by placing the slides on a warm plate kept at a temperature just below 100 C.

STAINING

When the slides are dry, they are ready for staining. They are put first in a 10 per cent. solution of acetic acid in 95 per cent. alcohol for one minute or more. They are then drained and put in Loeffler's methylene blue diluted 1:4 with distilled water. The slides are allowed to stain from two to three minutes and are then washed free from the stain in a jar of tap water. They are dried and are then ready for microscopic examination.

With practice it is soon possible to make these preparations in such a way that the colonies are deeply stained with the individual cells well differentiated and the background clear. The best results are usually obtained after the stain has been used for some time. For this reason the stain is used, in jars, over and over, rather than poured over the preparations fresh each time. So far, a diluted Loeffler's stain has been used exclusively; but it seems quite possible that other formulas can be developed and that perhaps other stains than methylene blue can be used to advantage. For example, it may be possible to use a red stain, such as fuchsin or safranin, which would be very desirable, especially in photomicrographic work. It is also quite possible, indeed, very probable, that stains can be used to bring out the metachromatic granules in the diphtheria and other germs. The double spore and the Gram stains have been successfully used.

AN IMPROVED SPINAL PUNCTURE NEEDLE AND PRESSURE APPARATUS

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It is now generally recognized that spinal puncture is one of the most useful diagnostic procedures, and that the pressure of the cerebrospinal fluid is a useful guide in the diagnosis of many diseases of the nervous system. Many needles have been used for doing a spinal puncture since Quincke first described the procedure. In using most of the needles, however, one is unable to tell whether or not he has reached the subdural canal until he has withdrawn the stylet entirely. If the canal has been reached, the fluid comes out with a greater or lesser force on removal of the stylet, and by the time the manometer is introduced into the needle, as for instance in the Quincke apparatus (Fig. 1), too much fluid has been lost to give a correct pressure reading; for it has been found that the pressure is greatly lessened, even if only a few drops of cerebrospinal fluid have been removed.

In order to prevent the loss of fluid in taking the cerebrospinal fluid pressure, and in order to make it easier to determine whether or not one has reached the subdural canal, I have devised the apparatus and method herein described.

The apparatus (Fig. 2) consists of a specially devised needle and a glass manometer.

The needle is the ordinary medium sized spinal puncture needle with a short piece of glass mounting and a stopcock. The glass tubing (A)

Fig. 1.—Quincke apparatus for measuring the cerebrospinal fluid pressure.

enables one to see whether the spinal canal has been reached with the first puncture. One need only withdraw the stylet beyond the glass tubing, and if the spinal canal has been reached, the fluid withdrawn will be seen immediately through the glass. If no fluid makes its appearance, the stylet can be inserted again and another attempt made. The fear of break-

ing the glass on boiling the needle for the purpose of sterilization is no objection. I have boiled the needles repeatedly, without ever breaking the glass.

The needle has a three-way stopcock (B), the distal end of which is about three-fourths inch long. This length is required in order to allow space from the stopcock to the end of the needle so as not to lose any of the fluid, as is the case when the valve of the stopcock is near the end of the needle. The stylet of the needle is long enough to reach from the distal to the proximal end of the needle.

The manometer (D) consists of a long glass tube of 1 mm. bore which is inserted into the projecting end of the needle (C). The glass tubing is 700 mm. long, as this was the highest pressure attained in any case studied. For convenience, it is divided into two portions, with a metal cap at the top of the first portion so that the other one can be screwed on. This makes the manometer convenient to carry in any small instrument case. Thick glass tubing is used for it so that it does not break easily in handling. A metal tape is attached to the glass to measure the pressure.

The needle (with the piece of glass tubing at the end, the stopcock and its prolongation) with the stylet inside is introduced into the spinal canal. After a snap has been felt, so that one is reasonably certain the subdural canal is reached, the stylet should be removed to a point beyond the glass attachment. If fluid is seen in the glass tubing, the stopcock (B) is turned at right angles so that the handle points upward. This shuts off the needle and prevents the fluid from coming out. The long glass tube (D) is then attached and the stopcock turned so that the handle points opposite the manometer. The fluid will then rush into the tube. When the fluid has mounted to the highest point, the pressure is read off in millimeters of water. If no fluid is seen coming out when the stylet is removed beyond the glass tubing, the stylet should be reintroduced until

the operator feels he is in the canal. It should then be removed beyond the glass, and the measurement taken. The handle is now turned parallel to the needle and

the fluid collected in test tubes. The whole needle, including the glass attachment, stopcock and prolongation, is not any heavier than an ordinary medium-sized spinal puncture needle.

The apparatus is made by Becton, Dickinson & Co., Rutherford, N. J.

30 North Michigan Avenue.

A SIMPLE ALL GLASS ATOMIZER

H. S. NEWCOMER, M.D. (PHILADELPHIA) AND W. S. McELLROY, M.D. (PITTSBURGH), PHILADELPHIA

Lieutenant and Lieutenant, Junior Grade, respectively, U. S. N. R. F.

