

increase is still further augmented for a short period after the abscess is incised, but during healing gradually returns to normal. This increased excretion of urinary nitrogen is accompanied by diuresis.

Acute pancreatitis from injection of bile in the pancreatic duct shows a similar metabolic disturbance.

Studies on fasting dogs suffering from acute pleuritis, pneumonia, acute endocarditis and distemper show that marked increase in nitrogen excretion is a constant phenomenon in these inflammatory processes. If one infection such as pneumonia is complicated by another infection such as endocarditis, the rise in nitrogen elimination is still further augmented.

In the above conditions, the blood non-protein nitrogen is increased, although the blood urea tends to remain relatively low.

These phenomena accompany acute inflammatory lesions caused by bacteria and also sterile lesions induced by an irritant (turpentine).

From the exudates in acute purulent inflammations toxic proteose-like substances have been isolated.

We wish to assume that the intoxications here studied are associated with a definite proteose intoxication, which is capable of initiating and continuing a profound injury of tissue protein. One index of this protein injury is the great and sustained rise in the curve of total nitrogen elimination.

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Botulism.

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In a previous report¹ it was shown that the formation of toxin by the *Bacillus Botulinus* is not dependent upon the presence of animal protein in the culture medium, but that in purely vegetable medium it may be formed with almost equal facility. The report was based upon experiments in which beans and peas were used, but later experiments have shown that corn and apricots are also suitable for the development of the toxin.

The importance of these observations has been emphasized by the fact that within a few months there have been three outbreaks of botulism with eight deaths in which the cause of the poisoning was the ingestion of home-canned beans, corn and apricots, respectively. In all cases a number of chickens became paralyzed and died after eating the remnants of the food which had been discarded. The virulence of the toxin was very great in all cases, that in the beans and corn being so great that the patients died after merely tasting the contents of jars in which the odor was unusual.

Records of necropsy and of histologic examination of the tissues of the chickens are not available in the corn and apricot cases, but examination of the tissues from the patient and from the chickens which died after eating the beans revealed the characteristic thromboses which were first observed by Wilbur and Ophüls² and which were reproduced experimentally by the author.¹

From the contents of the crops and gizzards of the chickens which died after eating the beans and corn, an organism was recovered which is morphologically and culturally identical with the *Bacillus Botulinus*, and which produces a toxin by which the typical symptoms and the characteristic thrombosis may be reproduced in animals. The virulence of the toxin in both strains is extremely high, approximately 0.002 c.c. of a filtered beef infusion culture of the bean strain being sufficient to kill a small guinea pig within eighteen hours, and 0.001 c.c. of a similar culture of the corn strain being sufficient to kill a medium sized rabbit within twenty hours.

¹DICKSON, E. C., Botulism, an experimental study. A preliminary report. *Jour. Amer. Med. Assoc.*, 1915, LXV, 492.

²WILBUR, R. L. AND OPHÜLS, W. Botulism. A report of food poisoning apparently due to eating canned string beans, with a report of a fatal case. *Archiv. Int. Med.*, 1914, XIV, 589.