemists, Branch of Technology, Bureau of Commercial Fisheries. Prepared for the National Association of State Purchasing Officials, an affiliate organization of the Council of State Governments, 1313 East Sixtieth Street, Chicago 37, Ill.

Winchester, Clarence F.

Fish meal - present and future. Feed-stuffs, vol. 34, no. 38 (September), p. 34-36.

U.S. Standards for grades of frozen sole and flounder fillets. Federal Register, vol. 27, no. 62 (March), p. 2680-2681. Prepared by Max Patashnik, Chemical Engineer, Anthony J. Frascatore, Jr., Chemist, and Morris Rafn, Food Technologist, Branch of Technology, Bureau of Commercial Fisheries.

## ADDRESSES

### Ann Arbor, Mich.

Clem, Joe P., and H. L. Seagran.

U.S.D.I. Inspection and certification of fishery products. Presented at the Bureau of Commercial Fisheries Seminar, Ann Arbor, Mich., January 25.

Seagran, H. L.

Progress on product development studies in assistance to the fish-farming industry. Presented at the Bureau of Commercial Fisheries Seminar, Little Rock, Ark., May 17.

Sullivan, L. J.

Product development from buffalo fish. Presented at the Bureau of Commerce Fisheries Seminar, Ann Arbor, Mich., January 29.

### College Park, Md.

Ambrose, Mary.

Pepsin digestibility of fish meals. Presented at the Atlantic Fishery Technologists Conference, Lunenburg, Nova Scotia, October 17.

**Ambrose, Mary.**

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**Bird, H. R.**

Growth factors in fish products. Presented at World Poultry Science Congress, Sydney, Australia, August.

**Childs, G. Richard.**

Factors influencing pigmentation of skin and yolks. Presented at Maryland Nutrition Conference, Washington, D.C., March 8-9.

Effect of dietary protein and amino acid levels on performance of laying hens. Presented at Poultry Science 51st Annual Meeting, Urbana, Ill., June 28.

**Kifer, R. R.**

Evaluation of protein supplements. Presented at the University of Maryland Short Course and Field Day, College Park, Md., February 1.

Protein quality. Presented at the University of Maryland Short Course and Field Day, College Park, Md., February 3.

Value of menhaden fish meal as a protein supplement to practical swine diets II. Corn-cottonseed diets (CP-119). Presented at American Society of Animal Science, Chicago, Ill., November 22.

**Knobl, George Jr.**

Fish protein concentrate (CP-111). Presented at Virginia Fishermen's Association Annual Meeting, Old Point Comfort, Va., February 6.

Resume of College Park research on nutritive quality of fish meal and FPC. Presented at N.F.I. Industrial Products Division Meeting, Morehead City, N. C., November 27.

**Lee, Charles F.**

Technological aspects of the fisheries of Egypt. Presented at Weekly Seminar Biology, Washington, D.C., office, August 29.

The fisheries of Chesapeake Bay. Presented at Lions Club Meeting, Washington, D.C., September 19.

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**Leong, Kam.**

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Joint report of research. Presented at N.F.I. Industrial Products Division Meeting, Morehead City, N. C., November 27.

**Miller, Dave.**

Exudative diathesis and muscular dystrophy induced in the chick by esters of polyunsaturated fatty acids. Presented at Atlantic Fishery Technologists Conference, Lunenburg, Nova Scotia, October 17.

**Pariser, E. R.**

Fish protein concentrate (CP112). Presented at Joint Congressional Meeting, Washington, D.C., February 1.

Fish protein concentrate (CP116). Presented at National Fishery Institute's 17th Annual Meeting, New Orleans, La., April 30.

**Pariser, E. R.**

Technological developments in the manufacture of fish protein concentrate for human consumption. Presented at Institute of Food Technologists, Miami Beach, Fla., June 12.

### Gloucester, Mass.

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**Anderson, M. L.**

Effect of C-18 unsaturated fatty acids on the measurement of protein extractability from the skeletal muscles of cod and other species using the solubility test. Presented at Atlantic Fisheries Technological Conference, Lunenburg, Nova Scotia, October 15.

Carver, J. H.

The Bureau of Commercial Fisheries' Standards and Inspection Program. Presented at Maryland Food Brokers' Association, Baltimore, Md., March 2.

Status of Federal Sardine Specification. Presented at Annual Spring Meeting of the Maine Sardine Council, Bangor, Maine, May 11.

