A FEW SUGGESTIONS FOR THE NINTH DECENNIAL REVISION OF THE UNITED STATES PHARMACOPŒIA.

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While we have no doubt but that many of the difficulties met by us in following official instructions for the testing of U. S. P. products have already been or will be corrected by the Committee of Revision, we have summarized a number of them, on which we have not hitherto seen comments, and beg to offer them, together with certain suggestions, in the following paper.

Aqua Ammoniae, Assay of.—The official method of weighing and titrating is inconvenient and subjects the sample to possible loss by volatilization. An improvement consists in placing a measured volume of standard acid solution in a glass stoppered weighing bottle, weighing, quickly introducing a sample of the ammonia to be assayed, stoppering tightly, and weighing again. A very little practice enables one always to use a proper excess of acid.

In the assay of *volatile acids,* the same principle may be employed, weighing the sample in a weighing bottle containing an excess of standard alkali solution.

Acidum Lacticum, Assay of.—The present U. S. P. method is unreliable and gives too low results. Murray's or the German Pharmacopoeia method should be adopted. If adopted, the standard should be raised to not less than 85 per cent.

Aqua Hydrogenii Dioxidi, Determination of Acetanilide in.—The following method gives nearly accurate results: Shake out about 200 Cc. H_2O_2 with 4 portions of chloroform, 25 Cc. each. Evaporate the chloroform on steam bath, dry residue at a temperature not higher than 60° C. and weigh as acetanilide.

A standard solution of acetanilide in H_2O_2 gave 100% of the acetanilide by this method.

The recovered acetanilide is white in new lots of H_2O_2 and slightly brownish in very old lots. However, in the latter case the melting point is only one or two degrees below the standard of pure acetanilide (113° C., U. S. P.).

The chloroform also extracts acetanilide decomposition products having an odor like nitrobenzol; but as these are volatilized on drying the recovered acetanilide, they do not affect the result.

Arseni Trioxidum, Assay of.—The following method has proved more convenient to us: Dissolve the weighed sample in a little KOH Test Solution (Heat may be applied). Make acid with HCl, make again alkaline with $NaHCO_3$ and add 1 or 2 Gm. more of $NaHCO_3$. Dissolve and titrate back with N/10 Iodine.

In the U. S. P. method it is very difficult to dissolve 0.1 Gm. As_2O_3 in 20 Cc. of water and 1 Gm. $NaHCO_3$ with a gentle heat and there is also the possibility of forming normal sodium carbonate which would use up some iodine.

Cocainae Hydrochloridum, Identification of.—A *strong* solution of cocaine hydrochloride in diluted HCl is necessary in applying the potassium chromate test. The U. S. P. directs "a HCl solution of the salt." In *too* dilute solutions no reaction takes place.

Copaiba.—This product rarely answers the requirement for solubility in petroleum benzin. As a rule considerable insoluble matter is left, even with samples the purity of which is unquestionable. In testing for Gurjun balsam, Turner's nitrite test should be adopted, as has been done by the new edition of the German Pharmacopoeia.

Creosotum.—A better phraseology for the test for "difference from and limit of Phenols" would be, "if 1 volume of creosote be mixed with 1 volume of 95% glycerin, a clear mixture will result, from which a creosotic layer, equal to or greater in volume than the creosote employed, will separate on the addition of *water to the extent of one-fourth the volume of the creosote—glycerin mixture."*

In the test for solubilities the sentence, "Soluble in all proportions in acetic acid" should read, "Soluble in all proportions in *glacial* acetic acid."

Definitions Wanted:

What is meant by *"colorless"?* A definition is needed. What depth of liquid is required? What width of tube should be employed? It would be advisable to use in all cases Nessler's tubes or jars. A liquid may be colorless on looking through the tube transversely, but may show an appreciable coloration on looking through the liquid vertically from top to bottom of the tube.

What is meant by *"parts"?* A statement should be included to make clear that "parts" as used in stating solubilities means "parts by weight." No other interpretation is at all likely in the case of solids, but, after noting the solubility of chloroform in water, which is given in "volumes," a wrong interpretation of "parts" as applied for example to cresol, creosote, and bromine, might result.

What is meant by *"unweighable residue"?* This statement should be defined. In the German Pharmacopoeia it is defined as "less than 1 mgm." For example: A sample of yellow oxide of mercury gave 0.0002 Gm. residue in test for "absence of many foreign salts." Is this considered to be unweighable?

The same sample gave 0.0008 Gm. residue in "limit of foreign metals." A second sample gave 0.0011 and 0.0004 Gm. respectively. A third sample gave 0.0018 and .0004 Gm. respectively. A fourth sample gave 0.0004 and 0.0006 Gm. respectively.

