

Acidum Boricum.....	15.0
Zinci Oxidum.....	10.0
Amylum.....	10.0
Bismuthi Subnitras.....	10.0
Oleum Olivae.....	30.0
Adeps Lanae Hydrosus.....	30.0
Liquor Calcis.....	30.0
Aqua Rosae.....	15.0

This preparation is called Cream Base No. 3. If you try to prepare it cold, it will not work, as you cannot incorporate all the liquids; if you apply much heat, you will have an ill-appearing mess. The trick is: after you have mixed all the ingredients to apply a very slight amount of heat. Stir constantly. Watch your preparation and at the psychological moment remove the heat and you will have a perfect preparation.

Diachylon Ointment is another bad actor. If you have to add some other ingredient to this ointment, when it is cold, it will break up into an unsightly mess. Even the act of stirring the ointment without any admixture does the same thing; that is, after the ointment has been standing a short time. Now, suppose you are called upon to add salicylic acid, phenol or some volatile oil to this ointment, you will have difficulty unless you apply a gentle heat, not enough to change the character of or volatilize the medicaments, but just enough to bring them to the proper consistency. Don't forget, heat is the answer!

THE DIAGNOSTIC LABORATORY IN THE PHARMACY.*

BY JACOB DINER.

SCOPE OF THE WORK.

Before beginning the planning of the laboratory one should carefully consider the scope of the work so as to plan intelligently how to arrange and equip the laboratory. It is entirely within the province of the up-to-date pharmacist to undertake the examination of urine, feces, blood, gastric and duodenal contents; to examine blood for malarial parasites, milk for bacterial contents as well as for adulteration and preservatives, exudates for gonococci, throat smears and cultures for diphtheria bacilli, sputum for tubercle bacilli, and cerebro-spinal fluids for globulin, copper-reducing substances and cell count as well as for bacteria. With reference to cerebrospinal fluid, however, we must bear in mind that many physicians are not familiar with the technic of lumbar puncture and they will therefore prefer to have the laboratory man perform that operation previous to examining the fluid. The procedure for obtaining spinal fluid by lumbar puncture, while relatively simple in the hands of a trained man, is fraught with many dangers to the patient when attempted by the inexperienced, and I doubt whether the pharmacist would legally be entitled to perform this operation. Similar objections may be raised against removal of blood from the vein of the patient for the purpose of performing the complement fixation test for gonorrhoea or syphilis. And even should the physician be willing to do that part of the work himself the preliminary steps necessary for carrying out the complement fixation

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test, such as preparation of antigen, and amboceptor, securing complement from guinea pigs, and titrating these important reagents each time before beginning the actual test would entail so much labor, consume so much time, and prove so expensive as to be prohibitive for a casual execution of this work on a single specimen. On the other hand, the preparation of autogenous vaccines can be carried out successfully by the trained laboratory man and will prove remunerative from a professional as well as from a financial point of view.

The following prices indicate the charges usually made for clinical and diognistical work:

URINE	
Qualitative Chemical and Microscopical.....	\$ 1.00
Quantitative Chemical and Microscopical.....	3.00
Nitrogen Partition.....	10.00
BLOOD.	
Red and White Cell Count and Haemaglobin, each.....	2.00
Differential Leucocyte Count.....	2.00
Complete Clinical Examination.....	5.00
Widal reaction.....	2.00
Plasmodia.....	2.00
Wassermann complement fixation.....	10.00
SPUTUM.	
T. B. or Pneumonia.....	2.00
FECES.	
Chemical or Microscopical.....	3.00
Bacteriological.....	10.00
GASTRIC CONTENTS.	
Chemical and Microscopical.....	5.00
SMEARS.	
Urethral, etc., for Gonococci.....	1.00
CEREBROSPINAL FLUID.	
Wassermann complement fixation.....	10.00
Noguchi Batyric Acid Reaction.....	3.00
Nonne Reaction.....	3.00
Cell Count.....	5.00
Bacteriological.....	15.00
VARIA.	
Autogenous Vaccines.....	10.00
Milk Analysis.....	5.00
Water Analysis.....	5.00
Tissue.....	5.00
Drug Assay, Food Analysis and other Chemical Analysis.....	
Quotations on application.	

LOCATION AND EQUIPMENT.

Inasmuch as we know what we wish to accomplish we can now intelligently plan our laboratory. In an article which appeared in the *American Druggist* some time ago, I gave a detailed plan for the arrangement, and it is not necessary to repeat it here. Generally speaking, the laboratory should be removed from the other departments of the pharmacy as far as possible. A room about 10 by 12 feet, well lighted by windows and electric light, preferably with northern exposure, should be the location of choice.

The equipment may be divided into four groups: 1. Glassware. 2. Reagents. 3. Implements. 4. Accessories.

GLASSWARE. Test-tubes, preferably of medium size and assuredly of good quality should be provided in abundance. Beakers of assorted sizes, porcelain evaporating dishes, Florence and Erlenmeyer flasks, a few distilling flasks and condensers, one of which at least should be a reflux condenser, microscopical glass slides and cover glasses of good quality, staining bottles of the drop-bottle variety, reagent bottles glass stoppered except those for alkalis, which latter should have rubber stoppers, a good supply of glass and rubber tubing and some stirring rods. A few extra large sized test tubes with thick walls for the purpose of constructing a Van Slyke apparatus should also be provided and, of course, a sufficient supply of urinometers, ureometers, pipettes and burettes, centrifuge tubes and Petri-dishes, the latter at least 1.5 cm. deep and 10-12 cm. wide.

