

of the amount filtered off. The second extraction is carried out for about a month in the ice box. Both filtrates may be used as antigens.

Add rapidly three parts of salt solution to 1 part of antigen. The mixture should be opalescent and but slightly milky. No precipitate should form after standing over night at room temperature. Antigens conforming with these requirements have been kept for 2 weeks without any apparent change in antigenic properties.

Add 0.1 c.c. of antigen to 0.3 c.c. of clear inactivated serum and incubate in the water bath. The strongly positive sera show immediate clouding and, within 5 min., visible precipitation. For uniformity, the tests are read after 1 hour and 3 hours incubation. Those showing marked precipitation at the end of 1 hour are considered strongly positive; marked precipitation at the end of 3 hours are considered positive; weak precipitation, weak positive and questionable, doubtful positive.

Of 1,119 comparative tests carried out with the precipitation and Wassermann reactions as performed in this laboratory, 98 per cent. showed agreement. It is hoped that this test will form an important supplement to the Wassermann test.

84 (1831)

A simple quantitative precipitation reaction for syphilis—micro procedure.

By **R. L. KAHN.**

*[From Bureau of Laboratories, Michigan Department
of Health, Lansing, Mich.]*

The precipitation reaction presented in the preceding paper may be employed also as a microscopic procedure. Prepare hanging drop preparations in the usual manner by mixing a small drop of serum with the same amount of antigen. Read results after 1 and 3 hours incubation at 37.5° C. Those sera showing precipitation give the appearance of clumps of minute globules, while the negative sera appear homogeneous. This procedure, however, requires much experience and care in its manipulation.

The following micro-method is, in our experience, far simpler to execute and is recommended: Pipette 0.03 c.c. quantities of

serum in narrow agglutination tubes and add 0.02 c.c. of antigen to each tube. Incubate in water bath and read as in the case of the regular quantities described in the preceding paper. Although the total quantity employed in this test is only about 1/10 of the original one, the precipitates can nevertheless be seen with the naked eye. We would, however, recommend this test only in cases where it is extremely difficult or impossible to obtain larger quantities of serum.

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Contribution to the chemico-pharmacodynamic relationship of atropine and homatropine.

By DAVID I. MACHT.

[From the Pharmacological Laboratory, Johns Hopkins University, Baltimore, Md.]

The classical researches of Ladenburg on the structure of atropine and the synthesis of various tropeins led almost immediately to a wide therapeutic application of homatropine as a mydriatic. Inasmuch as the mydriatic action of atropine is known to be through the parasympathetic nerve-mechanism of the eye, namely, the paralysis of the parasympathetic endings of the oculomotor nerve, it has been generally assumed that the mydriatic action of homatropine or tropin-mandelate was of exactly the same nature. An examination of experimental data on the subject, however, gives no proof to support this assumption. In the present investigation, the author became interested in the pharmacology of homatropine in connection with a study of mandelic acid. This acid is closely related to benzaldehyde and indeed can be readily prepared from the latter by treatment with hydrocyanic acid and water. Inasmuch as the author has already shown that benzaldehyde possesses the antispasmodic or relaxant properties on smooth muscle which are exhibited by benzyl alcohol and certain benzyl esters, it was thought possible that the action of homatropine may be exerted, at least partially, directly on smooth muscle itself. A series of experiments tended to corroborate his view. In the first place, the action of homatropine on other parasympathetic nerve endings, such as the vagus terminals in the heart, is very much weaker than that of atropine. Whereas