The accompanying illustration gives the construction and approximate dimensions of an all glass atomizer which may be readily constructed from ordinary glass tubing and at a cost of only a few cents. It consists of an outer piece which is an 8 mm. glass T tube. One end of the T is drawn out to a nozzle. Another nozzle, slightly smaller, is drawn from a piece of straight 6 mm. glass tubing. The latter nozzle is inserted within the first in such a way that the tip of the inner nozzle is 2 mm. behind the tip of the outer nozzle and concentric with it. The opening of the outer must be a little larger than that of the inner one so that the air stream from the inner nozzle will have an unobstructed path. The inner nozzle should be nearly in contact with the walls of the outer nozzle. Both the nozzles must be in longitudinal section slightly concave outward, and neither should be at all constricted at the tip by flaming.

The two tubes, inner and outer, are fastened together in place with a piece of rubber tubing. Under some circumstances it may be preferable to seal them together in the flame. An ordinary atomizer bulb with its tube slipped over the end of the inner tube furnishes the necessary air current. The absolute dimensions of the atomizer may be varied considerably. One exactly half the size described (about the size of the illustration) works very well.

The free leg of the T is dipped into the liquid to be atomized, or the T may be inverted and a small quantity of the liquid poured into it. The atomizer works in any posi-

tion, is readily taken apart for cleaning, and can be boiled in a shallow dish. It is especially adapted for use with heavy oils, such as a solution of dichloramin-T in chlorosane.

Naval Medical School.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

SULPHOICHTHYOLATE PREPARATIONS

Preparations containing as their essential constituents salts or compounds of a mixture of acids containing sulphur and designated by the group name "sulphoichthyolic acid" are manufactured from certain bituminous shales. Sulphoichthyolic acid is characterized by a high sulphur content, the sulphur existing largely in the form of sulphonates, sulphones and sulphides. The ammonium compound of this so-called sulphoichthyolic acid—first introduced as ichthyol—has been used most extensively. Compounds with sodium and other metals, with albumin, with formaldehyde, etc., have also been introduced.

Actions and Uses.—The current estimate of the effects of sulphoichthyolic acid preparations is based almost entirely on the use of ichthyol. As it is not known to what constituent or constituents of ichthyol such effects as it may have are due, the actions of ichthyol cannot be transferred to similar preparations which differ from ichthyol in their composition. The use of sulphoichthyolate preparations is still largely empirical. They are considered weakly antiseptic and mildly irritant. They penetrate the skin to some extent and are said to cause some vasoconstriction on mucous membranes. Taken internally they produce some gastro-intestinal irritation, with diarrhea, etc. Their influence on metabolism has not been determined.

They are used locally under the supposition that they will secure the absorption of swellings and effusions in contusions, burns, etc., and especially in gynecologic practice, and in various skin diseases. They have been tried internally in a great variety of conditions, but their therapeutic value in many of their suggested applications has not been fully established.

ITTIOLO.—*Ammonii Sulphoichthyolicum.*—An aqueous solution, the important medicinal constituents of which are ammonium compounds containing sulphur in the form of sulphonates, sulphones and sulphides. These characteristic forms of sulphur result from the sulphonation of the tarlike distillate obtained from the bituminous shales of Giffoni Vallepiana, Italy, and containing the fossil remains of fish.

Actions and Uses.—See general article on sulphoichthyolate preparations above. The composition of ittiolo closely resembling that of the original ichthyol, it is claimed that its actions and uses are also essentially those of ichthyol.

Dosage.—Since this article is claimed to be closely similar to ichthyol its dosage is probably like that of the older preparation (see N. N. R., 1918, p. 160).

Manufactured by Societa' Industrie Chimiche, Giffoni Vallepiana, Italy (Giuseppe W. Guidi, New York, distributor).

Ittiolo is a brownish-black syrupy liquid having a characteristic empyreumatic odor and burning taste.

It is almost completely soluble in water; incompletely soluble in alcohol and ether, but almost completely soluble in a mixture of equal volumes of alcohol and ether; also soluble in a mixture of equal volumes of alcohol, water, and ether. It is miscible with glycerin.

The aqueous solution of ittiolo (1:10) is faintly acid to blue litmus. The aqueous solution (1:10) yields a greenish-black resin-like precipitate upon the addition of hydrochloric acid. This precipitate is nearly insoluble in ether; it is partially soluble in alcohol; soluble in water, but if dissolved in the latter solvent it is again precipitated by the addition of hydrochloric acid. With barium chloride test solution the aqueous solution of ittiolo (1:10) gives a brownish-black precipitate which is insoluble in diluted hydrochloric acid.

Boil an aqueous solution of ittiolo (1:10) with potassium hydroxide test solution. Ammonia is evolved.

Incinerate 1 Gm. of ittiolo. 0.14 per cent. of residue remains.