REAGENTS. Stock solutions, as well as working solutions, of the following stains should be on hand: Carbol-fuchsin, carbol-gentian violet, Loeffler's alkaline methylene blue, aqueous solution of methylene blue, Gram iodine, acid-alcohol, acetone-alcohol, and Wright's blood stain. In addition to the stains the following reagents should be kept on hand, of course carefully titrated: N/10 NaOH, N/10 H₂SO₄, N/10 HCl; 2% acetic acid, 36% acetic acid, glacial acetic acid, diluting fluid for red blood corpuscles such as Hayem's, or that devised by me and published in the *Journal of the A. M. A.*, Fehling's solution, Benedict's solution for quantitative determination of sugar, bromine solution for urea determination (Rice's formula), Obermeyer's solution, standard AgNO₃ (1 Cc. to equal 0.1 NaCl); uranium nitrate solution (1 Cc. to equal 0.005 P₂O₅), acetic mixture, barium chloride test solution, 10% butyric acid in normal saline, etc. Indicators: Neutral potassium chromate, litmus, methyl orange, Töpfer's, cochineal, alizarin, phenolphthalein.

IMPLEMENTS. If possible one should have a good polariscope; also electric centrifuge, test-tube racks and holders, electric incubator, electric hot-plate, platinum loops and needles. Hagedorn needles, Arnold sterilizers, dry, hot air oven, autoclave. The possession of a good microscope, with oil immersion lens and mechanical stage, is an absolute necessity.

ACCESSORIES. Bunsen burners, two- or three-ring gas burner, grommets, crucible tongues, funnels and supports for same, filter paper, double-boiler (rice boiler), test-tube brushes and bottle brushes, metal and horn spatulas, triangular file, glass-pencil (a wax pencil for writing on glass), slide boxes and labels.

With reference to all the items enumerated above would say that quality only should be the determining factor and while a sufficient supply should always be on hand overstocking must be carefully avoided. The chemicals needed, as a rule, are found in every well stocked pharmacy. The formulae for the different reagents can readily be obtained from any standard text-book.

TRAINING.

In order to intelligently carry out laboratory work for diagnostic purposes one should have a thorough training, both theoretical and practical. A systematic course in this work should be the first step. This should be followed by about 3 to 6 months' practical work in a laboratory connected with a hospital or one in

which such laboratory work is done on a fairly extensive scale, under the immediate supervision of a trained pathologist. Ardent collateral reading, both of text-books and modern medical literature, are an essential part of the training. And while it is by no means necessary for the laboratory worker to become a physician it will prove of great advantage if he learns to evaluate the laboratory findings and their relation to disease.

METHODS FOR PROCURING BUSINESS.

This may be subdivided under two heads: (a) Direct advertising; (b) Indirect advertising.

(a) DIRECT ADVERTISING: At the very outset one should acquaint the physicians in the community with the fact that the laboratory has been established, stating frankly the qualifications of the man in charge and enclosing a schedule of fees for the different types of examinations one is ready to carry out. Secondly: Cordial invitations should be extended to the medical profession to visit and inspect the laboratory. Thirdly: Proper containers should be provided for the collection of specimens by the physician. Fourthly: Monthly or bi-weekly pamphlets of a scientific nature should be mailed to each physician. Each pamphlet may show the relation of some phase of the laboratory work to diagnosis and, if possible, to prognosis.

(b) INDIRECT ADVERTISING: Painstaking and accurate work carefully performed and intelligently reported. A good equipment well maintained and always open for inspection. Willingness and desire, frequently expressed, to have the physician present while the work is being carried out.

For methods of analysis and collateral reading one is referred to Hawk's Biological Chemistry, Simon's Clinical Diagnosis, Todd's Clinical Diagnosis, Emerson's Clinical Diagnosis, Wood's Clinical Diagnosis, Ewing's Hematology, Hiss and Zinsser's Bacteriology, Jordan's Bacteriology, Park's Bacteriology, *The Journal of Laboratory and Clinical Diagnosis*, and many other good books and publications easily found if desired. I may also be permitted to refer to a rather detailed outline on the preparation of autogenous vaccines published in the JOURNAL OF THE A. PH. A., February, 1914, by myself, as well as numerous monographs on laboratory diagnosis published by me in various medical and pharmaceutical journals.

The advantages of a diagnostic laboratory in conjunction with a modern pharmacy are too evident to require discussion. The least of these is the direct financial return from the work and the increase in the prescription work arising from the added confidence of both the physician and the public. One of the more important returns worth considering is the broadening influence which such work is bound to have on the pharmacist and the added appreciation of the importance of the pharmacy as a valuable adjunct in the diagnosis and treatment of disease.

CLOSER AND MORE PROFITABLE RELATIONS BETWEEN THE PHARMACIST AND HIS BANK.*

BY CLARENCE O. BIGELOW.

At no time in the last decade or more has the pharmacist been beset with so many vexatious problems as confront him to-day. Conditions arising out of the

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