zation is usually directed to be checked against pure iron as is evidenced by the following citation from page 136, U. S. Dept. Agr. Division of Chemistry, Bul. 107, revised, under the determination of the iodine number of fats and oils.

"*Decinormal potassium bichromate.*—Dissolve 4.9083 grammes of chemically pure potassium bichromate in distilled water and make the volume up to 1 liter at the temperature at which the titrations are to be made. The bichromate solution should be checked against pure iron."

But of course this requires another determination and further complicates the standardization of the $Na_2S_2O_3$ V. S.

In view of the close duplicates obtained by the use of resublimed iodine and simplicity of employing the watch glasses and clip method, I would suggest this as the most satisfactory means of accurately standardizing $Na_2S_2O_3$ V. S.

The sodium thiosulphate solution was made by taking 4 liters of distilled water, boiling until all air and CO_2 were expelled, placing in a large amber-colorded bottle, and when cool, dissolving about 100 grammes of C. P. sodium thiosulphate in the liquid.

The bottle was set away in a dark place until ready for use (about six weeks). When a syphon tube with pinch cock was inserted and a layer of neutral liquid petrolatum placed on top of the liquid, by blowing into a hollow glass tube in the other hole of the rubber stopper the syphon was started.

Making up the solution by using distilled water from which the air and CO_2 are expelled, allowing to stand until decomposition and precipitation has taken place, covering with a layer of liquid petrolatum and syphoning off the quantities of solution required makes an ideal method of handling not only this volumetric solution but very many others, it being our practice to follow this method whenever possible.

RESEARCH AND ANALYTICAL DEPARTMENT RIKER LABORATORIES.

A PROFESSIONAL "SIDE LINE" FOR THE PHARMACIST.*

J. M. ROGOFF, PH. G., M. D.

The introduction into therapeutics, of antitoxins, vaccines, serums, bacterins, etc., and the principles inculcated in the "Therapia Sterilans Magna" with the advent of Ehrlich's Salvarsan and Neo-Salvarsan have had a marked influence upon the prescription department of the pharmacist, and, for self-preservation, he has turned to commercialism and has converted his pharmacy into a miniature department store, instead of taking the more logical and ethical course of preparing to supply the physician with these new therapeutic agents, which have replaced so many of the old ones that at one time made the prescription department most remunerative.

In this paper, I do not aspire to the dubious distinction of originality, but will merely attempt to illustrate that the pharmacist can, with a little additional prepa-

* From a paper read before the Nashville Branch A. Ph. A., February 17, 1915.

ration, and without investment of much money, add to his store a profitable and ethical professional "side line," which will bring him into closer relationship with the physician and improve his prescription patronage indirectly, as well as partly remunerate him for the loss of some of the prescription work that has been replaced by the use of other agents.

The modern pharmacist can easily equip himself with the necessary knowledge and apparatus to do for the physician, the simpler chemical tests that are used in clinical diagnosis, i. e., ordinary urine analysis, gastric analysis, etc.

Believing that the practice of such a side line by the pharmacist would be a step in the progress of advancement of the profession, I will present to you this paper, which if met by your approval will be followed by other similar papers that might constitute an introductory course of instruction, which if added to the pharmacist's knowledge of chemistry and chemical technique, will aid you to perform these tests, and thus legitimately serve the physician and the public in an ethical manner.

In this paper, microscopical tests are not included, being limited to the chemical tests that can be performed by any intelligent pharmacist.

The apparatus and the reagents required for this work are simple and inexpensive and most of them are found in every pharmacy. The following apparatus is sufficient for most of this work: Burette and holder, pipettes, beakers, funnels, test tubes, sedimentation glasses, evaporating dishes, Bunsen burner or alcohol lamp. The reagents will be mentioned with the various tests.

I will consider the analysis of the gastric contents to begin with. The physician desires a qualitative and quantitative analysis, and I will group the easily performed tests into these two subdivisions.

A. Qualitative tests:

1. Quantity, odor, appearance (blood, pus, undigested food, mucus, etc.).
2. Reaction: Litmus test.
3. If reaction is acid, determine if acidity is due to free acids: Topfer's reagent (one percent alcoholic solution of dimethylamidoazobenzol) is most commonly employed; this gives a red color, if free acid is present.
4. If free acid is indicated, determine if this is mineral (hydrochloric) or organic (lactic):

GUENZBERG'S REAGENT.

Phloroglucin	1 part
Vanillin	2 parts
Alcohol	100 parts

A few drops of this reagent mixed with ½ to 1 cc. of filtered gastric juice and evaporated in a porcelain capsule will produce a red color as the mixture evaporates, (avoid excessive heat) if free mineral acid is present.

BOAS' REAGENT.

Resorcin	10 parts
Cane Sugar	5 "
Alcohol	5 "
Water, q. s.	100 "

This reagent is used as Guenzberg's, and the results obtained are similar if free mineral acid is present.

5. Organic Acid:—(lactic) Uffelmann's Reagent (2½% aqueous solution until the mixture becomes of an amethyst color). A few cc. of gastric contents are added to about 5 cc. of the reagent in a test tube, and if organic acid is present, a yellowish color will replace the bluish color; if mineral acid is present, a colorless solution will result. Therefore, if free mineral acid has been found to be present by test number 4, it is necessary to separate the organic to properly perform this test; this can easily be accomplished by shaking the gastric contents (a few cc.) with ether, which will extract the organic acid away from the mineral acid, and when the etherial layer is evaporated (spontaneously) the residue can be dissolved in distilled water and Uffelmann's reagent applied.
6. Starch: Iodine solution, or Lugol's solution (a few drops) gives a blue color.
7. Erythrodextrin: Iodine solution, or Lugol's solution, gives a reddish color.
8. Maltose: Fehling's, or Haines' solutions (a few cc.) boiled with a few cc. of the gastric contents will be reduced and a heavy reddish or reddish brown precipitate will appear.
9. Propeptone: a. Primary proteoses are precipitated by one-half saturation with ammonium sulphate.
   b. Secondary proteoses are precipitated by complete saturation with ammonium sulphate.
10. Peptone: The Biuret Test: This is performed by the addition of dilute cupric sulphate solution, then adding NaOH or KOH solution in excess (i. e., until distinctly alkaline) a pink color indicates peptone, violet indicates other soluble proteins. This reaction is sometimes enhanced by the aid of slight heat.
11. Pepsin: A few shreds of freshly, coagulated egg albumen are added to a few cc. of (acidulated to 0.4%) gastric contents and its digestive quality noted.
12. Rennin: 5 cc. of gastric content should completely curdle about 15 cc. of milk in from about 10 to 15 minutes, when kept at incubation temperature.

B. Quantitative tests.

1. Free HCl: Titrate with N/10 or N/20 NaOH, using Topfer's reagent as an indicator.
2. Combined HCl: Titrate with N/10 or N/20 NaOH, using alizarin as an indicator, then deduct the results of this titration from the total acidity.
3. Total Acidity: Titrate with N/10 or N/20 NaOH, using phenolphthalein as an indicator.
4. Organic Acids: Extract a known quantity of gastric content with ether, then titrate the residue for total acidity; this result deducted from the total acidity before extraction of the organic acid with ether will indicate the quantity of organic acid.
5. Pepsin: Digestive influence on Mett's tubes.