

## UNITED STATES PHARMACOPŒIA.

## ABSTRACT OF PROPOSED CHANGES WITH NEW STANDARDS AND DESCRIPTIONS.

## TENTH REVISION.

Copyright, 1923, by the Board of Trustees of the United States Pharmacopœial Convention.\*  
All Rights Reserved.

## PART I—FIRST PROOF.

The United States Pharmacopœial Convention in 1920 approved a recommendation that the Committee of Revision make public for comment and criticism, before final adoption, an abstract of new descriptions and standards, and all important changes in preparations and standards, proposed for the new Pharmacopœia. In compliance with that recommendation the following abstracts are published.

Part I of these abstracts includes most of the organic chemicals and some of the inorganic chemicals. Abstracts will be issued from time to time covering other texts for the Pharmacopœia.

The nomenclature used in these abstracts does not necessarily represent that to be finally adopted.

Where no reference is made to standards for purity, formulas, directions, tests or chemical assays, it is understood that the material facts remain the same as in the United States Pharmacopœia, Ninth Revision. Comments should be sent to the Chairman of the Revision Committee.

E. FULLERTON COOK,  
636 South Franklin Square,  
Philadelphia, Penna.

## GENERAL STATEMENTS APPLYING TO BOTH ORGANIC AND INORGANIC CHEMICALS.

*Chlorides and Sulphates.*—In testing for chlorides or sulphates, instead of the statements "not more than slightly turbid or slightly opalescent" quantitative tests for these impurities have now been adopted, based on turbidimetric comparison with standards prepared with fiftieth-normal hydrochloric acid and fiftieth-normal sulphuric acid. (A general description of the method of carrying out these turbidimetric tests will be given in Part II of the Pharmacopœia.)

*Assays.*—The details of the assay for acids will not be given under each acid, but referred to a "General Assay for Acids" to be found in Part II, the quantity of the substance to be taken for the assay and the indicator being specified in the text.

The statement formerly used in the assays that "each Gm. of ———, corresponds to not less than—cc of —acid," is omitted, except under bromides, iodides, and Trichloroacetic Acid.

The statement formerly used at the end of the assays that "it shows not less than—per cent. nor more than — per cent. of —" is also omitted.

All volumetric solutions will be referred to in the text without the accompanying abbreviation "V. S."

## ORGANIC CHEMICALS.

*Acetanilidum.*—Added to solubility statement—"1 Gm. dissolves in 4 cc of acetone. It is slightly soluble in petroleum benzin."

Melting point—"between 113° and 115° C." instead of "112° and 114° C."

The reaction to litmus is altered to read—"Shake 1 Gm. of Acetanilid with 20 cc of distilled water for two minutes and filter. The filtrate is neutral to litmus paper."

*Acetinum.*—Identity tests added—"To 1 cc of an aqueous dilution of acetone (1 in 200) add 1 cc of sodium hydroxide T. S., warm the mixture and add a few cc of iodine T. S. A yellow precipitate of iodoform is formed at once. Mix 1 cc of the same acetone dilution with 5 drops of sodium nitro-prusside T. S. and 2 cc of sodium hydroxide T. S., and add a slight excess of acetic acid. A deep red solution is produced, and, on diluting the liquid with several volumes of water, it develops a violet tint."

Non-volatile matter—"Not more than 0.002 Gm. from 50 cc of Acetone," instead of "0.002 Gm. from 25 cc."

---

\*Permission to reprint for purposes of comment can be had on application to the Chairman of the Board of Trustees, J. H. Beal, 801 W. Nevada Street, Urbana, Ill.

*Acetphenetidinum*.—Melting point—"between 134° and 135° C." instead of "between 133° and 135° C."

The reaction to litmus altered to read—"Shake about 1 Gm. of Acetphenetidin with 20 cc of distilled water during two minutes and filter—the filtrate is neutral to litmus paper."

In the test for acetanilid five times the U. S. P. amount of Acetphenetidin is taken.

*Acidum Aceticum*.—Identity test added—"Mix 1 cc of the Acid with 1 cc each of alcohol and of sulphuric acid and heat the mixture gently on a water-bath for about one minute. The characteristic odor of ethyl acetate becomes noticeable."

*Acidum Aceticum Dilutum*. Preparation. Formula—The formula is based on 1000 Gm. instead of 730 Gm.

*Acidum Aceticum Glaciale*.—Special test for non-volatile impurities added—"Evaporate 20 cc of Glacial Acetic Acid to dryness on a water-bath and dry at 100° C. Not more than 0.002 Gm. of residue remains."

*Acidum Benzoicum*.—The description of source is omitted—"Purity rubric changed from 99.5 per cent. to 99.3 per cent."

Added solubilities—"1 Gm. dissolves in 30 cc of carbon disulphide or carbon tetrachloride. Sparingly soluble in petroleum benzin."

Cinnamic acid test altered—"Dissolve 0.3 Gm. of the Acid in 15 cc of hot water and add to the solution 2 cc of tenth-normal potassium permanganate. The odor of benzaldehyde is not perceptible (*cinnamic acid*)."

Chlorine test altered—"Mix 0.5 Gm. of Benzoic Acid and 0.7 Gm. of calcium carbonate with a little distilled water in a crucible, dry the mixture and incinerate at a low red heat. Dissolve the residue in 20 cc of diluted nitric acid, filter, wash the filtrate and insoluble residue with 15 cc of distilled water, add to the filtrate 0.5 cc of tenth-normal silver nitrate and dilute with distilled water to 50 cc. Dissolve 0.7 Gm. of the same calcium carbonate in 20 cc of diluted nitric acid, filter, if necessary, add 0.5 cc of tenth-normal silver nitrate and dilute with distilled water to 50 cc. Now add to this solution fiftieth-normal hydrochloric acid, drop by drop, mixing well after each addition, until the turbidity matches that in the test with the benzoic acid. If the synthetic Acid is tested, not more than 0.6 cc of fiftieth-normal hydrochloric acid is required in the control test to match the turbidity, and, if the natural Acid is tested, not more than 0.3 cc of fiftieth-normal hydrochloric acid is required (*chlorine*)."

*Assay*.—The benzoic acid is dried at 100° C. for two hours instead of being dried to constant weight over sulphuric acid. Calculation of results changed to read—

"From the number of cc of tenth-normal barium hydroxide consumed subtract one-fifth of the volume of fiftieth-normal hydrochloric acid used in the test for chloride."

*Acidum Citricum*.—Identity test added—"Add 1 cc of mercuric sulphate T. S. to 5 cc of an aqueous solution of the Acid (1 in 100), heat the mixture to boiling and add 1 cc of potassium permanganate T. S. A white precipitate is formed."

Oxalic acid test altered—"Neutralize 10 cc of an aqueous solution of the Acid (1 in 10) with ammonia water, add 5 drops of diluted hydrochloric acid, cool, if necessary, and add 2 cc of calcium chloride T. S. No turbidity is produced (*oxalic acid*)."

Tartaric acid test altered—"Mix 1 Gm. of powdered Citric Acid with 10 cc of sulphuric acid in a test-tube, previously rinsed with sulphuric acid, and maintain the temperature of the mixture at 90° C. for one hour. No darker color than yellow develops (*tartaric acid*)."

#### ACIDUM DIETHYLBARBITURICUM.

Diethylbarbituric Acid

Diethyl Melonyl Urea—Barbital

$CC(HN.CO)_2C(C_2H_5)_2 = 184.15$

Diethylbarbituric Acid occurs in colorless or white crystals, or as a white crystalline powder. It is odorless and has a slightly bitter taste. It is stable in the air.

One Gm. Diethylbarbituric Acid dissolves in 130 cc of water, 14 cc alcohol, 75 cc chloroform, 35 cc ether at 25° C., also in 13 cc of boiling water. It is also soluble in acetone and ethyl acetate.

It melts between 187° and 190° C.

Its saturated aqueous solution is acid to litmus.

A saturated aqueous solution of the Acid yields a white precipitate with mercuric nitrate T. S. which is soluble in an excess of the reagent.

When Diethylbarbituric Acid is boiled with an excess of sodium carbonate T. S. for one-half hour, or when fused with sodium hydroxide, it is decomposed with the evolution of ammonia.

Ash: negligible from 0.5 Gm.

A solution of 0.2 Gm. of Diethylbarbituric acid in 2 cc of sulphuric acid is colorless (*readily carbonizable substances*), and a similar quantity of the acid is not colored by shaking with 2 cc of nitric acid.

*Acidum Phenylcinchoninicum*.—Purity rubric given—"It contains, when dried to constant weight over sulphuric acid, not less than 99 per cent. of  $C_8H_6.C_7H_5N.CO_2H$  (249.18)."

