and to stay the progress of these cord changes.

Briefly, then intensively treat syphilis and have your serological curve at hand, both of blood serum and spinal fluid. Look for syphilis with laboratory methods when the case is obscure, just as you would use your stethoscope or your ophthalmoscope.

Remember that sparing the lumbar puncture needle means spoiling the patient's chances for relief and your own diagnostic re-utation. And when you are dealing with salvarsan medication in the spinal canal, remember that many lumbar punctures are to be made before treatment should be stopped and that there are eccentricities in spinal fluid reactions just as there are in blood serum.

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A SIMPLE AND EFFICIENT CONTRAST STAIN FOR B. DIPHTHERIAE.

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PRELIMINARY REPORT.

Several years ago, it being observed that old alkaline methylene blue would at times color some of the polar granules of *B. diphtheriae*, red, attempts were made to produce this contrast staining effect constantly. Many methods were tried, each of which produced either no contrast stain at all, or gave a decided polychrome effect.

A few months ago, however, a method was finally perfected by which methylene blue is converted by oxidation into methylene red, within the polar granules, during the process of staining.

The stain as perfected is as follows:

Sat. Alcoholic Sol. Methylene-blue
(Koch for Bact.)..... 1 part
Hydrogen peroxide 9 parts

Should be kept in a well-stoppered bottle.

Methylene-blue, Koch for bact. has been specified, because other forms used failed to give the desired result.

Any peroxide which we have tried was found to be efficient.

The stain may be kept for several weeks after mixing, provided it be placed in well-stoppered bottles; samples placed in white glass bottles upon shelves in the open laboratory for six weeks were unaffected in any noticeable way, and retained the specific staining properties unaltered.

In using the stain, the specimen is prepared and fixed in the flame, as for ordinary specimens, and the stain allowed to act for from thirty seconds to three minutes. Upon its application, there occurs usually in about ten seconds a rise of small gas bubbles to the surface, this continuing for from thirty seconds to three minutes. As soon as this rise of bubbles ceases, the specimen is sufficiently stained. One minute has been found best for the majority of specimens, and is recommended for routine work. There is no danger of overstaining, as a half hour's exposure will not darken the *B. diphtheriae* appreciably, but has the disadvantage of staining some of the other organisms present in cultures from throats darker than when the time of exposure is shorter. The contrast effect upon the *B. diphtheriae* is, however, unaltered.

The specimen may be dried, either in the air or with the application of a small amount of heat—the latter not altering the contrast effect—and mounted in balsam.

B. diphtheriae will be stained as follows:

Bodies a pale pigeon egg blue, polar granules a bright red.

Other throat organisms ordinarily present usually take a very pale blue color, even paler than the bodies of the *diphtheriae* organism, in some specimens, forming here an almost homogenous pale blue background. When these various organisms stain darker, they are quite clear enough not to be confused, morphologically, with the *diphtheria* organism. A coccus has been encountered occasionally

which retains a pale pink color; this lighter shade with its shape differentiating it from the diphtheria bacillus. Again, a yeast has been encountered the ascospores of which retain the red color. Here it is not especially confusing, except when the cells are very small, when they may be mistaken for coccoid forms of *B. diphtheriae*.

Advantages observed:

A single stain, easily prepared, and with good keeping qualities; rapidity of staining—one-half to two minutes; good contrast colors, pale blue and bright red, a contrast especially well seen when white artificial light is employed; specimens will not overstain even if left for a half hour.

Over 600 specimens have been stained, 300 containing *B. diphtheriae*, and 300 negative specimens, containing simply the various bacteria present in the throats at the time the cultures were taken. Much work has been done checking the results obtained with this stain against those obtained with preparations from the same cultures, stained with the various accepted polar granule stains—Loeffler Alk. Methylene-blue, Neisser, Modified Neisser (with Grams solution and neutral red).

In each case the above stain has indicated the presence or absence of the *B. diphtheriae* uniformly with these recognized stains.

This stain is not applicable to smears taken directly from the throat, it failing to stain the polar granules, the organisms when present staining homogeneously a very pale blue.

After about eight hours' incubation at 37.5°C. upon Loeffler's blood serum mixture, many of the organisms show small polar granules, each taking the stain well: the number and size of granules increasing rapidly as the time is lengthened, so that at the end of sixteen to eighteen hours well formed granules appear in practically all the organisms, except the last generations, which stain very palely blue, and are rather hard to distinguish, so that at first glance every organism seems to contain one or more granules.

Cultures which have been kept in the la-

boratory for weeks, although the typical bacilli have disappeared, show in smears made from them numbers of round oval or irregular granules, these taking the stain typically—a bright red. One culture, kept at laboratory temperature for nine weeks, the vegetative properties having almost disappeared so that it was started growing again with difficulty, showed these granules splendidly.

Sufficient work has not been done with *B. pseudo-diphtheria* and other diphtheroids to report upon any differential properties which this stain might possess.

AUTHORS' ABSTRACTS.

Medicine.

Two and a Half Years' Experience with the Phenolphthalein Test. By Samuel Logan, New Orleans, La. *New Orleans Medical and Surgical Journal*, February, 1915, pp. 686-697.

In a series of 425 cases Logan reports his findings, which are very favorable as to the value of this method. Great emphasis is laid on the need for exactness. He has found the best results by the use of intravenous administration with an all-glass solid piston syringe.

Where the need of an exact knowledge of the kidney functional capacity is the greatest, this test has been found of greatest reliability and value. His best results have been obtained in the uremias, nephritis, and surgical conditions dealing with the genito-urinary system. In prostatic cases, each one should be tested frequently, prior to operation, and the latter ought only to be done after the kidneys have recovered to the highest degree of function, as indicated by the phthalein elimination.

In surgical conditions he sums up his experiences in a series of axioms as follows:

(1) Obstruction to the outflow of urine causes more or less delay in appearance of the phthalein and decrease in the output in proportion to the degree of obstruction.

(2) Percentage of output is not necessarily in proportion to the pus or infection present in the kidney urine, unless an obstructive condition be present.

(3) Renal tuberculosis causes a decrease in output out of all proportion to the extent of kidney area involved. This is a strong diagnostic point.

(4) Reflex (sympathetic) interference of a diseased kidney with the output of its healthy mate has not been observed.

(5) Neoplasms and cysts affect the output only from the degree or cortex involved or from the production of obstruction.

Some Clinical Observations of Mouth Infections as a Source of Systemic Diseases. By L. P. Robertson, Marlin, Texas. *Texas Medical News*, January, 1915, pp. 283, 284.