Frascatore, A. J., Jr.

Detection of bones in fish portions and fillets with the use of X-rays. Presented by J. A. Peters at the Institute of Food Technologists, 22nd Annual Meeting, Miami Beach, Fla., June 11.

Gould, E. D.

The protein solubility test: I - The effect of triglycerides on fatty acids in frozen cod flesh. Presented at Atlantic Fisheries Technological Conference, Lunenburg, Nova Scotia, October 15.

Mendelsohn, J. M.

Gas chromatographic analysis of the volatiles from haddock. Seminar, U.S. Quartermaster Research and Engineering Center, Natick, Mass., February 16.

Gas chromatographic separation of volatiles collected by different methods from haddock flesh. Institute of Food Technologists, 22nd Annual Meeting, Miami Beach, Fla., June 11.

Mendelsohn, J. M., and C. Merritt, Jr.

Flavors of fish. Presented by C. Merritt at the American Chemical Society, 142nd National Meeting, Atlantic City, N. J., September 16.

Peters, J. A.

Current United States research on freezing, cold storage, and distribution of seafoods. Atlantic Fisheries Technological Conference, Lunenburg, Nova Scotia, October 16.

Improving the handling and quality of whiting. Third Annual Maine Seafood Quality Program, Portland, Maine, October 26.

Peters, J. A., E. H. Cohen, and E. E. Aliberte.

Preliminary report: Improving the quality of whiting. Presented by J. A. Peters at the Bureau-Industry Meeting on Improving the Quality of Whiting, Technological Laboratory, Gloucester, Mass., May 24.

Peters, J. A., E. H. Cohen, and F. J. King.

Effects of chilled storage on the frozen storage life of whiting. Presented by J. A. Peters at the Institute of Food Technologists, 22nd Annual Meeting, Miami Beach, Fla., June 11.

Ravesi, E. M.

Low-level irradiation of clams and haddock. Atlantic Fisheries Technological Conference, Lunenburg, Nova Scotia, October 17.

Slavin, J. W.

Recent developments in refrigeration which may be applicable to tuna vessels. Government-Industry Tuna Meeting, LaJolla, Calif., January 9-10.

Time-temperature tolerance of frozen seafood. Annual Meeting of the National Association of Refrigerated Warehouses, New Orleans, La., May 29.

Cold storage warehousing and the fishing industry. Northeast Meeting of National Association of Refrigerated Warehouses, Sturbridge Village, Mass., October 5.

One hundred years of frozen seafood. Atlantic Fisheries Technological Conference, Lunenburg, Nova Scotia, October 16.

Slavin, J. W., J. A. Peters, and E. E. Aliberti.

Preliminary Report: Improving the handling of whiting. Presented by J. W. Slavin at the Bureau-Industry Meeting on Improving the Quality of Whiting, Technological Laboratory, Gloucester, Mass., May 24.

Steinberg, M. A.

Low-level radiation preservation of clams (*Mya arenaria*). Massachusetts Shellfish Officers' Association, Boston, Mass., March 15.

## Ketchikan, Alaska

Brown, Russel L.

Variation in drained weight of frozen king crab meats. Conference on Technology of King Crab Processing, Ketchikan, Alaska, May 10.

**Hayes, Murray L.**

Preliminary plans for biological research on king crab. Conference on Technology of King Crab Processing, Ketchikan, Alaska, May 10.

Biology of tanner crab. Conference on Technology of King Crab Processing, Ketchikan, Alaska, May 10.

### **Pascagoula, Miss.**

**Thompson, Mary H.**

The proteins of shrimp. Atlantic Fisheries Technologists' Conference, Lunenburg, Nova Scotia, October 15.

**Waters, Melvin E.**

Sanitation and care of catch on vessels at sea. Atlantic Fisheries Technologists' Conference, Lunenburg, Nova Scotia, October 16.

### **Seattle, Wash.**

**Dassow, John A.**

The irradiation research program of the Seattle Technological Laboratory, AFC-NFI Conference on Irradiation of Fishery Products, Cambridge, Mass., February 2.

Fresh fish grading and handling and its relation to product quality. Monthly local meeting of the Northwest Fisheries Association, Seattle, Wash., April 11.

Fresh fish grading and handling in relation to quality of halibut. Monthly local meeting of Northwest Fisheries Association, Seattle, Wash., April 11.