Solubilities added—It is almost insoluble in cold water. One Gm. dissolves in about 400 cc of chloroform, 100 cc of ether or 120 cc of alcohol. It is more soluble in hot alcohol.

Ash—"negligible from 0.2 Gm."—(instead of 0.5 Gm.).

Added test—A solution of 0.1 Gm. of the acid in 5 cc of sulphuric acid is not darker than yellow (*readily carbonizable substances*). On adding 3 drops of nitric acid to the solution no reddish or brown color is produced.

Assay added—"Assay: Weigh accurately about 0.5 Gm. of Phenylcinchoninic Acid, previously dried to constant weight over sulphuric acid, and dissolve it in 60 cc of alcohol which has been neutralized with tenth-normal sodium hydroxide, using 3 drops of phenolphthalein T. S., as indicator, warming gently to facilitate solution. Cool, and titrate the solution with tenth-normal sodium hydroxide until the pink color is restored. Each cc of tenth-normal sodium hydroxide corresponds to 0.024918 Gm. of  $C_8H_6.C_7H_5N.CO_2H$ ."

*Acidum Salicylicum*.—Purity rubric—"Not less than 99.5 per cent." instead of "99.3 per cent."

Added solubility—"1 Gm. dissolves in 3 cc of acetone."

Melting point—"between 157° and 159° C." instead of "between 156° and 159° C."

Ash—"not more than 0.05 per cent." instead of "0.1."

*Acidum Stearicum*.—No change.

*Acidum Tannicum*.—Ash—"Not more than 0.5 per cent." instead of "0.6 per cent."

*Acidum Tartaricum*.—The general definition is omitted.

A 1 in 5 aqueous solution of the acid is used instead of a 1 in 2 solution in the identity test with potassium acetate solution.

*Acidum Trichloroaceticum*.—Identification test altered as follows: "When Trichloroacetic Acid is heated with an alkali hydroxide solution, it is decomposed with the formation of alkali carbonate and chloroform, the latter being recognizable by the odor of phenylisocyanide when a few drops of a saturated, aqueous solution of aniline are added to the hot mixture."

*Aconitina*.—The description of taste is omitted, but the caution is added, "It is very poisonous."

*Adeps*.—A quantitative turbidimetric test for chloride added as follows—"Boil 1 Gm. of Lard with 20 cc of alcohol under a reflux condenser, allow it to cool, then filter, and add to the filtrate 5 drops of an alcoholic solution of silver nitrate (1 in 50). The turbidity, if any, is not greater than that produced by the same quantity of the reagent in a mixture of the same volume of alcohol and 0.5 cc of fiftieth-normal hydrochloric acid (*chloride*)."

*Adeps Lanae*.—Definition modified—"The purified, anhydrous fat of the wool of sheep."

A quantitative turbidimetric test for chloride added as follows: "Boil 1 Gm. of Wool Fat with 20 cc of alcohol under a reflux condenser, allow it to cool, then filter, and add to the filtrate 5 drops of an alcoholic solution of silver nitrate (1 in 50). "The turbidity, if any, is not greater than that produced by the same quantity of the reagent in a mixture of the same volume of alcohol and 0.5 cc of fiftieth-normal Hydrochloric Acid (*chloride*)."

*Adeps Lanae Hydrosus*.—No change.

*Aether*.—Purity rubric—"It contains approximately from 96 to 98 per cent. of  $(C_2H_5)_2O = 74.08$ " instead of "not less than 95.5 per cent. nor more than 97.5."

Acid test added—Place 10 cc of 85 per cent. alcohol in a 50 cc glass-stoppered flask or cylinder, add 2 drops of phenolphthalein T. S. and just sufficient fiftieth-normal sodium hydroxide to produce a light pink color when shaken. Now add 20 cc of Ether, shake gently and add

fiftieth-normal sodium hydroxide, drop by drop, gently shaking the mixture after each addition, until a light pink color is restored. Not more than 0.4 cc of the sodium hydroxide solution is required to neutralize the ether (*acid*).

Non-volatile matter reduced from 1.5 mg. in 30 cc to 1 mg. in 50 cc.

*Aethylis Chloridum*.—No change.

*Aethylmorphinæ Hydrochloridum*.—The definition of source is omitted.

Test for moisture content added—"When dried to constant weight at 100° C. it loses not more than 10 per cent. of its weight (*water*)."

Morphine test—"One cc of diluted ferric chloride solution (1 volume of ferric chloride T. S. to 9 volumes of water) 'replaces' a drop of ferric chloride T. S."

*Aloinum*.—Insoluble residue—"Does not exceed 1 per cent." instead of "1.5 per cent."

*Amylis Nitris*.—Method of correcting assay for barometric pressure and temperature changed to: "The temperature correction is one three-hundredth of the total percentage just found for each degree, additive if the temperature is below 25° C., and subtractive if it is above 25° C. The barometric correction is one seven-hundred and fiftieth of the total percentage just found for each millimeter, additive if it is above 760 mm., and subtractive if it is below 760 mm."

*Antipyrina*.—No change.

*Apomorphinæ Hydrochloridum*.—The definition of source is omitted.

The statement concerning loss and gain of water of crystallization is omitted.

*Atropina*.—The definition of source is omitted, but the chemical formula is retained.

Atropine also complies with the tests for *ash* and *readily carbonizable substances* under *Atropinæ Sulphas*. Five cc portions of a solution, made by dissolving 0.2 Gm. of the alkaloid in 1 cc of normal sulphuric acid and 14 cc of distilled water, do not respond to the test for *foreign alkaloids* or for *apoptropine* or *belladonine* described under *Atropinæ Sulphas*.

*Atropinæ Sulphas*.—The definition "The sulphate of the alkaloid atropine" is omitted.

Melting point—"Its melting point is not below 188° C." instead of "It usually melts between 188° and 191° C., but when anhydrous and free from hyoseyamine, it melts between 181° and 183° C."

To about 0.01 Gm. of Atropine Sulphate contained in a porcelain dish, add a few drops of nitric acid and evaporate the mixture to dryness on a water-bath—a yellow residue is obtained. On adding to the cooled residue a few drops of alcoholic potassium hydroxide T. S. and a fragment of potassium hydroxide, an intensely violet color is produced (*hyoscyamine* and *hyoscine* produce the same color, but the presence of other alkaloids masks the reaction).

Gold Chloride T. S. produces in its aqueous solution (1 in 50) a lusterless precipitate (hyoscyamine yields a lustrous precipitate).

Barium Chloride T. S. produces in an aqueous solution of Atropine Sulphate a white precipitate which is insoluble in hydrochloric acid.

Ash: negligible from 0.1 Gm.

One-tenth Gm. of Atropine Sulphate dissolves in 2 cc of sulphuric acid without producing more than a slightly yellow coloration (*readily carbonizable substances*) and the solution becomes only light yellow upon the addition of 0.1 cc of nitric acid (*many foreign alkaloids*).

In an aqueous solution of Atropine Sulphate (1 in 50), mixed with a few drops of hydrochloric acid, platinic chloride T. S. produces no precipitate (*most foreign alkaloids*).

An aqueous solution of the salt (1 in 60) is rendered turbid by sodium hydroxide, but no turbidity is produced immediately upon the addition of 2 cc of ammonia water to 5 cc of the solution (*Apoptropine, Belladonine*).

*Balsamum Peruvianum*.—Saponification value—The addition of powdered tragacanth to the mixture after shaking with sodium hydroxide is omitted. The mixture of balsam and sodium hydroxide is allowed to stand until complete separation into two layers has taken place, the lower aqueous layer is then drawn off and the ethereal layer quickly filtered into a flask.

The cinnamein value is changed from "50 to 56" to "50 to 60."

*Balsamum Tolutanum*.—No change.

*Benzaldehydum*.—The definition of source is omitted.

Solubility added—It is soluble in about 350 times its volume of water.

Assay—After acidifying with hydrochloric acid, 20 cc of distilled water is directed to be added, before filtering.

The test for *chlorinated products* has been modified to—"Wind the end of a copper wire into a spiral about 6 mm. in diameter and 6 mm. in length, and hold it in a non-luminous flame until it glows without coloring the flame green. Cool the wire, dip the spiral in the benzaldehyde, ignite, and allow it to burn outside of the flame and then bring the spiral into contact with the lower, outer edge of a non-luminous flame. Not even a transient green color should be imparted to the flame (*chlorinated products*)."

*Benzinum Purificatum*.—Specific gravity—"0.634 to 0.660" instead of "0.638 to 0.660."