Dissolve 10 Gm. of ittiolo in 90 Cc. of water, place the solution in a glass stoppered cylinder and allow to remain undisturbed for twenty-four hours. Only a slight deposit is formed.

Ittiolo loses 51.33 per cent. of its weight when dried at 100 C.

Weigh from 5 to 6 Gm. of ittiolo into a flask, add 25 Cc. of potassium hydroxide test solution and 100 Cc. of water. Distill the mixture until no more ammonia passes over, collect the distillate in 15 Cc. of normal sulphuric acid volumetric solution to which one drop of methyl orange test solution has been added, and titrate the excess of acid with tenth-normal potassium hydroxide volumetric solution; the amount of normal sulphuric acid volumetric solution consumed corresponds to 5.16 per cent. of total ammonia (NH_3).

Weigh from 5 to 6 Gm. of ittiolo into a beaker, add 50 Cc. of water, and 10 Cc. of a ten per cent. solution of albumin, followed by 5 portions of 5 Cc. each of diluted hydrochloric acid shaking after each addition. Make up the mixture to a volume of 500 Cc. and filter through a dry filter. Heat 200 Cc. of the filtrate to boiling, add 10 Cc. of barium chloride test solution and allow the mixture to stand for twenty-four hours. Collect the precipitate of barium sulphate, heat and weigh. The weight of barium sulphate obtained corresponds to 6.2 per cent. of ammonium sulphate.

Weigh from 0.5 to 1 Gm. of ittiolo into a Kjeldahl flask, add 30 Cc. of water and 5 Gm. of potassium chlorate followed by 30 Cc. of nitric acid and evaporate the mixture to about 5 Cc.; add 25 Cc. of hydrochloric acid and evaporate to 5 Cc.; again add 25 Cc. of hydrochloric acid and evaporate to 5 Cc. Then add 100 Cc. of water, heat to boiling and add 10 Cc. of barium chloride test solution, allow the mixture to stand for twenty-four hours, collect the precipitate of barium sulphate, heat and weigh. The weight of barium sulphate corresponds to 8.87 per cent. of total sulphur. Calculate the ammonia contained in the ammonium sulphate, as previously determined in ittiolo, and subtract the result from "total ammonia" as previously determined. Multiply the remainder by the factor 1.88. The result represents the sulphur present as "sulphonic sulphur." Calculate the sulphur contained in the ammonium sulphate as previously determined in ittiolo, and subtract the result from "total sulphur" as previously determined. The remainder represents the sulphur present in the organic sulphonic acids contained in the substance. Subtract the "sulphonic sulphur" as previously calculated, from the sulphur in the organic sulphonic acids, as previously calculated. The remainder corresponds to 0.66 per cent. ("sulphide") sulphur.

Ittiolo is incompatible with acids and saline solutions, fixed alkalies, their carbonates and iodides, alkaloidal salts and mercuric chloride.

QUININE ETHYL CARBONATE-MERCK.—*Quininae Aethylcarbonas.*—Euquinine.— $\text{C}_{20}\text{H}_{27}\text{O}_5\text{CO}_2\text{C}_2\text{H}_5\text{N}_2\text{O}$.—The quinine ester of ethyl carbonic acid. First introduced as euquinine.

Actions and Uses.—Those of a nearly tasteless and insoluble quinine compound.

Dosage.—The same as quinine.

Merck & Co., New York, distributors. No. U. S. patent or trademark.

Quinine Ethyl Carbonate-Merck Tablets, 2 grains.—Each tablet contains quinine ethyl carbonate-Merck 2 grains.

It occurs as a light, fleecy conglomeration of delicate white needles, which are practically tasteless.

It is sparingly soluble in water, but readily soluble in alcohol, ether and chloroform.

It is slightly alkaline in reaction, forming well crystallizable, bitter salts with acids.

Quinine ethyl carbonate melts at 89 to 91 C.

Dissolve about 0.2 Gm. of quinine ethyl carbonate in 5 Cc. of dilute sulphuric acid and dilute to 50 Cc. The solution exhibits a strong blue fluorescence, and responds to the general tests for alkaloids. Add 2 or 3 drops of bromine test solution to a 1 Cc. portion of the solution followed by 1 Cc. of ammonia water; the liquid acquires an emerald green color due to the formation of thalleoquin.

Dissolve 0.2 Gm. of quinine ethyl carbonate in 5 Cc. of nitric acid and dilute to 25 Cc. To a 5 Cc. portion add 1 Cc. silver nitrate test solution. No precipitate is formed (chloride). To another 5 Cc. portion add 1 Cc. barium chloride test solution. No precipitate is formed (sulphate).

Add 5 Cc. of iodine test solution to about 0.2 Gm. of quinine ethyl carbonate, decolorize with sodium hydroxide test solution and warm. The odor of iodoform is manifested (ethyl group).

Incinerate about 0.5 Gm., accurately weighed. Not more than 0.1 per cent. of residue remains.