Development of specifications for quality of frozen king crab meat. King Crab Conference, Ketchikan, Alaska, May 9-11.

Highlights of current technological research in Seattle. KING TV Community Workshop on Bureau of Commercial Fisheries, September 23.

The food scientist in fisheries. Bellevue Science Seminar, Bellevue High School, Bellevue, Wash., October 1.

Quality preservation by irradiation. Oregon's Fifth Annual Seafood Judging Program, Astoria, Oreg., December 6.

**Dassow, John A., and David T. Miyauchi.**

Highlights of the research on irradiation of Pacific crab and flounder. American Institute of Biological Sciences Committee Meeting on Food Irradiation, Washington, D.C., October 25.

Progress report on food preservation through the radiation process. Monthly meeting of the Northwest Fisheries Association, November 14.

**Gruger, Edward H., Jr.**

Refining commercial tuna oil for use with canned tuna. Bureau-Industry Conference on Tuna Program, Long Beach, Calif., June 6.

**Karrick, Neva L.**

Potential beneficial role of fish lipids in diets. Bureau-Industry Conference on Tuna Program, Long Beach, Calif., June 6.

Potential undesirable nutritional aspects of feeding fish lipids. Bureau-Industry Conference on Tuna Program, Long Beach, Calif., June 6.

**Malins, Donald C.**

Analysis of complex lipids by thin-layer chromatography. Seminar at College of Physicians and Surgeons, Columbia University, New York, N.Y. January.

The application of thin-layer chromatography to teaching, research, and industrial chemistry. Seminar at Department of Chemistry, Seattle University, Seattle, Wash., May 7.

**Miyauchi, David T., and John Spinelli.**

Drip formation in fish: III. Composition of drip from defrosted Pacific cod fillets. Joint Meeting Pacific Divisions of American Association for the Advancement of Science with AIBS and IFT, Corvallis, Oreg., August 29.

**Nelson, Richard W.**

Dungeness crab research at the Seattle Technological Laboratory. Fourth Annual Oregon Seafood Judging Program, January 23.

**Patashnik, Max.**

Preliminary observations on the milky condition in some Pacific coast fish species. Joint Meeting Pacific Divisions of American Association for the Advancement of Science with AIBS and IFT, Corvallis, Oreg., August 29.

Roubal, William T.

Tuna fatty acids: I. Initial studies on the composition of the light and dark meats of bluefin tuna (*Thunnus thynnus*)--structural isomers of the monoenoic fatty acids. AOCS Meeting, New Orleans, La., May 9.

Tuna fatty acids: II. Investigations of the composition of raw and processed domestic tuna. AOCS Meeting, New Orleans, La., May 9.

Stansby, Maurice E.

Brief resume of current Seattle Laboratory research of interest to tuna industry. Bureau-Industry Conference on Tuna Program, Long Beach, Calif., June 6.

Speculations on certain possible trends in tuna technological research. Bureau-

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### Technical Advisory Unit

Dyer, John A.

Fish oil--present and future. Virginia Fishermen's Association, Old Point Comfort, Va., February 13.

Winchester, Clarence F.

Fish meal--present and future. Virginia Fishermen's Association, Old Point Comfort, Va., February 13.

Environment and growth (invitational paper). The 54th Annual Meeting of the American Society of Animal Science, November 24.

## TRANSLATIONS PREPARED BY THE SEATTLE TECHNOLOGICAL LABORATORY, 1960-62<sup>1</sup>

(All translations by George Kudo)

Anonymous.

1957. Lipids of the muscle of tuna (*Thunnus orientalis*). IV. Cephalins of the dark-colored and ordinary muscles. Bulletin of the Japanese Society of Scientific Fisheries, vol. 23, no. 5, p. 278-281. Translated November 1960 (T-S-8).

Adachi, Akemi.

1960. Cuttle-fish oil. XII. Existence of C<sub>24</sub> acids, C<sub>26</sub> acids, and C<sub>28</sub> acids. Journal of Japanese Oil Chemists' Society, vol. 9, no. 11, p. 591-593. Translated January 1962 (T-S-13).

1960. Cuttle-fish oil. Isolation and structure of octadecatetraenoic acid. Journal of Japanese Oil Chemists' Society (Yukagko, Japan), vol. 9, no. 4, p. 191-194. Translated May 1962 (T-S-16).