Distilling points—"between 35° and 80° C." instead of "between 40° and 80° C."

The amount of non-volatile matter permissible is reduced from 0.0015 Gm. to 0.001 Gm. in 50 cc.

*Benzosulphinidum*.—The definition is omitted.

Melting Point—"Its melting point is not below 220° C. Absolutely pure Benzosulphinide melts at about 228° C." instead of "it melts between 219° and 222° C."

Identification Test Modified—Instead of fusing Benzosulphinide with Sodium Hydroxide, "0.1 Gm. is dissolved in 5 cc of a 10 per cent. aqueous solution of sodium hydroxide, the solution evaporated to dryness and the residue fused until no more ammonia is evolved."

Identification test added—"Mix about 0.02 Gm. of Benzosulphinide with about twice this weight of resorcinol, add 10 drops of sulphuric acid and heat the mixture over a small flame until it acquires a dark green color. Allow it to cool, add 10 cc of distilled water and supersaturate the solution with sodium hydroxide T. S. A fluorescent green liquid results."

#### BENZYLIS BENZOAS.

#### BENZYL BENZOATE.

Benzyl Benzoate contains not less than 95 per cent. of  $C_6H_5CO_2C_6H_5CH_2$  (212.17).

A colorless, oily liquid which congeals below 20° C. It is odorless, or has a faint odor of benzaldehyde. It has a sharp, burning taste.

Benzyl Benzoate is insoluble in water or glycerin, but is miscible with alcohol, chloroform, or ether.

Specific gravity 1.083 to 1.22 at 25° C.

Benzyl Benzoate is readily saponified by heating with alcoholic potassium hydroxide solution. Neutralize the solution thus obtained, evaporate the alcohol and dilute with water. Ferric chloride T. S. added to a portion of this solution yields a pink precipitate. To another portion of the solution add a slight excess of diluted sulphuric acid. A white crystalline precipitate is obtained, which, when shaken out with ether and the latter evaporated, has the melting point of Benzoic Acid.

Dilute 1 cc of Benzyl Benzoate with 10 cc of Alcohol, add 2 drops of phenolphthalein T. S. and titrate with *N*/10 Sodium Hydroxide to the production of a pink color persisting for 15 seconds. Not more than 0.2 cc of the Sodium Hydroxide is required (*free acid*).

Two cc of Benzyl Benzoate leaves a negligible residue upon evaporation and incineration.

Wind the end of a copper wire into a spiral of about 6 millimeters in diameter and length, and hold it in a non-luminous flame until it glows without coloring the flame green. Cool the wire, dip the spiral in the Benzyl Benzoate and allow to burn outside the flame. Then bring the spiral in contact with the lower outer edge of the non-luminous flame. Not even a transient green coloration is imparted to the latter. (*Chlorine*.)

*Assay*: Weigh accurately about 1.5 cc of Benzyl Benzoate in a tared flask, add 25 cc of half-normal alcohol potassium hydroxide, connect the flask with a reflux condenser and heat on a water-bath for one hour. Add to the solution a few drops of phenolphthalein T. S. and titrate the excess of potassium hydroxide with half-normal hydrochloric acid. Each cc of half-normal potassium hydroxide corresponds to 0.10609 Gm. of  $C_6H_5CO_2C_6H_5CH_2$ .

*Betaeucaina Hydrochloridum*.—Definition omitted. Test with ammonia water is omitted.

*Betanaphthol*.—The statement "A Monohydroxyphenol of the Naphthalene series" is omitted.

The description of taste is omitted.

*Reaction*.—The sentence "A hot saturated aqueous solution of Betanaphthol is neutral to litmus" is omitted and the following added.

"Shake 1 Gm. of Betanaphthol with 100 cc of distilled water at frequent intervals for fifteen minutes and filter the mixture. The filtrate is neutral to litmus paper."

Alphanaphthol test made more specific—"Boil 0.1 Gm. of Betanaphthol with 10 cc of distilled water until dissolved, allow the solution to cool, and then filter. The addition to the filtrate of 0.3 cc of normal sodium hydroxide, followed by 0.3 cc of tenth-normal iodine, produces no violet color (*alphanaphthol*)."

*Bismuthi Subgallas*.—Lead, copper, silver test—"In preparing the solution for these tests, the filtrate is evaporated to 20 cc instead of 30 cc and this is then divided into portions of 5 cc each."

The sulphate test is omitted.

*Caffeina*.—*Added Solubilities*—"1 Gm. of Caffeine dissolves in 50 cc of acetone, 100 cc of benzene at 25° C. and in 22 cc of boiling benzene."

Added test with iodine—"An aqueous solution of Caffeine yields a precipitate with tannic acid T. S., soluble in an excess of the reagent, *but no precipitate is produced by tenth-normal iodine unless the solution is first acidulated with hydrochloric or sulphuric acid.*"

*Caffeina Sodio-Benzoes*.—Purity Rubric changed to read—"It contains, when dried to constant weight at 80° C., from 47 to 50 per cent. of anhydrous caffeine, and from 50 to 53 per cent. of sodium benzoate, instead of 46 to 50 per cent. of anhydrous caffeine and 50 to 54 per cent. of sodium benzoate."

Added test for *limit of chlorine* in the sodium benzoate—"Dissolve about 2 Gm. of Caffeine Sodio-Benzoeate in 40 cc of distilled water in a separator, add 10 cc of diluted sulphuric acid, extract the liberated benzoic acid with two successive portions of ether, 10 cc each, and allow the other solution to evaporate to dryness at room temperature. One-half Gm. of the residue of benzoic acid, so obtained, complies with the test for 'limit of chlorine described under *Acidum Benzoicum*.'"

Assay for Caffeine—Added directions for the extraction with chloroform—"passing the chloroform solution through a filter which has been previously moistened with chloroform, and removing any caffeine adhering to the filter and the stem of the funnel with a few cc of hot chloroform."

New Assay for Sodium Benzoate—"To the aqueous liquid from which the caffeine has been removed in the above 'assay for caffeine,' add 10 cc of diluted sulphuric acid and extract the liberated benzoic acid with four successive portions of 20 cc, 10 cc, 10 cc, and 5 cc, respectively, of chloroform, passing the chloroform solutions through a filter, which has been previously moistened with chloroform, washing the stem of the funnel and the filter with a few cc of hot chloroform. Allow the chloroform solution to evaporate to about 5 cc at a temperature not exceeding 40° C., add 25 cc of diluted alcohol previously neutralized with tenth-normal potassium hydroxide, using 3 drops of phenolphthalein T. S. as indicator, and titrate with tenth-normal barium hydroxide to the restoration of the pink color. Each cc of tenth-normal hydroxide corresponds to 0.014408 Gm. of Sodium Benzoate."

*Camphora*.—Solubility more definitely stated as—"One Gm. of Camphor dissolves in about 800 cc of water, 1 cc of alcohol, 0.5 cc of chloroform, 1 cc of ether at 25° C. It is also freely soluble in carbon disulphide, petroleum benzin, or in fixed or volatile oils."

Test for chlorinated products modified—"Wind the end of a copper wire into a spiral about 6 mm. in diameter and 6 mm. in length and hold it in a non-luminous flame until it glows without coloring the flame green. Dip the hot spiral in the camphor, ignite, and allow it to burn outside of the flame. Then bring the spiral into contact with the lower, outer edge of a non-luminous flame—not even a transient green color should be imparted to the flame. *Chlorinated products.*"

*Cera Alba*.—No change.

*Cera Flava*.—No change.

*Cetaceum*.—No change.

*Chloralum Hydratum*.—The first sentence of the present monograph, "A compound of trichloraldehyde or chloral, with the elements of one molecule of water" is omitted and now reads—"It contains not less than 99.5 per cent. of  $\text{CCl}_3\text{CHO}\cdot\text{H}_2\text{O}$ ."

*Chloroformum*.—Added test for non-volatile matter—"Evaporate 50 cc of *chloroform* in a platinum or porcelain dish on a water-bath, and dry at 100° C. to constant weight. The weight of the residue does not exceed 0.001 Gm."

*Chrysarobinum*.—Chrysophanic acid test—"0.002 Gm. of Chrysarobin is used" instead of "0.001 Gm."

The test for chrysophanic acid with ferric chloride is omitted.

*Cinchonidinæ Sulphas*.—Melting point omitted.

Added test—"Sodium Tartrate T. S. produces in the 1 in 100 aqueous solution a white precipitate of Cinchonidine Tartrate (distinction from *cinchonine*)."

*Cocaina*.—Added tests—"Its saturated, aqueous solution is alkaline to litmus paper.

