an association with neurone block of repetitive discharges from the injured, the blocked, locus.

In favor of this last possibility is the observation we have made twice now, that fibers that have been blasted continue to develop spikes after the one initiated by the blast. But if this happens in experimental cerebral concussion, one would expect the initiating "start reflex" to be followed by some evidences of motor activity. As a matter of fact, Denny-Brown and Russell state that the start reflex is followed by a delayed spasm and then by the loss of postural tone. Concussion would be accounted for, on this basis, by stretch blocks of neurones plus excitation at the distorted loci, when there are evidences of excitation.

Summary. An adequate blast from an air pistol applied to a short segment of nerve causes the fibers to discharge once but immediately blocks the transmission of impulses. Fibers thus blocked may initiate repetitive spikes. Within the course of 3 to 5 minutes, as a rule, conductivity returns spontaneously in all fibers that have not been irreparably damaged. The possible relation of these results to cerebral concussion is discussed.

13469 P

Carbohydrate Metabolism and Staphylococcus Infection in Rabbits.

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A previous communication from these laboratories[1] showed that spreading necrotising staphylococcal skin infections and subcutaneous injections of necrosing doses of staphylococcus toxin produced temporary but definite glucose intolerance in rabbits. It was thought that it would be of interest to observe the effect of repeated subcutaneous injections of *Staphylococcus aureus* and of staphylococcus toxin. The following communication gives the results of some preliminary experiments of this type.

Experimental Procedure. The methods of analysis and injection were the same as described previously. Twelve rabbits were used.

[1] Jackson, S. H., Nicholson, T. F., and Holman, W. L., *J. Path. and Bact.*, 1940, **50**, 1.

Six were twice injected intradermally with *Staphylococcus aureus,* an interval of 3 weeks elapsing between each injection. The infection following each injection was the spreading necrotic type of lesion described by Jackson, *et al.*[1] The other 6 rabbits were twice injected intradermally, first with 2 ml of a 1:20 dilution of staphylococcus toxin and then, after an interval of 3 weeks with the same amount of undiluted toxin.

Glucose tolerance curves were performed 4 days after each injection and then at monthly intervals for 5 months. Before the end of the sixth month all the rabbits succumbed to an epidemic of snuffles. There were, however, no signs of snuffles until 2 weeks after the blood was taken for the last tolerance curve. The urine of all rabbits was examined for sugar periodically.

Results. All the animals developed slight glycosuria in the 24-hr specimens in from one to 2 months after the second treatment with *Staphylococcus aureus* or of staphylococcus toxin. This glycosuria increased in severity over a period of from 4 to 6 weeks until it was quite marked with occasional traces of glucose in the fasting urine.

The effects of *Staphylococcus aureus* infection and of Staphylococcus toxin on the glucose tolerance curves of rabbits.

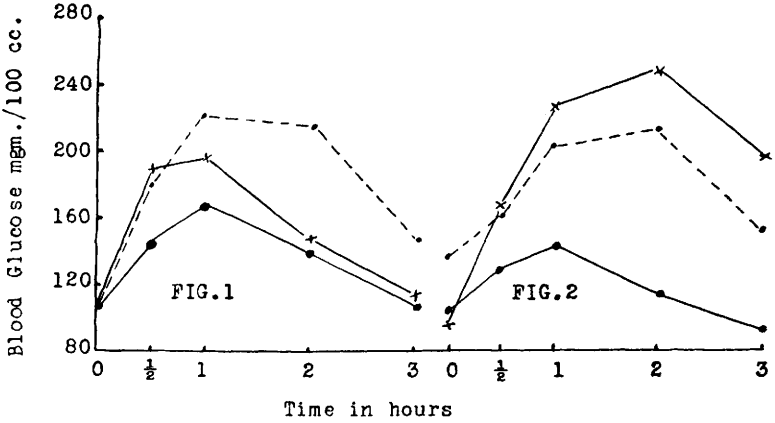

FIG. 1.

Composite glucose tolerance curves showing the effect of subcutaneous infection with *Staphylococcus aureus.* 1st infection April 10th, 1940, 2nd infection May 6th, 1940.

●——————● April 9th, 1940.
×——————× April 13th, 1940.
● - - - - - - - ● September 9th, 1940.

FIG. 2.

Composite glucose tolerance curves showing the effect of intradermal injections of staphylococcus toxin. 1st injection (1:20 dilution) April 10th, 1940, 2nd injection (undiluted) May 6th, 1940.

●——————● April 9th, 1940.
×——————× April 13th, 1940.
● - - - - - - - ● September 7th, 1940.

The effects on glucose tolerance curve are shown in Fig. 1 (staphylococcus infection) and 2 (intradermal staphylococcus toxin). In both cases there was evidence of a decrease in carbohydrate tolerance with a marked increase in the peak of the curve and a delayed return to fasting levels. This was quite marked following the second injection of toxin, the curve here presenting many points of similarity to that seen in mild diabetes.

Discussion. It is evident that repeated injections of *Staphylococcus aureus* or staphylococcus toxin accentuates and makes permanent the decrease in glucose tolerance which had been observed following a single lot of injections. The exact cause of this decreased tolerance has not been determined. Some preliminary experiments on rats, however, have shown that repeated injections of staphylococcus toxin may lower the insulin content of the pancreas.[2]

The effect of a greater number of injections of both organisms and toxin are being studied to determine whether or not a more severe glucose intolerance, simulating diabetes, may be produced.

Summary. Two massive doses of *Staphylococcus aureus* or staphylococcus toxin produced a definite and permanent decrease in carbohydrate tolerance, with glucose tolerance curves similar to those seen in mild diabetes.

13470

Electrophoretic Identification of Antibody to Tuberculin Protein.*

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It has been shown[1, 2] that rabbits can be readily sensitized to tuberculin protein by repeated injections of the antigenic form of the protein. The sensitization can be demonstrated by means of the precipitin test,[1] the Arthus reaction,[2] anaphylaxis and the uterine strip contraction.[3] Obviously antibodies to the tuberculin protein

2 Nicholson, T. F., and Haist, R. E., unpublished results of work done in the Departments of Pathological Chemistry and Physiological Hygiene, University of Toronto.

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1 Seibert, F. B., *Am. Rev. Tuberc.*, 1930, **21**, 370.

2 Seibert, F. B., *J. Infect. Dis.*, 1932, **51**, 383.

3 Lewis, J. H., and Seibert, F. B., *J. Immunol.*, 1931, **20**, 201.