Igarashi, Hisanao, K. Zama, and M. Katada.

1957. Lipids of the muscle of tuna (*Thunnus orientalis*). I. Acetone-soluble lipids of the ordinary muscle. Bulletin of the Japanese Society of Scien-

tific Fisheries, vol. 22, no. 12, p. 787. Translated July 1960 (T-S-5).

Igarashi, Hisanao, Koichi Zama, and Muneo Katada.

1957. Soluble lipids of the dark-colored muscle. Bulletin of the Japanese Society of Scientific Fisheries, vol. 22, no. 12, p. 791-794. Translated August 1960 (T-S-6).

1957. Lipids of the muscle of tuna (*Thunnus orientalis*). III. Lecithins of the dark-colored and ordinary muscles. Bulletin of the Japanese Society of Scientific Fisheries, vol. 23, no. 5, p. 273-277. Translated October 1960 (T-S-7).

Kaneda, Takashi, Hisae Sakai, Seinosuke Ishii, and Kimie Arai.

1955. Studies on the nutritive value of marine animal oils (discussion and summary). Bulletin of Takai Regional Fisheries Research Laboratory, no. 12 (Contribution A, no. 20), December, 20 p. Translated May 1960 (T-S-4).

<sup>1</sup> The 1960 and 1961 translations are included here because they have not previously been reported, the data not being available earlier.

1955. Studies on the nutritive value of marine animal oils. Bulletin of Takai Regional Fisheries Research Laboratory, no. 12 (Contribution A, no. 20), December, 121 p. Translated January 1962 (T-S-15).
- Katada, Muneo.  
1960. Lipids of the muscle of tuna (*Thunnus orientalis*). VI. Sphingolipids of dark-colored and ordinary muscles. Bulletin of the Japanese Society of Scientific Fisheries, vol. 26, no. 4, p. 421-424, April. Translated March 1961 (T-S-10).
- Katada, Muneo, Koichi Zama, and Hisanao Igarashi.  
1959. Lipids of the muscle of tuna (*Thunnus orientalis*). V. Further researches on the phosphoaminolipids. Bulletin of the Japanese Society of Scientific Fisheries, vol. 24, no. 9, p. 735-738. Translated February 1960 (T-S-2).  
1961. Lipids of the muscle of tuna (*Thunnus orientalis*). VII. Distribution of lipids in dark-colored muscle, ordinary muscle, and several other tissues. Translated April 1961 (T-S-11).
- Matsuura, Fumio, and Kanehisa Hashimoto.  
1961. Chemical studies on the red muscle ("chial") of fishes. XII. Oxygen dissociation curve of tuna myoglobin. Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, no. 2, p. 162-165. Translated June 1962 (T-S-17).
- Migita, Nasao, and Shigeo Otake.  
1961. Influence of different lethal conditions upon fish muscle protein. II. Denaturation of carp myosins by freezing and frozen storage. Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, no. 4, p. 327-338, January. Translated January 1962 (T-S-14).
- Nonaka, Junsaku.  
1958. Rusting of fish products and its prevention. Oil Chemistry (Yushi Kagaku), vol. 7, no. 5, p. 317-322. Translated December 1961 (T-S-12).
- Ota, F.  
1958. Carbonyl compounds in fish as related to deterioration. I. Detection of volatile carbonyl compounds formed in fish flesh. Bulletin of the Japanese Society of Scientific Fisheries, vol. 24, no. 5, p. 334-337. Translated February 1960 (T-S-1).  
1958. Carbonyl compounds in fish as related to the deterioration. II. Thermal production of formaldehyde in fish flesh. Bulletin of the Japanese Society of Scientific Fisheries, vol. 24, no. 5, p. 338-341. Translated February 1961 (T-S-9).
- Toyomizu, Masamichi.  
1961. Studies on antimicrobial action of oxidized fish oil. IV. On the mode of antimicrobial action of oxidized fish oil and the reversal substances. Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, no. 2, p. 182-187. Translated December 1962 (T-S-18).
- Uno, Tsutomu, Toshio Tokunaga, and Masayoshi Nakamura.  
1956. Chemical studies on the body tissues of the salmon (*Oncorhynchus keta*), after spawning. Bulletin of the Hokkaido Regional Fisheries Research Laboratory (Yoichi), no. 14, p. 89-95, September. Translated April 1960 (T-S-3).

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