"Dissolve 0.1 Gm. of the finely powdered Cocaine in 1 cc of sulphuric acid—not more than a slight yellow tint that is produced (*readily carbonizable substances*). Keep this solution at 100° C. for five minutes, then cautiously mix it with 2 cc of water. The aromatic odor of methyl benzoate is noticeable and, on cooling, crystals of benzoic acid separate, which dissolve on the careful addition of alcohol.

"Ash: negligible from 0.3 Gm.

"Dissolve 0.3 Gm. of the finely powdered Cocaine in 1 cc of normal hydrochloric acid, gently warming to aid solution, if necessary, and dilute with distilled water to 15 cc. Five cc portions of this solution comply with the tests for *cinnamyl-cocaine* and for *isotropyl-cocaine* under *Cocaine Hydrochloridum*."

*Cocainæ Hydrochloridum*.—Added test—"A solution of 0.5 Gm. of Cocaine Hydrochloride in 10 cc of distilled water requires not more than 0.5 cc of fiftieth-normal sodium hydroxide to neutralize, using one drop of methyl red as indicator."

*Codeina*.—Statement of source is omitted.

Added solubility—"1 Gm. dissolves in 13 cc of benzene at 25° C."

*Codeinæ Phosphas*.—Assay for codeine changed from gravimetric to volumetric as follows:—

"Weigh accurately about 0.5 Gm. of Codeine Phosphate, dissolve it in 10 cc of distilled water, in a separator, add 10 cc of sodium hydroxide T. S. and extract the codeine by shaking with 4 successive portions of 15, 10, 10 and 5 cc of chloroform, or a sufficient quantity to complete extraction. Shake the combined chloroform solutions with 5 cc of distilled water, and completely separate the chloroform from the aqueous layer. Evaporate the chloroform almost to dryness on the water-bath, dissolve the residue by warming with 15 cc of tenth-normal sulphuric acid, heat the solution on the water-bath until the odor of chloroform is no longer evolved, cool, dilute with about 10 cc of distilled water, and titrate the excess of acid with tenth-normal sodium hydroxide, using 2 drops of methyl red as indicator. Each cc of tenth-normal sulphuric acid corresponds to 0.029927 Gm. anhydrous codeine."

*Colchicina*.—The sentence "An alkaloid obtained from *Colchicum*" is omitted, only the formula being given.

*Copaiba*.—New test for gurjun balsam—"Mix 1 drop of nitric acid and 3 cc of glacial acetic acid in a test-tube and carefully pour 4 drops of Copaiba on the liquid. No reddish zone appears, nor does the liquid become red or purple after being shaken (*gurjun balsam*)."

*Colarninæ Hydrochloridum*.—No change.

*Cresotum*.—In the definition the formulas are given for guaiacol and cresol.

Specific gravity—not below 1.076 at 25° C. instead of 1.073.

"Not less than 90 per cent. by volume distills between 200° C. and 220° C." instead of "80 per cent."

Coerulignol test slightly modified to read—"Upon complete separation three distinct layers are visible, the upper layer being neither blue nor muddy (*coerulignol*)."

*Cresol*.—Hydrocarbon test changed to—"A solution of 1 cc of Cresol in 60 cc of distilled water shows no greater turbidity than that produced in 58 cc of distilled water by the addition of 1.5 cc of fiftieth-normal sulphuric acid and 1 cc of barium chloride T. S. Comparison should be made after the control mixture has been well shaken and allowed to stand five minutes."

*Elaterinum*.—Definition changed to: "A substance obtained from the juice of the fruit of *Ecballium Elaterium* (Fam. *Cucurbitaceæ*)."

The description of taste is omitted.

The test for readily carbonizable impurities is omitted.

*Emetinæ Hydrochloridum*.—Description reads—"C<sub>29</sub>H<sub>40</sub>O<sub>4</sub>N<sub>2</sub>2HCl = 553.42 with variable amounts of water of crystallization."

Added test—"A solution of 0.1 Gm. of Emetine Hydrochloride in 10 cc of distilled water requires for neutralization not more than 0.5 cc of fiftieth-normal sodium hydroxide, using 1 drop of methyl red T. S. as indicator."

Cephaeline test changed—"Dissolve 0.2 Gm. of Emetine Hydrochloride in 10 cc of water, add 5 cc of sodium hydroxide T. S. and shake, successively, with 20 cc of ether, then with 10 cc portions of ether, until the residue obtained by evaporating 2 cc of the ether, when dissolved in 1 drop of diluted hydrochloric acid and 1 cc of water, no longer yields a distinct turbidity with iodine T. S. Discard the ether solution. Acidulate the aqueous liquid with diluted sulphuric acid, add ammonia until alkaline and shake with four 10 cc portions of ether. Evaporate the combined ether solutions to dryness on a water-bath and dry the residue at 100° C. Its weight does not exceed 0.004 Gm. (*cepaehline*)."

*Eucalyptol*.—No definition, only formula given.

Phenol test changed—"Shake 1 cc of Eucalyptol with 20 cc of distilled water and allow the liquids to separate. To 10 cc of the aqueous layer, separated from the eucalyptol, add 1 drop of ferric chloride T. S. No violet color is produced (*phenols*)."

*Gelatinum*.—Added identity tests—"An aqueous solution of Gelatin (1 in 100) yields no precipitate with copper sulphate or mercuric chloride T. S., but is precipitated by solutions of chromium trioxide or trinitrophenol T. S."

Heavy metal test—"solution prepared with hydrochloric acid and a few drops of nitric acid," instead of "0.002 per cent. 0.004 per cent. of sulphur dioxide is now permitted."

*Glucosum*.—Ash—"not more than 0.5 per cent." instead of "1.0 per cent."

*Glycerinum*.—The quantitative test for chloride is omitted and the following test added: "10 cc of an aqueous solution of glycerin (1 in 10) remains clear in the addition of 0.5 cc of silver nitrate T. S. (*chloride*)."

Statement of its non-volatility from weak aqueous solution, solution and complete volatility at 100° when of a strength of 70 per cent. or over is omitted.

*Gossypium Purificatum*.—Test for fatty matter—"Ten Gm. of purified replaces 5 Gm. and 200 cc of percolate is received instead of 20 cc."

Test for dyes—"The percolate is made to measure 50 cc instead of 100 cc and the test for resins and soap is omitted."

Added test for water-soluble matter—"Place 10 Gm. of Purified Cotton in 200 cc of boiling distilled water, in a porcelain dish; maintain the water at about 100° C. for five minutes, keeping the cotton immersed with the aid of a glass rod. Then press out, with the assistance of the same rod, and decant 100 cc of the water, filtering it if not clear. Now add 50 cc of cold distilled water to the Cotton, working it thoroughly through the Cotton with the glass rod, for ten minutes, and again decant 50 cc of the water. Twice again wash the Cotton with 50 cc portions of cold distilled water, in the manner just described, and evaporate the combined washings, so obtained, in a porcelain or platinum dish to dryness, on a water-bath. The residue, dried to constant weight at 100° C., does not exceed 0.25 per cent. of the weight of the Purified Cotton taken (*water-soluble matter*)."

*Guaiacol*.—Change in general definition—"A liquid consisting principally of guaiacol ( $C_6H_4(OH)OCH_3$ ) 1:2 = 124.10 usually obtained from wood creosote, or a solid consisting almost entirely of guaiacol and usually prepared synthetically."

Specific gravity—"The specific gravity of liquid Guaiacol is not below 1.112, the specific gravity of melted solid Guaiacol is about 1.132 at 25° C."

Added note—"Solid Guaiacol boils between 204° and 206° C."

Hydrocarbon test—"25 cc of distilled water is used instead of 20 volumes."

*Guaiacolis Carbonas*.—Melting point—"between 85° and 88° C." instead of "83° and 87° C." Chloroform replaces ether in the guaiacol identity test.

*Hexamethylenamina*.—The general definition is omitted. Purity Rubric added. "Hexamethylenamine contains not less than 99 per cent. of absolute hexamethylenetramine."

Solubility tests—"1 Gm. soluble in 10 cc of chloroform at 25° C. Only slightly soluble in ether."

"A quantitative turbidimetric test for chloride added allowing an amount of chloride corresponding to 0.2 cc fiftieth-normal hydrochloric acid per Gm."

Assay added—"weigh accurately about 1 Gm. of Hexamethylenamine, transfer to a beaker, add 40 cc of normal sulphuric acid and evaporate on a water-bath (or boil gently, adding a little water from time to time, if necessary) until the odor of formaldehyde is no longer perceptible. Cool, add 20 cc of water and titrate the excess of acid with normal sodium hydroxide, using



methyl orange T. S. as indicator. Each cc of normal sulphuric acid consumed corresponds to 0.03504 Gm. of absolute Hexamethylenamine.

