United States Department of the Interior, J. A. Krug, Secretary
Fish and Wildlife Service, Albert M. Day, Director

Fishery Leaflet 211

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CERTAIN ASPECTS OF THE GERMAN FISHING INDUSTRY

REPORT VI - INSTITUTE FOR THE UTILIZATION OF FISH OF THE FEDERAL FISHERIES AGENCY (INSTITUT FUR FISCHVERWERTUNG DER REICHSANSTALT FUR FISCHEREI) HANDELSHAFEN 12, WESERMUNDE

(Interview with Dr. Lucke (Director & Dr. Luneburg)

One of a series of six fishery leaflets* abstracted from BIOS FINAL REPORT No. 493, Item No. 22 prepared by Mr. W. H. Myles, Ministry of Fisheries, Dr. G. A. Reay, Department of Scientific and Industrial Research, and Lt. H. E. M. Farrer, Herring Industry Board, for the British Intelligence Objectives Sub-Committee, 32 Bryanstone Square, London, W. 1.

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Object of Visit

The object of this visit was to hear Dr. Lucke's opinions about various matters concerning preservation of fish as food and to learn something of research carried on at the Institut.

Communication was slow because of language difficulty and there was an appearance of reticence, although this may not mean that anything new and important was being concealed. The whole of the time available was spent in talking.

It was intended to visit the Institut again to see the laboratories, but this could not be arranged. It appeared from a cursory inspection to be a well laid out and equipped laboratory. At present it is apparently employed almost entirely upon testing work under American direction, e.g. testing the freshness and quality of fish supplies by bacterial counts, volatile base analysis, and determination

*F.L. 206 Fish Processing Machinery, F.L. 207 Quick Freezing and Cold Storage of Fish, F.L. 208 Smoke Curing of Fish, F.L. 209 The Preservation of Fish by Canning and Related Processes, F.L. 210 "WIKING EIWEISS" (A protein Product Manufactured from Fish), and F.L. 211 Institute for the Utilization of Fish of the Federal Fisheries Agency (Artificial Ice, Spoilage in Fish, Anti-Oxidants, and Fish Meal & Oil Manufacture).

of nutritional value. During the war German research was confined mainly to inland fresh water fisheries in Germany and in occupied countries to the East and South-East. This research was carried out in various inland places.

Opinions gathered here on some subjects e.g. freezing of fish, smoke curing of fish, performance of filleting machines and fish preserved products are referred to in Reports Nos. I, II, III and IV. Below are short notes made on a few other topics that were briefly discussed.

Artificial Ice

No new commercial developments in the manufacture of ice are to be found in Germany. Before the war a certain amount of research was carried on in this field but had not led to developments.

F. W. Fechner & Co. of Hamburg had produced on an experimental scale "Scherben Eis" i.e. thin, sheet ice made on a freezing drum, c.f. U.S. "Flak" ice. It was admitted that should a suitable chemical preservative be found for incorporation in ice this method would be the most satisfactory one by which to obtain a uniform distribution of it throughout. This had been one of the chief difficulties in their experimental work with chemical ices made by the ordinary slow freezing can method. This agrees with U.K. experience.

Dr. Lucke thought that chemical ices could never be completely satisfactory since during gutting on the deck of the trawler bacteria got pushed too deeply into the flesh for diffusion of the chemical subsequently to prevent deep-seated bacterial growth completely. Dr. Lucke was not enthusiastic about the results of past research which included a study of "Caporit" ice (containing a trade-marked hypochlorite mixture of unknown composition), "Libicin" ice (containing hydrogen peroxide), "Katadyn" ice (containing colloidal silver). The last was stated to be useless in the presence of sea water, which brought about the flocculation of the colloid. The problem of finding a satisfactory preservative ice was to be resumed in due course, the intention being to try "penicillin" ice. This has also been thought of in the U.K.

Spoilage in Fish - Estimation of

In the control work now being carried out, fish if suspect, is tested organoleptically i.e. examined for stale or putrid or rancid odours and flavours. The most commonly used objective test for spoilage, apart from bacterial counts, is measurement of the total volatile base. The limit for what might be considered fresh fish was stated to be 60 to 70 mg. volatile base N per cent. This limit was not passed on the average until fish that had been preserved on ice was more than 14 days caught. At this comparatively late stage of spoilage, Trimethylamine content was not considered so satisfactory as an index as the content of total volatile bases. Although the content of Trimethylamine increased at first with incipient spoilage, it tended to fall later. Dr. Luneburg doubted if workers using this as an index were in fact measuring only Trimethylamine. He could not lay hands upon a printed account of his researches in this field, but instructions were left with Lieut. Abrams of the U.S. Military Government at Wesermunde to receive and forward this paper to us.

pH measurements were also being made upon the flesh of suspect fish, as a confirmatory test in conjunction with the estimation of bases.

Dr. Luneburg had it in mind to investigate the possibility of measuring spoilage by detecting the production of fluorescent substances.

Anti-Oxidants

Very little work had apparently been done in this field. For prevention of rancidity in salt herrings the most effective anti-oxidant tried was hydroquinone, used in experimental trials in concentrations up to 0.5 per cent. The use of this substance is not restricted in Germany as it would be in the U.K.

Fish Meal & Oil Manufacture

This was not discussed with Dr. Lucke, but whilst at Wesermunde a short visit was paid to the works of Schlottenhose & Co. the well known manufacturers of fish meal plant and a record of the visit can conveniently be made here. Actually this Company which had been on war work, had nothing new to offer in the way of plant or process. Every type of plant that could immediately be put into production, if material were available, was contained in their pre-war catalogue.

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