Food Preservation and So-Called "Food Poisoning"

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Food preservation embraces a large variety of methods for the storage of food products, for example, drying, storage at low temperatures, and heating in hermetically sealed containers. For the present the last named method will be considered in relation to diseases.

It seemed rather illogical to classify all diseases as "food poisoning" whether the food were acting merely as a vehicle or as a substratum from which the organism obtained nourishment for growth and in certain cases the elaboration of a toxin. This resulted in a subdivision or reclassification, whereby disease produced by food acting as a vehicle has been called "food infection" and in cases where the food acted as a nutrient medium for growth and the production of a toxin has been called "food intoxication." This nomenclature is somewhat misleading, as an example, if a food handler working as a waiter contaminated a freshly opened can of string beans with the typhoid organism it would be classed a food infection. On the other hand, if he contaminated a glass of water it would be classed, strictly speaking, water-borne typhoid. Yet, in either case there are only three factors which enter, namely, donor, vehicle and donee.

There has been some agitation in different quarters for the elimination of the word "ptomaine" as a misnomer and in reality a word which has been used when the real cause of the trouble is not known, yet, it is believed that when the combination of words "food poisoning" is used all the sins ascribed to the use of the word "ptomaine" have been committed in the same manner. Can it be any more logical to speak of "food poisoning" in the case of food-borne diseases than to speak in specific terms of fomites-borne infection, if you believe in fomites-borne infection, as a "door knob poisoning" or "door knob infection?" If it is possible to say definitely that the disease is transmitted through food, it will be possible to classify the disease as an intoxication or food-borne which would be more specific than the indefinite term "food poisoning."
For the above reasons it is believed that the term "food poisoning" should be eliminated together with the word "ptomaine" and some outline as the following used:

Diseases transmitted through food:

A Bacterial
   1 Food intoxication—growth and production of toxin
   2 Food-borne—growth may or may not take place

B Non-bacterial

While it is realized that the term "food intoxication" may not be as good as desired, it may be used to indicate that the food was a part of the sequence of events, but that a qualification as to whether an exotoxin or products of the decomposition of the food were formed is not necessary at the present time.

Food-borne does show clearly that the food acts as a vehicle. It does not differentiate into groups which show whether the organism grew or not, but it is not believed that this differentiation is of such importance to warrant this further subdivision, at least at the present time.

Food intoxications have been studied very much since the first outbreak of botulism from canned ripe olives in 1919. Since the organism is an anaerobic sporeformer the methods of canning have been studied with particular emphasis upon processing in order to protect the consumer.

There are three main heads under which the canning and consumption of food products must be controlled. First, a clean, sound product for canning; second, reasonable methods for processing, and third, examination of the product after opening the container.

Several workers have shown that the number of organisms which survive a certain temperature and time of processing is directly proportional to the number of initial cells. It has been found in practice that a product which has been allowed to undergo fermentation is much more difficult to sterilize. Even contamination occurring during handling or shipping has a very decided influence. In the larger cities the canning of products purchased from the markets has not been found satisfactory from either a bacteriological or economical standpoint.

Two factors are involved in the processing of food products: first, the efficiency of the temperature and time, and second, the

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retention of a desirable flavor of the finished product. The general tendency in the industry is to process for as short a time and as low a temperature as possible. This has resulted in certain cases of an increased hazard from food intoxications and increased percentage loss from spoilage. In this connection thermophilic bacteria have caused considerable trouble in certain products. Fermentation before canning will account for a portion of this spoilage which would be eliminated to a certain extent by proper processing and post-process cooling. If the product is clean and sound, processing is not so vital a factor and a better and safer product can be placed on the market.

Quite independently of the quality and the processing of a canned product it is essential that an impartial examination be made at the time of opening the container. It is not possible to avoid all accidents incident to the canning industry or to the home canning procedure. In so far as the author's experience is concerned the products which have caused trouble have been detected as spoiled by someone after the opening of the container. However, experimentally infected cans may not show such outstanding evidence of danger. Possibly, this may be accounted for by the absence of a mixed contamination.

There are cases, especially among the foreign born, when the product is thought to be good, even excellent, though others examining the product do not question the evidence of decomposition. This type of case has happened and the product was pronounced decomposed unreservedly, notwithstanding statements published to the contrary.

The final protection from food intoxications then, is the ability of the person who opens a canned food product to identify spoilage. Under no circumstances should spoiled food be reclaimed, and in case of doubt, protection can be secured by boiling which must be done before the food is tasted.

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