*Homatropinæ Hydrobromidum*.—The definition is omitted.

*Hyoscyaminæ Hydrobromidum*.—The definition is omitted.

*Iodoformum*.—The definition is omitted.

*Liquor Formaldehydi*.—Rubric changed to read: A solution of not less than 37 per cent. by weight of H.CHO in water, and containing variable amounts of ethyl or methyl alcohol or both to prevent polymerization.

*Menthol*.—The definition is omitted.

Added solubility—"freely soluble in glacial acetic acid."

*Methylis Salicylas*.—Specific gravity—"from gaultheria, 1.176 to 1.182" instead of "1.172 to 1.182."

Boiling point—"between 219° and 223° C." instead of "218° and 221° C."

*Methylthioninæ Chloridum*.—No change.

*Morphinæ Hydrochloridum*.—The definition—"the hydrochloride of the alkaloid morphine" is omitted.

"Morphine hydrochloride also responds to the identity tests for morphine and the purity tests under *Morphinæ Sulphas*."

*Morphinæ Sulphas*.—The definition "the sulphate of the alkaloid morphine" is omitted. Moisture test changed to "When dried to constant weight 130° C. Morphine Sulphate loses not more than 12 per cent. of its weight (water)."

Added tests: Add a few drops of ammonia water to 5 cc of an aqueous solution of Morphine Sulphate (1 in 30) and gently shake the mixture. A white precipitate is formed which dissolves upon the subsequent addition of a few cc of sodium hydroxide T. S.

Sulphuric acid containing 0.005 Gm. of selenious acid in each cc gives with Morphine Sulphate a blue color, changing to green and then to brown (codeine yields a green color, changing to blue and afterwards to grass-green). Sulphuric acid containing 0.005 Gm. of molybdic acid in each cc gives a purple color, changing to blue. Sulphuric acid containing in each cc one drop of solution of formaldehyde yields an intense purple color. With nitric acid Morphine Sulphate produces an orange-red color fading to yellow.

The addition of a few drops of ferric chloride T. S. to an aqueous solution of Morphine Sulphate (1 in 100) produces a blue color, which is destroyed by acids, alcohol, or by heating. When an aqueous solution of the salt (1 in 100) is treated with potassium ferricyanide T. S. containing 1 drop of ferric chloride T. S. in each cc, a deep blue color is produced at once (differing from *codeine*).

Barium chloride T. S. produces in an aqueous solution of the salt a white precipitate insoluble in hydrochloric acid.

A solution of 0.5 Gm. of the salt in 15 cc of distilled water requires not more than 0.5 cc of fiftieth-normal sodium hydroxide for neutralization, using one drop of methyl red T. S. as indicator.

Ash: negligible from 0.5 Gm.

Warm 0.2 Gm. of Morphine Sulphate with 5 cc of sodium hydroxide T. S. The odor of ammonia is not noticeable (*ammonium salts*).

Add a few drops of ferric chloride T. S. to 5 cc. of an aqueous solution of the salt (1 in 30) previously mixed with 5 cc of diluted hydrochloric acid. No red color is produced (*meconate*).

Dissolve 1 Gm. of Morphine Sulphate in 10 cc of sodium hydroxide T. S. in a separator, and shake the solution with three successive portions of 15, 10 and 10 cc of chloroform, passing the chloroform solution through a small filter previously moistened with chloroform. Shake the combined chloroform solutions with 5 cc of distilled water, separate the chloroform and evaporate it carefully to dryness on a water-bath. Add to the residue thus obtained 10 cc of fiftieth-normal sulphuric acid, heat gently until dissolved, cool, add two drops of methyl red T. S. and titrate the excess of acid with fiftieth-normal sodium hydroxide. Not less than 7.5 cc of the latter is required (*foreign alkaloid*).

*Oleum Amygdalæ Expressum*.—Peach or apricot kernel test modified to—"The mixture is not more than slightly colored after shaking for 5 minutes."

## OLEUM CHAULMOOGRÆ.

## CHAULMOOGRA OIL.

A fixed oil expressed from the seeds of *Taraktogenos Kurzii*, King (Fam. *Flacourtiacæ*).

The fixed oil from the seeds of certain species of *Hydnocarpus*, when designated as such and when agreeing in physical and chemical characters with Chaulmoogra Oil may be used in its place.

Chaulmoogra Oil is a yellow or brownish yellow liquid. At temperatures below about 25° C. it is a whitish, soft solid. It has a characteristic odor and somewhat acrid taste.

It is sparingly soluble in alcohol; soluble in benzene, chloroform, ether or petroleum benzin. Specific gravity: About 0.950 at 25° C., or about 0.940 at 45° C.

The specific rotation of Chaulmoogra Oil determined at 25° C. in a chloroform solution containing about 10 Gm. of the oil in 100 cc of the solution is +43° to +60°.

Dissolve 1 Gm. of the oil in 15 cc of a mixture of equal volumes of alcohol and ether which has previously been neutralized with tenth-normal sodium hydroxide, using 5 drops of phenolphthalein T. S. as indicator, then titrate the solution with tenth-normal sodium hydroxide to the production of a pink color which persists for 15 seconds. Not less than 1.8 cc nor more than 4.5 cc of tenth-normal sodium hydroxide is required (*free acid*).

Saponification value: 198 to 213.

Iodine value: 98 to 104.

Preserve in well-closed containers, in a cool place, protected from light.

*Oleum Gossypii Seminis*.—No change.

*Oleum Lini*.—New free acid test added—"Dissolve 2 Gm. of Linseed Oil in 20 cc of a mixture of equal volumes of alcohol and ether which has previously been neutralized with tenth-normal sodium hydroxide, using 5 drops of phenolphthalein T. S. as indicator, and titrate with tenth-normal sodium hydroxide to the production of a pink color which persists for fifteen seconds. Not more than 1.5 cc of tenth-normal sodium hydroxide is required (*free acid*)."

Unsaponifiable matter test added.—"Unsaponifiable matter: not more than 1.5 per cent."

*Oleum Morrhua*.—Free acid test added—"Dissolve 2 Gm. of Cod Liver Oil in 20 cc of a mixture of equal volumes of alcohol and ether which has previously been neutralized with tenth-normal sodium hydroxide, using 5 drops of phenolphthalein T. S. as indicator and titrate with tenth-normal sodium hydroxide to the production of a pink color which persists for fifteen seconds. Not more than 1 cc of tenth-normal sodium hydroxide is required (*free acid*)."

Unsaponifiable matter test added—"Unsaponifiable matter: not more than 1.5 per cent."

*Oleum Ricini*.—Free acid test added—"Dissolve 2 Gm. of Castor Oil in 20 cc of alcohol, which has previously been neutralized with tenth-normal sodium hydroxide, using 5 drops of phenolphthalein T. S. as indicator, and titrate with tenth-normal sodium hydroxide to the production of a pink color which persists for fifteen seconds. Not more than 1.5 cc of tenth-normal sodium hydroxide is required (*free acid*)."

*Oleum Theobromatis*.—No change.

*Oleum Tiglii*.—No change.

*Paraffinum*.—Added solubility—"Freely soluble in chloroform."

*Paraformaldehydum*.—Identity test added—"On gently warming about 0.02 Gm. of Paraformaldehyde with 5 cc of sulphuric acid in which about 0.1 Gm. of salicylic acid has been dissolved, a deep red color develops."

*Paraldehydum*.—Congealing point—"not below 9° C." instead of "6° C."

Acetaldehyde test—"The mixture is allowed to stand at 20° C. and the time limit is fifteen minutes," instead of "one hour."

*Pelletierina Tannas*.—Definition modified—"A mixture of the tannates of several alkaloïds obtained from pomegranate."

The color reaction test with sulphuric acid, containing selenious acid, is omitted.

*Pepsinum*.—The statement of incompatibility of pepsin with alkalies, etc., is omitted, as is also the statement in reference to activity with hydrochloric acid.

*Petrolatum*.—Description changed to:

"Petrolatum is an unctuous mass, varying in color from yellowish to light amber. It has not more than a slight fluorescence, even after being melted and is transparent in thin layers. It is free or nearly free from odor or taste."

Solubility statement changed to:

"Petrolatum is insoluble in water; almost insoluble in cold or hot alcohol, or in cold dehydrated alcohol; freely soluble in benzene, carbon disulphide, chloroform or oil of turpentine. It is soluble in ether, petroleum benzin or in most fixed or volatile oils, the degree of solubility in these solvents varying with the composition of the Petrolatum."

