

TECHNOLOGY OF CRABMEAT PRODUCTION —

A BIBLIOGRAPHY

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A bibliography dealing with food and food technology aspects of the body and leg muscles of crabs, has been unavailable. Such a compilation would be valuable to give logical direction to research and point-up individual problems that require study. The collection contained herein, was prepared to serve these needs.

In attempting to gather the pertinent literature, ministries, laboratories and libraries around the world were solicited. These inquiries elicited a gratifying response, producing several previously unknown publications and at the same time, indicating the striking paucity of literature in this area. It was firmly established that only six species of five genera are fished on a commercially profitable scale. Interestingly enough, published papers deal only with these same six forms.

While the stone crab, *Menippe mercenaria*, is fished in the south Atlantic coastal areas of the United States, it is of little commercial value; material dealing with its development technologically, have not been published. A similar situation exists with respect to *Portunus pelagicus*, of Australian waters.

It appears that some of the crab resources of South America particularly *Callinectes*, are not utilized and that additional fishing grounds may be discovered by exploring the inshore waters. Although the rock crab, *Cancer irroratus*, seems to be present along the eastern coast of the United States in numbers to justify a fishery, little study has been made of methods of meat removal; a problem that can easily mean the difference between profit and loss to a producer.

While *Portunus pelagicus* is caught by Australian crabbers, information is yet too meager to encourage speculation regarding its future potentialities. A similar condition exists in The Philippines, the inshore waters of India, Egypt, Israel and West and South Africa. It may well be that exploratory studies of the abundance of other genera and those already known could lead to additional sources of low-cost high-quality food. With rapidly expanding populations such increases in the food supply will be welcome.

Industry may find it profitable to investigate the possibilities of expanding operations to encompass markets more distant than present storage-transporta-

tion facilities allow. In the United States for example, pasteurization² of crabmeat in sealed double-seamed cans has increased the cold-storage life of meat of the atlantic blue crab. This technique is already beginning to increase the market areas for this product.

Other technological investigations are worthy of study; utilization of scrap waste for by-product development and automatic picking methods to increase yield and reduce production costs, to mention but two. Few papers actually deal with handling, cooking and storage of the meat. Only one paper dealing with the blue crab, *Callinectes sapidus* (Rathbun), treats of removal of meat from the shell, yet this is a major consideration in any appraisal of yield. These have been neglected areas of investigation. The outstanding lack however is the subject of nutrition. A definitive study of the vitamin, amino acid and mineral content of any of the crabmeats is unknown to the author. With the study of diet and dietetics so important these days, such an investigation would fill a wide gap in our knowledge and supply needed information. Review of this bibliography may suggest additional areas for study.

²170°F for 1 minute internal temperature at geometric center of the can, is minimum for storage at below 43°F, to achieve a year of preservation.

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COMMITTEE REPORTS

REPORT OF THE COMMITTEE ON SANITARY PROCEDURE—1960

The 1959 Annual Report of this Committee, presented at the Glenwood Springs Meeting, included coverage of the results of the meeting of the 3-A Sanitary Standards Committees held on August 23-26, just prior to the Annual Meeting of the Association. Only one meeting of the 3-A Sanitary Standards Committees has been held since the 1959 Annual Meeting of the Association. That meeting was held at the Continuing Education (Kellogg) Center at the University of Georgia, Athens, Georgia, on February 29 and March 1 and 2, 1960.

That meeting was attended by nine members¹, the ex-officio member, and the chairman, of a total of sixteen. Caucuses of the Sanitarians were attended by seven representatives of the Milk and Food Program of the USPHS, all of whom are members or officers of this Association, and, intermittently, by President Wm. V. Hickey and by several other members connected with other committees.

The two accomplishments of the Athens meeting of immediate interest to milk sanitarians were (a) the final and official approval of the 3-A Sanitary Standards for Farm Milk Cooling and Holding Tanks - Revised, (J. Milk and Food Technol., 23: 172-178. 1960) and which became effective on September 1, 1960, and (b) the adoption of an amendment to Subsection D(4) of the 3-A Sanitary Standards for Stainless Steel Automotive Milk Transportation Tanks for Bulk Delivery and/or Farm Pick-up Service, to permit a maximum interior length of 38' 6" for tanks with one manhole. This amendment became effective on July 5, 1960.

Of the four tentative sanitary standards reviewed during the Meeting the most progress toward completion was made in those covering Automatic Bulk Milk and Milk Products Vending Machines. The comments of the caucus of Sanitarians have

been made available to the Task Committee, and a revised draft of these sanitary standards should be available for consideration at the next Meeting of the Committees.

A screening test, consisting of exposure to normal washing and bactericidal materials and procedures, for Plastic Materials as Product-Contact Surfaces, in Multiple Use, for Dairy Processing Equipment, was reviewed, and suggestions for minor modifications in the procedure were submitted to the Task Committee.

The determination of the desirable and essential physical properties and characteristics of plastics and rubber and rubber-like materials, within relatively narrow ranges of instrument measurement or chemical assay, for specialized applications in dairy equipment, requires a degree of technology which few, if any, sanitarians are in position to provide. Therefore, in the fixing of the limits for ranges of physical properties of these materials, for specific uses, members of the Committee on Sanitary Procedure are compelled to defer to the recommendations of the manufacturers of these materials, and the experience of fabricators who use parts made of them, or to research and experimental investigations performed by Government agencies and educational institutions, in agreeing to the limits proposed. It is obvious that sanitarians will not be in position to verify physical properties of such materials, either in the field or at an office desk. And it is equally obvious that some of the physical limitations ultimately agreed upon, such as the specific degrees of hardness or resilience, are principally of concern to fabricators. Sanitarians - and the users of the equipment - are primarily concerned with absorption of butterfat, water, detergent and sanitizing solutions, the stability of these materials with respect to cracking or disintegration, and the migration of components - especially those which may, from time to time, be declared toxic or carcinogenic - into the products processed.

Limits to absorption can be agreed upon, and fixed, although the frequency of tests in the field is extremely questionable. Everyone desires that the rubber parts of equipment last for a reasonable number of uses without displaying

¹The names of the signatories of this Report who attended the Athens Meeting are indicated by asterisks.