Speaking of yellow oxide of mercury, we found it unfair to this product to run the U. S. P. tests for "absence of foreign salts" and "limit of foreign metals" without running a blank test at the same time, as in many cases the blank gives as high as 0.0005 Gm. residue.

Fluidextractum Frangulae, Preparation of.—The U. S. P. process seems to give a product which contains only about 70% of the emodin found by the assay of the drug.

A sample of the bark, which assayed 1.141% emodin gave a U. S. P. fluidextract assaying only 0.778% emodin, or 68.2% of the emodin found in the drug.

Fluidextractum Sennae, Preparation of.—As in the case of fluidextract of frangula, the U. S. P. process seems to give a product containing only about 70% of the emodin contained in the drug.

A sample of senna leaves, which assayed 0.667% emodin, when made into a fluidextract by U. S. P. directions gave a fluidextract assaying only 0.479% emodin or only 71.9% of the emodin shown to be contained in the drug.

Glandulae Thyroideae Siccae.—In the test for "inorganic iodine," the phrase "A cold extract of desiccated thyroid glands" should read "A cold *water* extract of desiccated thyroid glands."

Liquor Formaldehydi, Assay of.—In assaying, the flask should be shaken occasionally during the thirty minutes standing, or until gas bubbles are no longer formed on shaking. The reaction proceeds slowly at times and thirty minutes *without* shaking is insufficient. The reaction is only complete when gas bubbles are no longer liberated on shaking.

Mel, Test for Cane Sugar in.—It is to be presumed that the U. S. P. test for "absence of cane sugar" is intended to provide a means of testing for non-reducing sugar. As such, the test is unreliable. A rather complicated but reliable substitute is the method of reduction of an alkaline copper (Fehling's) solution before and after inversion treatment with dilute acid, the difference in the amounts of cuprous oxide found being calculated as sucrose.

As an illustration: A sample "B" gave a dark zone at the end of one-half hour and a sample made up in our laboratory from the fresh combs also gave a dark zone, but not as dark as the "B" sample.

"B" sample assayed 72.90% reducing sugar.
Laboratory sample assayed 65.80% reducing sugar.
"B" sample assayed 1.25% non-reducing sugar.
Laboratory sample assayed 9.72% non-reducing sugar.

While the U. S. P. test would indicate that the "B" sample contained more non-reducing sugar than the sample made from fresh combs in the laboratory, the cupric-reducing power proved this to be not the case. A "limit" of sucrose is needed.

Melting Point of Waxes, etc., Determination of.—We have found the following to be a good method: A piece of thin glass tubing about three-eighths inch in diameter and about three inches long is heated in the Bunsen flame about one inch from one end until the walls fall in and form a constriction with a capillary opening. To use this device, the smaller end is pressed into the wax up to the constriction. The device is then bound to a thermometer and both are suspended in a beaker of water so that the constriction is about one inch below the surface. Heat is applied with constant stirring of the water. When near the melting point, the temperature is raised at the rate of one degree in two minutes. When a drop of the melted wax passes up through the constriction or capillary opening, the melting point is indicated. The melting point is very easily observed as it is quite sharp. This method is much better than the "drop of mercury" method, which we formerly used, the trouble being that with this method the melting point is not sharp, as it sometimes requires two or three minutes for the drop of mercury to fall through the melted wax.

Melting point methods for such substances as petrolatum, lanum, etc., should be described and adopted.

Myrrha.—The sentence, "It does not swell or dissolve in water," should read, "It does not swell or *completely* dissolve in water," in view of the fact that myrrh contains considerable water soluble gum.

Oleum Eucalypti. Assay for Cineol.—We have found the following procedure very satisfactory: Introduce into a beaker a solution prepared by dissolving 10 Cc. of the oil in 50 Cc. purified petroleum benzin; immerse the beaker in a freezing mixture and add phosphoric acid U. S. P. (85%), drop by drop, with constant stirring until 12/15 Cc. have been added and the magma of cineol phosphate formed is bulky, granular, and pinkish in color; then stir occasionally for one-half hour. Transfer the magma quickly and completely to a force-filter, wash it several times with cold purified petroleum benzin and then press it between two porous plates until a dry, white powder (cineol phosphate) is obtained. Finish like U. S. P.

The indefinite quantity of phosphoric acid in the U. S. P. method is apt to produce trouble for the novice, as an insufficient quantity will result in an incomplete separation of the cineol and an excessive amount will result in a sticky magma which is difficult to handle and dry and almost impossible to wash properly. The stated amount of phosphoric acid—namely 12/15 Cc.—has proved satisfactory in our work, with oils ranging from 50-80% cineol, while 20 Cc. has produced the sticky magma mentioned above.

Oleum Olivae, Elaidin Test for.—None of the samples tested during the last few years responded properly to the elaidin test, and rarely gave a "whitish granular mass" in the freezing test. It is suggested that a thorough investigation of these tests be made.