*Petrolatum Album*.—Description changed to:

"White Petrolatum is a white or faintly yellowish unctuous mass, transparent in thin layers even after cooling to 0° C."

*Phenol*.—Purity rubric raised—"Phenol contains not less than 98 per cent. of absolute C<sub>6</sub>H<sub>5</sub>OH (94.03)," instead of "97 per cent."

Congearing point—"not below 39° C." instead of "38° C."

*Phenol Liquefactum*.—Purity rubric raised—"It contains not less than 98 per cent. of C<sub>6</sub>H<sub>5</sub>OH," instead of "97 per cent."

Note added—"NOTE—When Phenol is to be mixed with collodion, fixed oils or petrolatum, use melted crystalline phenol instead of liquefied phenol."

*Phenolphthaleinum*.—Melting point—changed from "not below 253°" to "not below 258° C."

*Phenylis Salicylas*.—No change.

*Pilocarpinæ Hydrochloridum*.—No change.

*Pilocarpinæ Nitras*.—Chloride test changed—"The addition of a few drops of silver nitrate T. S. to 5 cc of an aqueous solution of the salt (1 in 50), acidulated with nitric acid, does not at once produce an opalescence (*chloride*)."

*Pix Liquida*.—Test with ferric chloride modified to—"Shake about 1 cc of Tar with 10 cc of water for 10 minutes and filter. On adding one drop of ferric chloride T. S. to the filtrate a green color is produced rapidly on changing to brown."

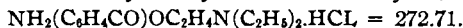
Ash standard added—Ash: not more than 0.25 per cent.

#### PROCAINE HYDROCHLORIDUM.

#### PROCAINO HYDROCHLORIDE.

#### PROCAINE—PROCAIN.

Para-amino-benzoyl-diethyl-amino-ethanol Hydrochloride.



Procaine Hydrochloride occurs in small, colorless crystals or as a white, crystalline powder. It is odorless and stable in the air.

One Gm. of Procaine Hydrochloride dissolves in 0.6 cc of water and in 30 cc of alcohol at 25° C. It is slightly soluble in chloroform, and almost insoluble in ether.

Procaine Hydrochloride melts between 154° and 156° C.

Its aqueous solution (1 in 20) is neutral to litmus paper.

The aqueous solution of Procaine Hydrochloride (1 in 10) yields a precipitate with gold chloride T. S., iodine T. S., mercuric potassium iodide T. S., picric acid T. S.

An aqueous solution of Procaine Hydrochloride (1 in 10) is clearly miscible with a solution of sodium bicarbonate, but with sodium hydroxide T. S. or sodium carbonate T. S. a colorless, oily precipitate is produced, which becomes crystalline on standing.

Silver nitrate T. S. produces in its aqueous solution a white precipitate insoluble in nitric acid.

Ash from 0.5 Gm. is negligible.

A solution of 0.1 Gm. of Procaine Hydrochloride in 1 cc of sulphuric acid is colorless or very nearly so (*readily carbonizable substances*).

Dissolve 0.1 Gm. of Procaine Hydrochloride in 5 cc of water, add 2 drops each of hydrochloric acid and solution of sodium nitrite (1 in 10) and then a solution of 0.2 Gm. of betanaphthol in a mixture of 3 cc of sodium hydroxide T. S. and 7 cc of water. A scarlet-red precipitate is produced (*difference from phenacaine which yields a white precipitate*).

To a solution of 0.1 Gm. of Procaine Hydrochloride in 5 cc of water add 3 drops of diluted sulphuric acid, followed by 5 drops of potassium permanganate T. S. The violet color of the latter is immediately discharged (*difference from cocaine hydrochloride*).

An aqueous solution of Procaine Hydrochloride does not respond to the test for heavy metals.

*Pyrogallol*.—Melting point—"Between 130° and 133° C." instead of "129° and 133° C."

*Quinina*.—The morphine test is omitted.

Cinchona alkaloids test altered—"Dry Quinine to constant weight at 100° C., then dissolve 1.5 Gm. of the dried Quinine in 25 cc of alcohol, dilute the solution with 50 cc of hot water, add normal sulphuric acid (about 5 cc) until the solution is acid, using 2 drops of methyl red T. S. as indicator, then neutralize the excess of acid with normal sodium hydroxide."

*Quinina Bisulphas*.—Moisture content changed from 25 to 24 per cent. Morphine test is omitted.

Ammonium salts test called—"on heating 0.3 Gm. of the salt with 3 cc of sodium hydroxide T. S. on a water-bath; the odor of ammonia is not evolved (*ammonium salts*)."

In the test for cinchona alkaloids the Quinine Bisulphate is dissolved in a mixture of 20 cc of alcohol and 50 cc of hot distilled water.

*Quinina Dihydrochloridum*.—Moisture test added—"Quinine Dihydrochloride loses not more than 3 per cent. of its weight when dried to constant weight at 100° C."

Sulphate test made quantitative permitting an amount of sulphate corresponding to 0.5 cc  $N/50$   $H_2SO_4$  per Gm.

Cinchona alkaloids test altered—"Evaporate the combined chloroform extracts to dryness on a water-bath, dissolve the residue in 25 cc of alcohol, dilute with 50 cc of hot distilled water, add normal sulphuric acid (about 5 cc) until the solution is acid, using 2 drops of methyl red T. S. as indicator, then neutralize the excess of acid with normal sodium hydroxide. Now evaporate the liquid to dryness on a water-bath, powder the residue, mix it in a test-tube with 20 cc of distilled water, and complete the test for other cinchona alkaloids as directed under *Quinina Sulphas*."

*Quinina et urea Hydrochloridum*.—Thalleoquin test added—"A solution of Quinine and Urea Hydrochloride in diluted sulphuric acid (1 in 1000) shows a blue fluorescence. Add 2 to 3 drops of bromine T. S. to 5 cc of an aqueous solution of the salt (1 in 1000) and then add 1 cc of ammonia water. The liquid acquires an emerald-green color due to the formation of thalleoquin."

Cinchona alkaloids test changed—"Dissolve about 3 Gm. of Quinine and Urea Hydrochloride in 30 cc of distilled water in a separator, add 10 cc of ammonia water, shake out the mixture with two successive portions of 30 and 20 cc each of chloroform, and evaporate the chloroform solution to dryness on a water-bath. Dissolve 1.5 Gm. of this residue in 25 cc of alcohol, dilute the solution with 50 cc of hot distilled water, add normal sulphuric acid (about 5 cc) until the solution is acid, using 2 drops of methyl red T. S. as indicator, then neutralize the excess of acid with normal sodium hydroxide. Evaporate the liquid to dryness on a water-bath, powder the residue, mix it in a test-tube with 20 cc of distilled water and complete the test for other cinchona alkaloids as described under *Quinina Sulphas*."

In the assay ammonia water and chloroform are used instead of sodium hydroxide and ether.

*Quinina Hydrochloridum*.—Morphine test omitted.

Added test—"One Gm. of the salt dissolves completely in 7 cc of a mixture of 2 volumes of chloroform and 1 volume of dehydrated alcohol (*ammonium chloride on other inorganic salts*)."

Sulphate test is made quantitative turbidimetrically permitting an amount of sulphate corresponding to 0.5 cc  $N/50$   $H_2SO_4$  per Gm.

Cinchona alkaloids test changed—"Dissolve about 2.5 Gm. of Quinine Hydrochloride in 60 cc of distilled water in a separator, add 10 cc of ammonia water, shake out the mixture with two successive portions of 30 and 20 cc each of chloroform, and evaporate the chloroform solution to dryness on a water-bath. Dissolve 1.5 Gm. of this residue in 25 cc of alcohol, dilute the solution with 50 cc of hot distilled water, add normal sulphuric acid (about 5 cc) until the solution is acid, using 2 drops of methyl red T. S. as indicator, and neutralize the excess of acid with normal sodium hydroxide. Evaporate the liquid to dryness on a water-bath, powder the residue, mix it in a test-tube with 20 cc of distilled water and complete the test for other cinchona alkaloids as described under *Quinina Sulphas*."

*Quinina Sulphas*.—Moisture determined at "100° C." instead of "110° C."

Morphine test is omitted.

*Resina*.—No change.

*Resorcinol*.—No change.

*Saccharum*.—Color test of aqueous solution altered—"An aqueous Solution of Sugar (1 in 1) is colorless or at most only faintly yellow when viewed horizontally against a white back-

ground through a vertical cylinder of colorless glass having an inside diameter of about 25 mm."

The specific gravity of an aqueous solution is omitted.

Sulphate is determined turbidimetrically, an amount of sulphate corresponding to 0.3 N/50 H<sub>2</sub>SO<sub>4</sub> in 5 Gm. of the sugar being permitted.

