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## UNIFORMITY IN MORTALITY STATISTICS

It is hardly necessary to point out the great advantages to the public health involved in a correct and uniform system of reporting deaths, and yet one can hardly turn to a table of official mortality statistics without being perplexed by the need of reinterpretation of the data presented. A number of current controversies, such as that on the alleged increase of cancer, hinge very largely on the correct evaluation of reported causes of death. Some of the sources of error are at present unavoidable. As is well known, there are some certified causes of death, such as "influenza" and "rickets," in which the margin of error is so great that they are considered unacceptable as statements of the cause of death unless confirmed by necropsy.<sup>1</sup> It is well known also that the diagnosis of some pathologic conditions is difficult at the best, that under some conditions, as in gastro-intestinal maladies in the tropics, the uncertainty is greater than under others, and that improvements in diagnostic methods are steadily making the reported causes of today less comparable with the reported causes of a few decades ago.

If a large measure of the uncertainty in mortality data is unavoidable, it is nevertheless true that death records can be simplified and made much more useful by uniformity in nomenclature and in methods of reporting. The framing of the International List of Causes of Death was a step in this direction; but, as pointed out by the committee already referred to, such a list "necessarily contains many terms that are unscientific, inaccurate and indefinite, as well as some that are obsolete." As experience in registration offices has shown, it is necessary to eliminate some of the terms from such a list and to use great caution in accepting others without necropsy or without supporting data, such as the finding of a specific microbe.

For some diseases it is possible to secure valuable data by simple uniformity in reporting. In death following measles, for instance, the report to the health

officer might fail to distinguish between the primary and the secondary cause of death. Some physicians might report the death as due to measles, others as due to bronchopneumonia. Unless the occurrence of measles is specifically mentioned in the report, the connection of a death from bronchopneumonia with a case of measles would not be known at the health office. Comparison of the death rates from measles in communities where different modes of reporting were customary might hence be very misleading, and so might the apparent degree of fatality from measles at different periods in the same community. Nearly one fourth of the deaths reported from "pneumonia" in the registration area of the United States are not differentiated as between the lobar or broncho type, and the tables do not indicate whether pneumonia was the primary cause of death or occurred in the course of or following some other disease. The difficulty here would seem largely due to methods of recording. Since correct data on the occurrence of disease and the cause of death must constitute the basis for much of our public health work, more emphasis should be laid on uniformity in death reports both by health authorities and by the teachers in medical schools. The organization of the medical work in the Army encampments with reference to pneumonia and measles will doubtless do much to bring home to physicians the importance of uniformity in records in these and other diseases. Otherwise no proper comparisons of conditions and results are possible.

## THE SCIENCE OF NUTRITION AND THE ARMY

The necessity for the scientific handling of our food supply no longer needs any argument in its favor. The day of haphazard methods and laissez faire policies has passed. A writer recently remarked that the personnel of the Food Administration is only another of the many proofs which we are having that there is no talent so superior that it does not gladly turn all that it has to the use of the country. We have lived to witness a supposedly intractable land of liberty respond to restrictive food regulations with a spirit of readiness that must have been fortified by a confidence in their safety and wisdom. The gospel of using our food wisely in economy has become firmly established among the people. Nevertheless the organization of a division of food and nutrition in the Medical Department of the Army has been watched with uncertainty as to its success by more than one champion of universal conservation. Has not the rationing of the Army been the uninvaded province of the quartermaster for generations? Who, then, shall presume to interfere with the orderly conduct of this supply department?

Yet the unexpected has happened, as has been the case so often in this war. Since last fall a group of food specialists — physiologists, food analysts and

1. The Accuracy of Certified Causes of Death, Report of a Committee of the Vital Statistics Section of the American Public Health Association, Pub. Health Rep., 1916, 31, 2539.

other nutrition experts recruited from the staffs of our educational and research institutions under the leadership of Major Murlin—have been making surveys of food conditions in the camps. These officers have studied the food served, how it is inspected, stored and prepared, and have made many recommendations which have been adopted with advantage. The presence of experienced students of nutrition has left an impress in the form of improved knowledge of dietaries and dietetic methods. Better still, however, has been the effect of this intelligent cooperation with mess officials on the reduction of waste, a feature which early aroused the criticism of the civilian conservationist, who looked with disgust and ire on the apparent lack of mess economy in some of the camps. According to a recent statement authorized by the War Department,<sup>1</sup> in a typical "surveyed" organization the edible waste per man per day was reduced from 1.12 pounds before the instruction to an average of 0.43 pound thereafter.

