

Every true protein contains a poisonous substance and whatever the source of the protein, the poison is similar.

Those with the larger content of the protein poison are the proteins of our daily food. Casein contains, perhaps, the highest proportion of the protein poison. It is not a poison when administered by the mouth. It is dialysable, but dialyses very slowly, and is absorbed very slowly from the intestine. It is split up into harmless amino acids by the digestive ferments. While not exactly alike from all its sources, its effects on animals is similar in its lethal properties.

The symptoms and lesions of disease are not due to the growth and multiplication of the infective bacteria in the body. For (1) they are rapidly growing during the stage of incubation when neither symptoms or lesions are present, and (2) dead bacteria injected into the blood stream cause the same lesions, *e.g.*, in typhoid dead bacteria will cause all the ulcerative processes.

The strong, vigorous man elaborates substances which kill the invading bacteria. With heavy dose and great resistance the bacteria are rapidly killed and the protein poison sets up acute symptoms. In a study of the records of typhus and typhoid epidemics from those in England and Ireland 200 years ago down to personal investigations in the American army in 1898, it is an outstanding fact that the case mortality is greater in the strong and vigorous than in the weak and feeble. The case incidence is greater amongst men than women, in young adults than older adults. In Ireland many years ago it was shown that amongst the poor half-starved peasants the case mortality was 1 in 23. Amongst the physicians, nurses, priests and social helpers the mortality was 1 in 2.

The dead bacillus of a species to which an animal is immune rapidly kills the animal from the rapid setting free of the toxic substances. The dead bacillus of a species to which the animal is non-immune does not rapidly kill the animal, but it grows in the animal without the rapid killing and setting free of the protein poison. In the period of infection of an acute infectious disease there are not symptoms, but during the invasion and fastigium, the invading bacteria are being destroyed, toxins are set free and the stage of symptoms has arrived. With leucocytosis active there is less toxin set free and symptoms are definitely less.

The subject of anaphylaxis was discussed in short and it was pointed out that when a patient is susceptible to horse serum or diphtheria antitoxin, the injection of one minim will overcome this and in a few hours any quantity may be injected without danger.