*Saccharum Lactis*.—Specific rotation—"The sugar of milk used is directed to be previously dried to constant weight at 80° C."

*Salicinum*.—Melting point—"between 199° and 202° C." instead of "between 198° and 202° C."

*Santoninum*.—Test for alkaloids—"1 Gm. of santonin, 40 cc of distilled water and 3 cc of diluted sulphuric acid replace 2 Gm. 80 cc and 5 cc, respectively."

*Scopolaminæ Hydrobromidum*.—No change.

*Sevum Preparatum*.—No change.

*Sodii Benzosulphinidum*.—Test for benzoate and salicylate changed to—"No precipitate or violet color is produced (*benzoate or salicylate*)."

*Sodii Cacodylas*.—Reaction to litmus added—"An aqueous solution of Sodium Cacodylate (1 in 20) is alkaline to litmus."

The acidity or alkalinity test changed to—"A solution of 2 Gm. of Sodium Cacodylate in 50 cc of distilled water requires not more than 0.5 cc of tenth-normal acid or 1 cc of tenth-normal alkali to render it neutral, using 2 drops of phenolphthalein T. S. as indicator."

Chloride test made quantitative allowing an amount of chloride corresponding to 0.3 cc N/50 HCl per Gm.

*Sodii Indigotindisulphonas*.—No change.

#### SODIUM DIETHYLBARBITURATE.

Barbital Sodium.



Sodium Diethylbarbiturate is a white powder. It is odorless and has a bitter taste. It is stable in the air.

One Gm. of Sodium Diethylbarbiturate dissolves in about 5 cc of water at 25° C.; also in 2.5 cc boiling water. It is slightly soluble in alcohol and is soluble in ether.

Its aqueous solution is alkaline to litmus.

The addition of diluted hydrochloric or sulphuric acid to an aqueous solution of the salt (1 in 20) produces a precipitate of diethylbarbituric acid.

A solution of 0.2 Gm. of the salt in 2 cc of sulphuric acid is colorless (*readily carbonizable substances*).

Ten-cc portions of an aqueous solution of Sodium Diethylbarbiturate (1 in 100) acidulated with a few drops of nitric acid yield no opalescence at once on the addition of a few drops of silver nitrate T. S. (*chloride*) nor a turbidity within one minute by the addition of 1 cc barium chloride T. S. (*sulphate*).

The aqueous solution of the salt does not respond to the test for heavy metals.

When dried to constant weight at 100° C. it loses not more than 1 per cent.

Shake 0.5 Gm. of Sodium Diethylbarbiturate with 20 cc of ether (R) for 10 minutes, filter, evaporate the ether and dry at 100° C. The weight of the residue does not exceed 0.003 Gm. (*uncombined diethylbarbituric acid*).

Weigh accurately about 1 Gm. of Sodium Diethylbarbiturate, previously dried at 100° C., dissolve it in 10 cc water in a separator, add to the solution 15 cc of diluted hydrochloric acid and extract the liberated diethylbarbituric acid by shaking successively with eight portions of 25 cc each of ether. Evaporate the combined ether extracts at as low a temperature as possible and dry at 100° C. The weight of the diethylbarbituric acid so obtained is from 88 to 90 per cent. of the dried Sodium Diethylbarbiturate taken.

The diethylbarbituric acid obtained in the above determination has the melting point of, and responds to the identity tests under *Acidum Diethylbarbituricum* and the ash resulting from the incineration of 0.2 Gm. at a low temperature is negligible.

*Spiritus Camphoræ*.—Specific Gravity added—"from 0.824 to 0.826 at 25° C."

Optical Rotation added—"not less than 7.25° in a 200-mm. tube at 25° C."

*Strophanthinum*.—No change.

*Strychninæ Nitras.*—Solubilities changed—"One Gm. dissolves in 45 cc of water instead of 42 cc, 10 cc of boiling water instead of 9 cc and 80 cc of alcohol at 60° C. instead of 77cc."

Identity test added—Dissolve about 0.05 Gm. of Strychnine Nitrate in 5 cc of water, add a few drops of ammonia water and extract the liberated strychnine with 5 cc of chloroform. Evaporate the chloroform to dryness on the water-bath, cool, dissolve the residue in 2 cc of sulphuric acid and add a fragment of potassium dichromate. On gently agitating the mixture, a blue color is momentarily produced, changing to violet, then to purplish red, and finally to orange or yellow.

Added test—"A solution of 0.5 Gm. of Strychnine Nitrate in 20 cc of distilled water requires not more than 0.5 cc of fiftieth-normal sodium hydroxide for neutralization, using one drop of methyl red T. S. as indicator."

Added test—"A solution of 0.1 Gm. of Strychnine Nitrate in 5 cc of sulphuric acid is not darker than pale yellow (*readily carbonizable substances*)."

*Strychnine Sulphas.*—Solubility—"One Gm. dissolves in 35 cc of water instead of 32 cc."

Added test—"A solution of 0.5 Gm. of Strychnine Sulphate in 20 cc of distilled water requires not more than 0.5 cc of fiftieth-normal sodium hydroxide for neutralization, using one drop of methyl red T. S. as indicator."

*Sulphonethymethanum.*—Quantitative turbidimetric test for sulphate added as follows—"To a further portion of 50 cc of the filtrate (corresponding to 1 Gm. of sulphone ethylmethane) add 1 drop of hydrochloric acid and 1 cc of barium chloride T. S. The turbidity produced, if any, is not greater than that produced in a mixture of 50 cc of distilled water and the same quantities of the reagents by the addition of 1 cc of fiftieth-normal sulphuric acid (*sulphate*)."

*Terpini Hydras.*—The description of taste is omitted.

*Theobrominæ Sodio-Salicylas.*—Added to purity rubric—"and not less than 35 per cent. of salicylic acid."

Moisture limit added—"Dried to constant weight at 120° C., it loses not more than 10 per cent. of its weight."

Solubility test modified to—"A freshly prepared aqueous solution of Theobromine Sodio-Salicylate (1 in 20) is colorless or nearly colorless and is clear or at most opalescent."

Assay for salicylic acid added—"Dilute the filtrate and washings, obtained in the assay for theobromine, with distilled water to exactly 50 cc, transfer 25 cc of the liquid to a separator, add 10 cc of diluted sulphuric acid and extract the liberated salicylic acid with four successive portions of 25, 15, 10 and 5 cc each of chloroform. Pass the chloroform solutions through a filter previously moistened with chloroform and wash the filter and the stem of the funnel with a few cc of hot chloroform. Evaporate the chloroform solution to about 5 cc at a temperature not exceeding 60° C., add 25 cc of diluted alcohol which has been previously neutralized with tenth-normal sodium hydroxide, using 3 drops of phenolphthalein T. S. as indicator, and titrate with tenth-normal barium hydroxide until a pink color is restored. Each cc of tenth-normal barium hydroxide corresponds to 0.013808 Gm. of salicylic acid."

*Theophyllina.*—Test with sulphanilic acid and sodium nitrite to distinguish from Caffeine and Theobromine is omitted.

*Thymol.*—The test for Phenol is omitted.

*Thymolis Iodidum.*—Ash test changed to—"Heat about 0.5 Gm. of Thymol Iodide, accurately weighed, in a porcelain crucible until charred, cool, add 5 drops of sulphuric acid and ignite to constant weight. Not more than 1.5 per cent. of residue remains."

In the assay potassium carbonate is now used to decompose the compound instead of sodium carbonate.

*Trinitrophenol.*—No change.

*Vanillinum.*—No change.

#### INORGANIC CHEMICALS.

*Acidum Boricum.*—The description of taste is omitted.

*Acidum Nitricum.*—Boiling point added—

It boils at about 120° C., but volatilizes completely on being heated on a steam-bath.

*Antimonii et Potassii Tartras.*—The description of taste is omitted.

Arsenic test—"0.1 Gm. of the salt is used" instead of "0.2 Gm."

*Aqua*.—Nitrite test—"acetic acid and Naphthylamine acetate T. S. replace hydrochloric acid and Naphthylamine hydrochloride T. S."

*Aqua Ammonia*.—Assay—The dilution with 50 cc of water is omitted.

*Aqua Ammonia Fortior*.—No change.

*Calcii Chloridum*.—The description of taste is omitted.

*Calcii Lactas*.—No change.

*Calx Chlorinata*.—No change.

*Acidum Sulphuricum*.—In the test for nitric or nitrous acid use "5 cc" of sulphuric acid instead of "3 cc."

*Acidum Sulphuricum Dilutum*.—No change.

