Investigaciones que se condujeron por varias agencias gubernamentales, demostraron que condiciones sanitarias abominables existían en algunas plantas en la industria de la carne de cangrejos azules. El National Fisheries Institute ha tratado de establecer standards sanitarios entre los varios productores.

En la convención del National Fisheries Institute en 1954 se discutieron y se trataron de establecer standards voluntarios para las croquetas de pescado. Este trabajo ha sido hecho en estos últimas meses y está ahora casi completo.

Standards for Crab Meat

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The summer of 1953 was like the lull before the storm, with the crab meat industry prospering. By August there were a few scattered reports of food poisoning due to crabmeat, then all of a sudden more food poisoning cases were reported. The public was alarmed, particularly in the New York, Baltimore and Philadelphia markets. The papers in New York City demanded that the Health Department take steps to prevent the "wanton poisoning" of their readers. The New York City Health Department then asked the Federal Food and Drug Administration for help.

A crew of federal inspectors and technicians in a mobile laboratory came upon the scene to locate the source of the trouble. These men tried to be of assistance and make suggestions for the benefit of the operator. A second contingent of federal inspectors, which the industry referred to as the "wrecking crew", now arrived on the scene. Its job was to make plant inspections and sample interstate shipments. Within short order many shipments of crabmeat were embargoed, some later released, others seized and condemned.

The effect of this upon crabmeat sales was disastrous. There was no ready market; the commission merchants were wary about buying and the consuming public was afraid to eat fresh crabmeat. The Federal Veterans Hospital Administration stopped buying crabmeat and New York City was ready to ban shipments to that city. Other major cities were preparing to do likewise.

The crabmeat industry was in serious difficulties, and at this crucial time the National Fisheries Institute entered the picture. It headed off any immediate drastic measures that had seemed certain to be taken by New York City. It promised the officials that the industry, itself, would at once do something.

In order to carry out the promise that N.F.I. had made, Mr. Jackson, its General Manager, initiated area meetings of crabmeat producers along the Atlantic seaboard, at which the dealers were forcefully told that the salvation of their markets was in their own hands. Some packers readily admitted that at times their plant sanitation had slipped, but all expressed willingness

to remedy the situation. The Blue Crab Committee was organized and met at National Fisheries Institute headquarters in January, 1954, to formulate a sanitary code for the crabmeat industry. Codes from the various states were compared and that of Virginia was used as a basis for the National Fisheries Institute code. Some additions were made in order to strengthen this voluntary industry code.

The foreword of the Code reads as follows: "The objective sought through the adoption of these Voluntary Industry Rules and Regulations are:

1. To safeguard the health of persons eating crab meat.
2. To assure uniform inspection of procedures and sanitation standards among the subscribers to this code.
3. To provide for an accredited list of crab meat packers subscribing to this voluntary industry code.
4. To provide operators of cooked crab establishments and crab meat plants with an adequate, practicable guide for the construction, equipment, maintenance and operation of their establishments."

The Code establishes standards for the various structural aspects of the plant: picking operations, cleaning and sterilizing of equipment, and all other matters directly and indirectly concerned with crab meat production.

Then the Code discusses accreditation. This refers to the fact that, after all plants have had an opportunity to review the Code and subscribe to it, N. F. I. will submit to all regulatory agencies, in all areas where fresh crabmeat is marketed, an approved list of plants. It should be mentioned that such accredited list is not limited to N. F. I. members alone, since any plant has the privilege of being on such list, provided it can meet the provisions of the code and conscientiously abide by them.

The question then arose as to who would decide whether a plant can qualify for accreditation. It was decided by the N. F. I. Technical Committee that the local health officer, where possible, will make the first qualifying inspection. In areas where this is not possible, a qualified commercial laboratory (approved and designated by the N. F. I. Technical Committee) will do the certifying. Furthermore, a plant wishing certification may select a laboratory, provided that the laboratory is qualified in the opinion of the N. F. I. Technical Committee. The process of accreditation is thus on an impartial basis, and all plants are given an equal opportunity to qualify before the accredited list is published.

