with a wax crayon. Then fill to the mark with the stock standard solution and discharge into a small volume of water in a test-tube. Draw up a little water and discharge this also into the test-tube. In another tube place 5 cc of the dilute standard solution. Make both tubes up to equal volumes with water and proceed with the determination in the usual way. With the standard set at 20 a reading at 20 would, of course, mean that the crayon mark is correct.

It is, of course, necessary that the 5 cc pipette be correct, as all capillaries will reproduce whatever error it may have.

The method may be employed to calibrate any size pipette by using solutions of appropriate concentration. The volume of a single drop also may be determined: a great convenience sometimes.

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SPECIAL ARTICLES

PREVENTION OF EXPERIMENTAL EQUINE ENCEPHALOMYELITIS IN GUINEA PIGS BY MEANS OF VIRUS ADSORBED ON ALUMINUM HYDROXIDE

RHOADS[1] reported the prevention of experimental poliomyelitis in monkeys by the use of virus adsorbed on aluminum hydroxide, Wilstaetter's Type C.[2]

In experiments with the virus of equine encephalomyelitis[3] an attempt was made to immunize guinea pigs against the experimental disease by means of the virus so adsorbed. It was found, however, that the adsorbent, when injected subcutaneously in amounts comparable to those previously employed, produced large, nodular masses which resolved with difficulty and often became inflammatory. Inasmuch as aluminum hydroxide prepared at pH 6.6 and sterilized by heat adsorbs as much as 99 per cent. of the virus from active material, the use of less than one twentieth of the amount of the colloid hitherto employed resulted in active immunization of the test animals. Moreover, the sites of injection showed only inconsiderable, localized indurations that disappeared within 5 or 6 weeks.

The source of virus was either the brain of guinea pigs which had succumbed to the experimental disease, or tissue cultures.[4] The latter were found to be more desirable, since less protein is present and hence less adsorbent is required. Another advantage is that in tissue-culture virus concomitant infectious agents can more easily be controlled.[5]

Guinea pigs received three subcutaneous injections of one cubic centimeter each, at 7-day intervals, of the adsorbed virus. The adsorption is of such a character that none of these animals revealed signs of infection during the period of immunization. On the tenth day after the third injection, they were shown to be resistant to an intracerebral inoculation of virulent guinea pig brain material in dilutions of 1:600 to 1:1600.[6] It should be emphasized that the virus was introduced directly into the brain in the test dose, which was lethal for control animals in dilutions of 10^{-5} or 10^{-6} when given subcutaneously or intracerebrally, respectively.

Thus far 40 guinea pigs have been inoculated with the aluminum hydroxide-virus material: 16 with the Western strain of tissue-culture virus, 10 with a mixture of Eastern and Western strains of similar material; 9 with the Eastern strain of guinea pig brain virus, and 5 with a mixture of Eastern and Western strains of the brain virus. None of these animals was affected after the intracerebral injection of the homologous strains as a test for resistance. On the other hand, all the 14 control, non-immunized guinea pigs died of experimental encephalomyelitis within from 72 to 96 hours after the test inoculation.

Investigations are now under way on the possible use of this method in preventing experimental encephalomyelitis of the monkey and the horse, the length of time the adsorbed virus retains its potency (thus far determined to be at least 10 weeks), and the duration of the resistance after the immunization.

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THE THERAPEUTIC BEHAVIOR OF LUCILIA SERICATA MEIG. LARVAE IN OSTEOMYELITIS WOUNDS

THE blowfly maggot (*Lucilia sericata* Meig.) removes by ingestion the acid-forming and bacterial-

[1] C. P. Rhoads, *Jour. Exp. Med.*, 53: 399, 1931.

[2] R. Wilstaetter and H. Kraut, *Ber. chem. Ges.*, 56: 149, 1923.

[3] We are indebted to Miss B. Howitt, of the University of California, for the Western, and to Dr. C. Ten-Broeck, of the Rockefeller Institute, for the Eastern strain of the virus.

[4] H. R. Cox, J. T. Syverton and P. K. Olitsky, *Proc. Soc. Exp. Biol. and Med.*, 30: 896, 1933; J. T. Syverton, H. R. Cox and P. K. Olitsky, SCIENCE, 78: 216, 1933.

[5] T. M. Rivers and S. M. Ward, *Jour. Exp. Med.*, 58: 635, 1933.

[6] All operations on animals were performed with the aid of ether anesthesia.