New York Meeting.

New York Academy of Medicine, October 16, 1929.

4582

Toxic Products in Infected Pork.

G. H. ROBINSON AND F. A. TAYLOR. (Introduced by Samuel R. Haythorn.)

From the Wm. H. Singer Memorial Research Laboratory of the Allegheny General Hospital, Pittsburgh, Pa.

Recent investigations have disproved the theory that living pathogenic organisms must be present in food in order to cause that train of symptoms usually associated with food poisoning. The work of Ecker and his associates,[1] Branham[2] and Geiger[3] clearly indicates that organisms of the paratyphoid group are capable of producing a heat resistant toxin in culture media. Dack, Jordan and Wood[4] have demonstrated that the killed bodies of paratyphoid bacilli are not toxic when ingested. The report of Pryer[5] shows that meat from which no organism of known pathogenicity could be isolated was toxic for human beings. Organisms other than those of the paratyphoid group such as *B. proteus* have been suspected of causing food poisoning.

We have also found *B. proteus* predominating in some raw sausages which after apparent sufficient cooking caused intestinal disturbance. It seemed of interest to us to investigate the nature of a toxin, if any, produced on meat and fish by *B. proteus, B. paratyphosus B.* and *Staphylococcus albus.* At first fresh meat was inoculated with our test organisms but was found to be so grossly contaminated that no conclusions were possible. Our results in these

[1] Ecker, E. E., *J. Infect. Dis.*, 1917, xxi, 541. Ecker, E. E., and Megrail, E., *Ibid.*, 1925, xxxvii, 546.

[2] Branham, S. E., *Ibid.*, 1925, xxxvii, 308.

[3] Geiger, J. C., and Meyer, K. F., PROC. SOC. EXP. BIOL. AND MED., 1928, xxvi, 91.

[4] Dack, G. M., Jordan, E. O., and Wood, W. L., *Ibid.*, 1929, xxvi, 307.

[5] Pryer, R. W., *Am. J. Pub. Health*, 1919, xix, 208.

experiments were obtained from meat which was inoculated after autoclaving at 15 pounds for 15 minutes.

After inoculation the meat was kept at room temperature for periods of from 3 to 19 days, after which it was ground in a mortar and extracted with either alcohol or water. Water extracts were heated to 70° for 30 minutes. Alcoholic or ether extracts were evaporated to dryness *in vacuo* and resuspended in salt solution. Toxicity was determined by the intraperitoneal injection into young rats or white mice.

The toxic substance is readily produced in pork and fish by *B. paratyphosus B.* or *B. proteus* but not by *Staphylococcus albus.* It was not recovered from uninoculated controls. As has been found by others, it is heat resistant, withstanding 100° C. for 30 minutes. It is soluble in water, alcohol and ether. More refined chemical methods may demonstrate two toxic substances, one of which causes diarrhea and the other prostration and death. It was quite noticeable that water extracts produced death while alcohol and ether soluble fractions gave rise to a transient diarrhea.

It is apparently not a protein as it is soluble in absolute alcohol and is not precipitated by sodium tungstate. It will pass through a Mandler filter. In attempts to produce an antitoxin in rabbits treated with a toxic water extract no protective action could be demonstrated by the serum of these animals.

A toxin is produced in cooked pork and fish by *B. paratyphosus B.* and *B. proteus* but not by *Staphylococcus albus.* This toxin is heat resistant and is probably not a protein. Attempts to produce an antitoxin were unsuccessful.

4583

Ephedrine Hydrochloride on the Excised Ureter of the Dog.

GEORGE B. ROTH.

From the Department of Pharmacology, George Washington University Medical School, Washington, D. C.

Apparently the only observation thus far made of the effects of ephedrine on the ureter is that reported by J. Hofbauer.[1]

Hofbauer obtained a stimulating effect from ephedrine on both longitudinal and ring preparations of the excised ureter of the pig.

[1] Hofbauer, J., *J. Urology,* 1928, xx, 413.