On the basis of the average saving of 0.69 pound per man per day, the economy would amount to \$338,000 a year for a camp of approximately 15,000 men. The advantage of work of this character involving scientific advice about dietaries, inspections for adulteration, spoiling and deterioration, and cooperation with mess officers has become so apparent that sixty new officers similar to the specialists now in service are commissioned. Such are the conquests of scientific administration.

#### THEORIES REGARDING MEAT POISONING

The discovery by Gaertner in 1888 of a micro-organism, *Bacillus enteritidis*, in association with an outbreak of meat poisoning, gave a great impetus to the study of bacterial food poisoning. Since then many added instances of the finding of the same or closely related bacteria have pointed to the harm that may arise from most unsuspected sources in relation to edible products. In an earlier period it was widely assumed that in the decomposition of meats and other food products highly poisonous "ptomains" are formed, and that these were responsible for the observed cases of acute intoxication ascribed to food. Speaking several decades later, Jordan has summarized the trend of present opinion by stating that it is possible that cases of "ptomain poisoning" due to ingestion of ptomains or to their formation within the intestine sometimes occur in man, but that there is no doubt that such cases, if they occur at all, are very rare. Many of the epidemics of "meat poisoning" are now known to be due to infection with specific micro-organisms, rather than to the action of a formed poison. The alleged complicity of the ptomains remains to be proved.

1. Nutrition Officers Stationed in the Camps, *Science*, Aug. 16, 1918, p. 159.

Two kinds of bacilli are at present primarily associated with the production of meat poisoning: organisms of the type of Gaertner's bacillus and the anaerobic *Bacillus botulinus*, discovered in 1896 by Van Ermengem. The latter and its relation to those outbreaks of poisoning which have been described under the name of botulism have previously received detailed comment in *THE JOURNAL*.<sup>1</sup> In the case of true meat poisoning, the illness is unquestionably due in many instances to that group of micro-organisms now classified as paratyphoid bacilli, which includes the *B. enteritidis*. Paratyphoid fever may therefore be due to food poisoning in the bacteriologic sense.

The county medical officer of health for Somerset, England,<sup>2</sup> has recently pointed out that in spite of our greatly extended knowledge regarding food poisoning outbreaks, there is surprisingly little information as to the precise sources of infection. It has been alleged, for example, that the bacilli are of human origin, the food being infected with pathogenic Gaertner bacilli from a human source, such as a paratyphoid fever patient or a carrier of its infective organism. Again, since organisms culturally resembling paratyphoid bacilli are widely distributed in nature, it has been believed that many outbreaks of food poisoning are due to direct contamination with these sources, and particularly with fecal infection.

A third hypothesis is urged by Savage<sup>3</sup> as best explaining the available facts. He suggests that this type of food poisoning outbreaks is due to an infection of the food with virulent organisms of the Gaertner group, derived either from animals that are at the time suffering from disease due to such micro-organisms or from animals acting as carriers of these bacilli. Heretofore no direct connection of human paratyphoid fever with specific diseases of the lower animals has been certainly established. The probability of such a relationship hinges in part on the question as to whether or not the organisms of the meat-poisoning type actually occur frequently in the healthy human intestine and likewise in the alimentary tract of animals. Savage claims to have proved by extended direct examination that the Gaertner group bacilli are not natural intestinal inhabitants either of man or of animals used for human food or which come into contact with food. The instances, he argues, in which these bacteria have been found in such situations are rare, and they may be bacilli from some previous infection.

If these assumptions are established, it will be important to direct attention in greater measure to unrecognized disease in animals. At any rate, Savage<sup>3</sup>

1. Food Poisoning, with Special Reference to Botulism, *THE JOURNAL A. M. A.*, Aug. 11, 1917, p. 472; Home Canned Foods and Botulism, Oct. 13, 1917, p. 1262.

2. Savage, W. G.: The Sources of Infection in Food Poisoning Outbreaks, *Jour. Hyg.*, 1918, 17, 20.

3. Savage, W. G.: Further Investigations of the Distribution of Gaertner Group Bacilli in Domestic and Other Animals, *Jour. Hyg.*, 1918, 17, 34.