

The method reported with slight variations in technic has been used with similar success in the titration of Type I antipneumococcic horse sera. A limited number of tests with concentrated antibody solutions have given promising results. No prozones have been encountered. Preliminary experiments indicate that the test may be applied to other types of antipneumococcic sera.

Since a positive reaction may be demonstrated with a solution containing less than 5 units of antibody per cc., and since the technic described requires only a small amount of serum, possible clinical applications such as the demonstrations of specific antibody in human sera are suggested.

We have been able to demonstrate capsular swelling in mixtures of Type I antimeningococcic serum with homologous organisms. This reaction suggests many possible applications, such as the diagnosis of the type of meningitis directly from the spinal fluid. It also indicates that with appropriate sera, it may be possible to demonstrate capsular-swelling reactions with other kinds of bacteria.

### 8349 P

#### Polarity in Lethal Action of Electric Current.

VICTOR SCHECHTER. (Introduced by A. J. Goldforb.)

*From the College of the City of New York.*

Electric currents have been shown to be capable of directing or determining the growth of certain organisms of simple symmetry.<sup>1,2,3</sup> The present is a report of experiments in which the application of direct electric current resulted in partial death of the organism; the effect being localized in a polar fashion. The results given below were obtained with the Bryophyte *Conocephalus*. *Lunularia* and *Marchantia* reacted similarly but not as definitely.

The plants were cleaned. Most of the rhizoids and the apex and base were clipped off. Current was applied through an agar bed (usually containing nutrients) upon which the plants were placed in intimate contact. It was found that death occurred in that part of the plant which lay toward the anode. This effect was not due to the creeping of toxic materials from the electrodes as suitable pre-

---

<sup>1</sup> Barth, L. G., *Physiol. Zool.*, 1934, **7**, 340.

<sup>2</sup> Lund, E. J., *J. Exp. Zool.*, 1924, **39**, 357.

<sup>3</sup> Schechter, Victor, *J. Gen. Physiol.*, 1934, **18**, 1.

cautions were taken. Also, successive rows throughout the experimental dish were similarly affected while the region toward the cathode remained alive in all plants.

The extent of the dead region increased with greater current density; also with greater duration of exposure. Larger pieces were more susceptible than small, *i. e.*, the percentage dead region/plant size was greater. No difference was detected in quantity of effect between plants oriented in opposite directions; that is, apex and base were equally susceptible when turned toward the anode. Regeneration did not, of course, occur toward the anode, but was not absent elsewhere. As a result new growths were more frequently seen on plants turned with apex toward the cathode.

This report is based on 116 plants which were subjected to direct currents of approximately  $\frac{1}{2}$  to  $6\delta$  for a period of time up to 350 hours. The dead region comprised 5 to 63% of the length of the thallus. Large plants (about 6 cm. long) showed about 20% more injury than small ones (1 cm. or less) for the same duration and density of current.

Perhaps some light may be thrown by these findings on those cases cited<sup>1, 2, 3</sup> in which the polarity of growth is affected by electricity. (It is not intended to infer, however, that toxic action at one pole is necessarily responsible there.)

## 8350 C

### Evidence for the Presence of a Diffusible Organic Substance in Blood Which Accelerates Blood Clotting.

CLARENCE E. LARSON AND DAVID M. GREENBERG.

*From the Division of Biochemistry, University of California Medical School, Berkeley.*

Dialysis of blood plasma, it has been presumed, removes only one component essential to the blood clotting mechanism, namely, calcium. However, during the course of certain experiments in which plasma was very thoroughly dialyzed, the authors observed that when the plasma proteins were redissolved in a saline solution containing an adequate amount of calcium, no clot was formed for 24 or 48 hours. If to this artificial plasma there is added a small portion of the ultrafiltrate of whole blood or serum, the formation of a firm clot is induced within an hour or less.