Summary of Results.—During the period of observation preceding the injections the values for urea nitrogen, sugar, and total non-protein nitrogen of the blood were within the upper normal limits given by Myers.[1] Three hours after the intravenous injection of 6 decigram doses of arsphenamin, a slight rise in the total non-protein nitrogen of the blood (2 or 3 mg.) was observed in each of the two cases studied. This rise became more pronounced one week later, reaching a value of about 38.0 mg. per 100 c.c. of blood, and then gradually declined. The injections were repeated two weeks later. A more pronounced rise (up to 44 mg. per 100 c.c. of blood) was observed twenty-four hours later—the immediate increase (three hours after injection) being similar to that seen after the first injections. The changes in the blood-urea nitrogen were, in general, parallel to the curves of the total non-protein nitrogen. The individual values of the former occasionally reached as high as 23 mg. per 100 c.c. of blood and often constituted more than 60 per cent. of the latter. Marked increases in the blood sugar were seen three hours or within three to seven days after the injections. In one case the blood sugar was more than doubled three hours after the injection. In no case, however, did the blood sugar reach much above the upper normal limit,—the value in the last case referred to being 153 mg. per 100 c.c. of blood.

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Chemical stimulation of the annelid nerve cord.

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According to Maxwell's[2] classification, based on work with mammals, there are two classes of excitants for nervous tissue, viz: (1) those which act only upon the medullated fibers, such as the

[1] Myers, V. C. Chemical Changes in the Blood in Disease. *Jour. Lab. and Clinic. Med.*, 1920, v, 344.

[2] Maxwell, S. S., *Am. J. Physiol.*, 1918, xlvii, 283.

calcium precipitants, (2) those which act on the gray matter only, as creatin and strychnin. In order to determine possible similarities and differences between mammalian nervous tissue and that of one of the annelids, experiments were carried out on the nerve cord of the earthworm, *Lumbricus terrestris*. In these experiments the worm was decapitated, the anterior end of the preparation pinned down and the nerve cord laid bare. The cord was then dissected free for a distance of about 20 segments and the stimulating substances applied directly to it. Stimulation was indicated by squirming movements of the posterior segments.

Excitants of the first class, KCl, $BaCl_2$, and Na_3 citrate, each in $M/8$ concentration, gave marked excitation. Of the excitants of the second class, camphor and strychnin, each in saturated solution, and picrotoxin crystals, all yielded positive results within a minute after application, but phenol, nicotin and creatin had no effect, used either as crystals or in solution. $M/64$ tetra-ethylammonium chloride gave strong stimulation.

The fact that excitants of the first class act on the annelid nerve cord shows that the nerve processes reacting do not differ in this respect from the axons of the myelinated fibers of mammals. The action of the excitants of the second class exhibits two peculiarities; the action is almost immediate, there is no latent period of several minutes as in mammals and in squid[1]; the fact that the nerve cells of the earthworm are unaffected by phenol, nicotin and creatin indicates a chemical organization different from that obtaining in the neurones of higher forms in which stimulation by these substances does take place.

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Observations on the specific exhaustion of cutaneous reactions.

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Cutaneous reactions in hypersensitive individuals are of two quite distinct types. The reactions observed in patients with hay fever or asthma and after sensitization by foreign serum

[1] Moore, A. R., *J. Gen. Physiol.*, 1919, i, 505.