TABLE I.
Protection of Rats Against Sodium *m*-chloro *p*-acetyl amino phenyl stibonate ("Stibosan").

Intravenous drug dose	Dose of *p*-amino-benzoic acid and frequency of administration	No. of rats used in exp.	No. of rats surviving	% survival + *p*-amino-benzoic acid	% survival Control
300 mg/kg	1 g/kg x 3 days	12	12	100	
	controls	10	4		40
380 mg/kg	1 g/kg x 3 days	11	10	90	
	controls	12	0		0

pound, trypanosomes reappear in the blood of many of the treated animals and cause their death as late as 24 days after the start of the experiment.

The protective properties of *p*-aminobenzoic acid against "Stibosan" are spectacular. While the majority of protected rats remain normal in appearance and activity, the control rats receiving "Stibosan" alone rapidly lose weight, their fur becomes roughened and matted, they develop extreme flaccid paralysis of the hind quarters, and excessive secretion of the lachrymal glands seals the eyelids. Most animals die on the second to fifth days of the experiment. Lesions, especially of the kidney cortex, are outstanding in the morbid anatomy of fatal intoxication.

14081

Electrical Field of the Nerve Impulse.

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In a previous report, experiments were described purporting to test for the presence of an electro-magnetic field surrounding the segment of nerve bearing a nerve impulse.[1] Considerations arising from the bioelectric circuit hypothesis of nerve transmission lead to the conclusion that no electro-magnetic field should exist owing to the cancellation of the magnetic field accompanying the component of the circuit external to the axis cylinder by the magnetic field accompanying the component within the cylinder. The experiments indicated, in fact, that, within the sensitivity of the measuring instrument, no electro-magnetic field was present.

The passage of a nerve impulse involves, however, not only the existence of local bioelectric currents through the electrolytic media within and without the axis cylinder, but the existence of electrical lines of force which originate at any point of high potential and terminate at a point of lower potential. In the case of the nerve impulse the zone of depolarization will be characterized by a low electrical potential with respect to the 2 intact zones on either side of it. Hence there will be electrical lines of force originating in the two intact regions and terminating in the depolarized region. If a detecting instrument is interposed in the space containing these lines of force, then an electric charge is induced upon the instrument and may be detected with a suitable recorder.

A detector placed alongside a conducting nerve will convey to the recording instrument 2 peaks of such induced potential; one peak will occur when the depolarized region is approaching the detector, the other when it has passed under it and is receding from the detector. If, however, the nerve is crushed for a length of several centimeters and the

[1] Gengerelli, J. A., PROC. SOC. EXP. BIOL. AND MED., 1942, **51**, 189.

detector is placed at the boundary of the intact and crushed region, then but one peak will be observed.

Details of the apparatus used for the detection of these electrical lines of force are given in the above-mentioned report; however, the general features are shown in Fig. 1.

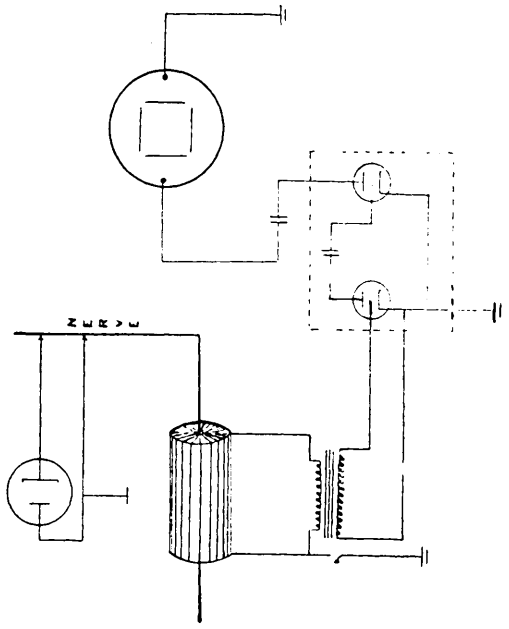
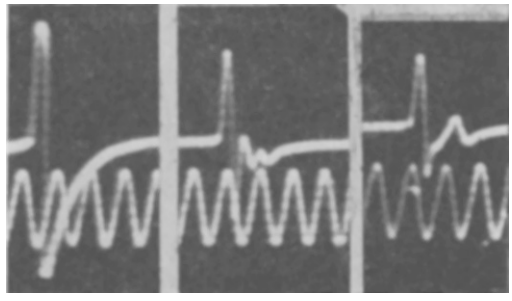


FIG. 1.

That the disturbances indicated by the recording oscillograph were in the nature of induced electrical charges on the detecting coil and not an induced e.m.f. is shown by the fact that they disappeared when the primary coil of the matching transformer was grounded. (*Cf.* Fig. 1.)

The frog's sciatic was used. The results are indicated in Fig. 2. A gives the stimulus artifact (*ca.* 30 m V); B shows the result obtained with an intact nerve, and reveals the 2 peaks; C is the result obtained when the detector is located on the boundary of the intact and crushed portion.



A B C

FIG. 2.

A. Stimulus artifact obtained with dead nerve.
B. The two peaks obtained with intact nerve.
C. Single peak obtained when detector is located on boundary of crushed and intact portion of the nerve. Time line indicates 500 cycles.

It was possible to duplicate these results when the nerve and the detector were both immersed in tap water, mineral oil, and Ringer's solution. In the case of Ringer's, it was possible to demonstrate increased velocity of the nerve impulse as being of the order of value calculated by Hodgkin[2] by other experimental means.

[2] Hodgkin, A. L., *J. Physiol.*, 1939, **94**, 510.

14082

Role of Sodium Chloride in Production of Nephrosclerosis by Steroids.

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Previous investigations[1] have shown that desoxycorticosterone acetate (D.C.A.) causes nephrosclerosis and generalized tissue edema in the chick. The condition is usually accompanied by cardiovascular changes similar to those seen in human hypertensive heart disease. In the present communication we should like to discuss a series of experiments indicat-

[1] Selye, Hans, *Canad. Med. Assn. J.*, 1942, **47**, 515.