Despite the fact that New York City looks upon this Voluntary Industry Code with favor, its attitude is conservative. The New York people maintain that no quality control program is better than the follow-up. During the time the Voluntary Industry Code was being drafted, New York City had been testing samples of crabmeat. The Health Department sent its reports, some favorable, others not, to the various plants. These reports expressed the results of the testing in terms that were unfamiliar to some packers. Heretofore, any bacteriological reports that they had received had been sent by the Federal Food and Drug Administration. If the crabmeat they sampled showed the presence of *E. coli* of fecal origin, the plant was so notified. If *E. coli* was not present, there was no notification. Therefore, it seemed to the packers that New York City was trying to impose standards and regulations foreign to the crabmeat industry.

N. F. I. arranged a meeting with the Director of the Food and Drug Division of the New York City Health Department in April, 1954, to discuss this new type of bacteriological testing regarding fresh crabmeat.

During the summer of 1953, all cases of food poisoning directly attributed to crabmeat were caused by hemolytic Staphylococci. These bacteria are the same kinds that may be found in pie fillings, custards, and cream puffs and are insidious due to the fact that they produce a toxin that is not destroyed by the usual cooking temperatures. Even though the bacteria themselves are dead, their toxin still exists as a potential public health hazard.

These bacteria may be found on the hands; more so if the worker has any sores or open cuts on his hands. In this way they can easily contaminate the food being packed.

Crabmeat showing an abundance of Enterococci constitutes a health hazard. These bacteria are of fecal origin and therefore are of sanitary significance in any food operation. Other bacteria involved in this testing were the coliforms including harmful types such as those producing Typhoid and Dysentery, as well as many harmful ones. If many coliforms are present in crabmeat there is a real possibility that harmful kinds may be included.

The Standard Plate Count, as used by the New York department, expresses the total number of bacteria present, making no effort to differentiate among the innumerable kinds.

The various standards that New York City planned to adopt to determine the bacteriological quality of fresh crabmeat, in the order of their importance, are as follows:

Hemolytic Staphylococci	100 per gram
Enterococci	1000 per gram
Coliform	100 per gram
Standard Plate Count	100,000 per gram

In July, 1954, the City of New York made an amendment to its Sanitary Code. This, in effect, stated that any crabmeat offered for sale in that City must be sterilized and in a hermetically sealed can, or if it is marketed as fresh crabmeat, it must comply with the bacteriological standards above.

During the late spring and throughout the summer our Laboratory was engaged in the testing of crabmeat, for Standard Plate Count. This work was carried out in the plants in northern Florida and southern Georgia, and involved nearly four hundred samples per month for several months. In reviewing these data, a question arose as to whether the plants in the Southeast can consistently produce meat that will comply with the 100,000 New York standard. The other standards were felt to be reasonable, but some doubt was felt that the 100,000 maximum Standard Plate Count might be difficult to achieve immediately. Moreover, this amendment to New York City's Sanitary Code was scheduled to go into effect January 1, 1955.

Recently at a Seafood Seminar, sponsored by the Maryland Department of Health at Solomon's Island, Maryland, it was suggested to the Shellfish Division of the New York City Department of Health that there was not sufficient information to justify this standard. We held the view that it was important to do year-round testing in representative areas along the coast in order to take into account the different climatic conditions and their effects.

Postponement of the implementation of this standard was requested. It was pointed out that when the U. S. Public Health Service decided to establish a bacteria standard for raw milk at the first the allowable maximum bacteria count was high. There was an understanding that as the milk producers improved their sanitation and production methods and showed that they could produce a milk of better bacteriological quality, this allowable maximum would be lowered. At the present time the U. S. Public Health Service has a standard of 200,000 for raw milk. Quality-minded producers are able to meet this standard, and even better it.

This analogy was used to support the idea of a flexible standard for the Standard Plate Count of crabmeat. Originally it was felt justified to set the bacteria standard at a figure higher than 100,000. If the majority of the packers employing good plant practice can consistently produce meat of better quality, then this standard could be tightened. The representative from New York City promised that his Department would consider this.