Oleum Terebinthinae, Test for Hydrocarbons in.—The U. S. P. test for "absence of petroleum benzin, kerosene or similar hydrocarbons" should have a time limit upon it as the "clear layer" is small or large in proportion to the time the mixture is allowed to stand. "After the dark mass has settled" is very indefinite; in fact, there is usually no "dark mass."

Illustrations: (1) 0.35 Cc. clear layer after one-half hour; 0.35 Cc. after 45 minutes and 0.45 Cc. after 15 hours. (2) 0.35 Cc. clear layer after one-half hour and 0.6 Cc. after 15 hours. (3) 0.4 Cc. clear layer after one-half hour and 0.7 Cc. after 15 hours.

Later experiments show that vigorous shaking of the sulphuric acid-turpentine mixture in the burette after cooling leaves smaller and in some cases practically no clear layers, even after 24 hours standing. Is such shaking allowable?

Resina Podophylli.—We have found that the alcohol soluble matter is always low and the water soluble matter always high. Some examples:

Alcohol soluble: 92.2, 98.0, 95.6, 93.6, 92.8, 92.2, 93.9, 92.2;
Water soluble: 35.5, 35.9, 45.1, 42.0, 41.1, 42.0, 39.3, 26.1.

U. S. P. standard is "not less than 99% soluble in alcohol and not more than 25% soluble in water." Are not these requirements too rigid?

Saccharum Lactis, Test for Cane Sugar in.—The U. S. P. test for "absence of cane sugar" is unreliable. The Leffmann-Oliver Sesame Oil test is an excellent substitute. Samples leaving 0.152 and 0.142 Gm. (instead of not more than 0.03 Gm.) in the U. S. P. test were proved free from cane sugar by means of this test.

The Leffmann-Oliver Sesame Oil test for cane sugar is made as follows: Dissolve 0.1 Gm. of the sample in 4 Cc. concentrated hydrochloric acid and add 4 Cc. of sesame oil. Shake vigorously for one-half minute and allow to stand.

Approximate estimation:

Cane sugar 1% gives faint pink color in 12 minutes.
Cane sugar 3% gives faint pink color in 5 minutes.
Cane sugar 5% gives faint pink color in 4 minutes.
Cane sugar 10% gives faint pink color in 2 minutes.
Cane sugar 100% gives faint pink color immediately.
Milk sugar 100% gives faint pink color in 15 minutes.

The reagent must be made up freshly for each test.

Sapo Mollis, Test for "limit of free alkali" in.—A suggested improvement is as follows: Dissolve the soap in absolute alcohol with the aid of heat, filter, and reserve the filter and contents for the determination of potassium carbonate. Titrate the filtrate with N/10 oxalic acid using phenophthalein as indicator, and calculate the alkalinity as potassium hydroxide (KOH).

Then place the filter and contents in a flask, add a little water, shake to dissolve the potassium carbonate, if any, and titrate with N/10 sulphuric acid, using methyl-orange as indicator. Calculate as K_2CO_3. Limits should be specified. We have seen many soaps which did not give an alkaline reaction with phenolphthalein, but did so with litmus.

In conclusion, we beg to state that if methods for the determination of alcohol in galenicals are to be adopted, we would be glad to submit a description of the methods used by us and the modifications which we have found necessary in applying them to different preparations.

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NOTE ON TRUE SCAMMONY AND MEXICAN SCAMMONY ROOT.

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For the past year or two the root of *Ipomoeia Orizabensis* has been imported in large quantities under the name of Mexican Scammony root. The reason for this lies in the fact that the genuine scammony root is becoming scarcer and therefore higher in price than heretofore. Whether this root of *Ipomoeia Orizabensis* is identical with the genuine scammony in therapeutic effects and yields a resin having similar properties is a subject for pharmacologists to determine. There can be little doubt, however, that pending such determination it is hardly an ethical proceeding to market the Mexican scammony as the genuine article. It may be as good therapeutically but it sets a bad precedent and there is always the tendency to apply the same rule in the case of inferior substitutes. This results in the physician condemning the drug as unreliable or uncertain in action and such drugs ultimately drop into disuse not through any fault of their own but as the result of wide latitude in the use of other species supposedly as active as the official.

The subject of scammony is scarcely treated in text-books dealing with the subjects of powdered drugs and the Mexican variety is not even mentioned in most. This is not surprising because most of these volumes deal with the more common drugs and one can refer to any of them and find good descriptions of these. But when one tries to obtain references on drugs not in everyday use, he finds that they are lightly passed over in most cases and in many more are not mentioned. There seems to be great need of an abstract or index dealing with subjects of pharmacognosy, as at present one may spend days in search of light upon a certain subject and it is often more expeditious to work the problem out rather than search for material.