This is the first time that any definite action has been taken toward the establishing of standards for crabmeat. It is a step in the right direction. The standards serve as an incentive for further work and they embrace types of bacteria more important to the testing of quality of crabmeat than merely testing for *E. coli* alone. A positive test for *E. coli* may not be informative enough for a packer in order to correct a bad sanitary situation, whereas a report showing analyses for the bacteria named in the New York standards would be more useful, helping the packer locate the source of the contamination more easily.

The fresh crabmeat industry is to be commended for the effort that it has put forth as a result of the crisis described above. The packers have begun to raise their standards of quality by their own efforts. The bacteriology of a crabmeat operation is not too well known. It was our general belief until recently, for example, that the majority of bacterial contamination took place in the picking room. Yet, even though sanitation conditions in this section were good, the bacterial counts on the crab meat were still high in many cases, and attention then began to be paid to other parts of the operation.

Along the Atlantic Coast two different types of operation exist. North of the Carolinas the cooked, cooled crabs are given to the pickers directly, who do their own "backing", i.e., remove the back shell of the crab. After this is done, they proceed with the picking of the meat. This process is generally referred to as a "dry pick". South of the Carolinas the cooked crabs are cooled on tables in the "backing room". A crew then removes the shell back. These backed crabs are washed, usually by means of water flowing down a metal flume. These washed, backed crabs are given to a different crew that does the picking of the meat. This method is commonly known as the "wet pick".

In the backing room of a wet pick operation we ran a series of bacteriological tests. We were startled at some of the things we learned. It has been assumed that the crab is sterile, both externally and internally, immediately after removal from the cooking retort. Our testing has shown that this is not necessarily true. This raised questions as to what is the best cooking time and the temperature and pressure relationship that will insure sterility and yet not adversely affect the flavor of the meat. The uniformity of cooking for various batches of crabs and the proper cooling method also came in for

scrutiny as a result of these findings. The present method of cooling may actually be the worst way.

Another possible way to insure good quality crabmeat is to pasteurize it. Fish and Wildlife Service experiments have shown that it is possible to produce crabmeat of reasonably good quality, but in my opinion not quite like fresh crabmeat. Fresh crabmeat has a delicate flavor that is easily affected by heat. Therefore, even though laboratory tests may show that pasteurization of crabmeat will keep down the bacterial counts, I believe it is not the answer because the product is a different one from fresh crabmeat. One packer from Maryland is pasteurizing part of his meat production and others intend to do the same. It appears that some problems have yet to be solved before a product can be made comparable with the fresh.

This research, sponsored by the industry, shows that the industry is recognizing the problems confronting it and is expending an earnest effort to solve its problems. The industry is meeting its challenge and accepting its responsibility.

Standards para Carne de Cangrejo

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Abstracto

En agosto de 1953 ocurrieron varios envenenamientos a lo largo de la costa Atlántica, los cuales se reportaron ser debidos a carne de cangrejo. Como resultado el Departamento de Salubridad de New York, el Federal Food and Drug Administration y la industria pesquera guiados por el National Fisheries Institute colaboraron para producir un Código Voluntario de Calidad, basado en el código de Virginia. Al mismo tiempo la ciudad de Nueva York empezó a analizar carne de cangrejo. Después de una reunión de los distribuidores y otros varios organismos, en julio de 1954 la ciudad de Nueva York hizo un enmienda en su código sanitario, por la cual se establecía que toda la carne de cangrejo para la venta en esa ciudad debería ser esterilizada y en un lata cerrada herméticamente, y si vendida como carne fresca debe de llenar los standards bacteriológicos. Los standards establecidos por Nueva York son considerados como muy buenos, pero uno de ellos, "el recuento total de placas" debería ponerse más alto con el entendimiento de que la industria mejorará con la experiencia. El nuevo tipo de análisis es informativo para el distribuidor y si es usado propiamente ayudará a localizar las fuentes de contaminación bacteriológica en la planta.