*Ammonii Chloridum*.—0.1 per cent. of non-volatile matter is permitted instead of "not more than 0.5 per cent."

*Argenti Nitras*.—Added to Assay—"Silver nitrate may also be assayed by the electrolytic method."

*Argenti Nitras Fusus*.—Method of its preparation is omitted. Assay—"Moulded silver nitrate may also be assayed by the electrolytic method."

*Cupri Sulphas*.—Assay—"Copper sulphate may also be assayed by the electrolytic method."

*Ferri Chloridum*.—No change.

*Ferri et Ammonii Citras*.—Assay—"In the assay, after cooling the solution it is diluted with 100 cc of distilled water and then titrated."

*Ferri Phosphas Solubilis*.—No change.

*Hydrargyri Iodidum Pubrum*.—Description of taste omitted.

*Hydrargyrum Ammoniatum*.—The description of taste is omitted.

*Potassa Sulphurata*.—Rubric reads "of monosulphide sulphur" instead of "sulphur."

*Potassii Bicarbonas*.—No change.

*Potassii Bitartras*.—No change.

*Potassii Carbonas*.—No change.

*Potassii Nitras*.—No change.

*Sodii Bicarbonas*.—The description of taste is omitted.

The test for insoluble is omitted.

*Sodii Boras*.—No change.

*Sodii Nitris*.—No change.

*Spiritus Ammonia Aromaticus*.—No change.

*Zinci Acetas*.—Assay—The last sentence is changed to read—"The weight of zinc oxide obtained, when multiplied by 2.254, indicates its equivalent in  $Zn(C_2H_3O_2)_2$  which corresponds, etc."

*Zinci Sulphas*.—Assay—"The salt yields an amount of zinc oxide corresponding to not less than" etc., is changed to read, "The weight of zinc oxide obtained, where multiplied by 1.984, indicates its equivalent in  $ZnSO_4$  which corresponds to not less than," etc.

*Arseni Trioxidum*.—No change.

*Ferri Sulphas*.—No change.

*Ferri Sulphas Exsiccatus*.—No change.

*Ferrum*.—No change.

*Ferrum Reductum*.—Iron obtained by the action of hydrogen upon ferric oxide, etc.

*Hydrargyri Chloridum Corrosivum*.—The notations, "permanent in the air, and having a characteristic and persistent metallic taste." "Great caution should be used in tasting it," are omitted.

*Hydrargyri Salicylas*.—Identity tests—"To another portion of this solution (salt and HCl) add a few drops of ferric chloride T. S." etc., changed to "To a mixture of 1 Gm. of the salt with 10 cc of water add a few drops of ferric chloride T. S.," etc.

New Assay—Assay—"Weigh accurately about 0.5 Gm. of Mercuric Salicylate, digest it in a mixture of 15 cc of sulphuric acid and 10 cc of nitric acid on a sand-bath until the mixture is nearly colorless. Then add another 10 cc of nitric acid and heat until the mixture is decolorized. Cool the solution, dilute it with 150 cc of distilled water, add 2 cc of ferric ammonium sulphate T. S. and titrate with tenth-normal potassium thiocyanate until a permanent yellowish red color is produced. It shows not less than 54 per cent. nor more than 59.5 per cent. of Hg."

Each cc of tenth-normal potassium thiocyanate corresponds to 0.01003 Gm. of Hg.

*Hydrargyrum*.—No change.

*Liquor Ammonii Acetatis*.—Change in directions:

“Dissolve the ammonium carbonate (which must be in hard translucent pieces) in the diluted acetic acid without strong agitation.

“Solution of Ammonium Acetate may also be prepared as follows:

“Solution No. 1.—AMMONIUM CARBONATE, in translucent pieces, *fifty grams* 50 Gm.  
DISTILLED WATER, a sufficient quantity to make *five hundred*  
cubic centimeters 500 cc

“Solution No. 2.—ACETIC ACID, *one hundred and sixty cubic centimeters* 160 cc  
DISTILLED WATER, *three hundred and forty cubic centimeters* 340 cc  
To make *five hundred cubic centimeters* 500 cc

“Cautiously mix the two solutions in equal volumes, in a capacious vessel in quantities sufficient to produce the amount of Solution of Ammonium Acetate needed.”

In Assay—It is directed to add 25 cc of 10 per cent. NaOH instead of “rendering alkaline with KOH.”

*Liquor Plumbi Subacetatis*.—New Formula:

LEAD ACETATE, *two hundred and twenty grams* 220 Gm.

LEAD OXIDE, *one hundred and forty grams* 140 Gm.

DISTILLED WATER, a sufficient quantity to make *one thousand cubic centimeters* 1000 cc

Triturate the lead oxide to a smooth paste with *one hundred cubic centimeters* of distilled water and transfer the mixture to a bottle of about *one thousand cubic centimeters* capacity using an additional *one hundred cubic centimeters* of distilled water for rinsing. Dissolve the lead acetate in *seven hundred cubic centimeters* of distilled water, and add the solution to the lead oxide mixture. Shake vigorously for five minutes, then set it aside for seven days, shaking frequently during this time. Finally filter, protecting the solution from undue contact with air, and pass enough distilled water through the filter to make the product measure *one thousand cubic centimeters*.

This solution may also be prepared as follows:

Boil the mixture of lead acetate and lead oxide for half an hour in a suitable flask, adding small portions of distilled water as necessary to keep up the volume, and when cool filtering. The funnel during filtration should be covered to protect the solution from the action of air, and enough distilled water passed through the filter to make the product measure *one thousand cubic centimeters*.

*Plumbi Oxidum*.—Rubric changed from “not less than 96 per cent.” to “not less than 97 per cent.”

Insoluble residue changed from “not more than 0.115 Gm.” to “not more than 0.10 Gm.”

*Assay*—0.4 Gm. of Lead Oxide is dissolved in 2 cc of glacial acetic acid instead of 4 cc of acetic acid.

*Potassii Acetas*.—Identity tests—The addition of 5 cc sodium bitartrate T. S. to 5 cc of an aqueous solution of the salt (1 in 10) causes a white, crystalline precipitate, within 15 minutes. “The addition of 5 cc of” instead of “a 1 in 5 solution,” with no time limit.

*Potassii Citras*.—“An aqueous solution of the salt (1 in 20) is alkaline to litmus but 10 cc of the solution are not reddened by one drop of phenolphthalein T. S.” instead of “is alkaline to litmus but is not reddened,” etc.

*Potassii et Sodii Tartras*.—“An aqueous solution of the salt (1 in 20) is alkaline to litmus, but 10 cc of the solution are not reddened by a drop of phenolphthalein T. S.” instead of “is alkaline to litmus but is not reddened,” etc.

Time limit added for identity test “an aqueous solution of the salt (1 in 20) yields a white, crystalline precipitate with an equal volume of acetic acid, within fifteen minutes.”

*Potassii Hydroxidum*.—No change.

*Potassii Permanganas*.—Description of taste is omitted.

*Sodii Citras*.—No change.

*Sodii Hydroxidum*.—No change.

*Sodii Sulphas*.—Assay—1 cc of hydrochloric acid is used for acidulating the solution “(not more than 1 cc of the acid to 100 cc of solution).”



*Talcum Purificatum*.—Under the identity test "2 Gm. of anhydrous potassium carbonate" is used and not "2 Gm. each of anhydrous sodium," etc.

Added test: Add 1 Gm. of Purified Talc to 20 cc of diluted hydrochloric acid, no effervescence occurs (*carbonate*). Digest the mixture for 15 minutes and filter; 10 cc of the filtrate when evaporated to dryness and ignited leave a residue weighing not more than 0.005 Gm.

*Zincum*.—The statements about the effect of various degrees of heat on zinc as well as its melting and boiling points are omitted.

#### THE STUDY OF PHARMACY IN AUSTRIA.

According to the *Lancet* new regulations have recently been issued by the Austrian Ministry of Health for those desiring to pursue pharmacy:

"These persons will have to show a certificate that they have successfully passed through a secondary school, and will then have to study at the university for three years. The first year's course comprises physics, general and systematic botany, as well as the chemistry of organic and inorganic matter, and with practical work in these subjects. In the second year chemical laboratory work is continued, and instruction in the principles of physical chemistry and pharmaceutical chemistry is begun. The summer term of this year brings practical instruction in pharmacognosy. In the third year these latter instructions are continued, and to these are added practical laboratory work dealing with prescriptions and pharmaceutical technique; also instruction in the 'principles of hygiene,' including bacteriology and serology, disinfection and sterilization, as far as is required for pharmaceutical chemists. Apart from these subjects, the fundamental rules of pharmaco-dynamics and toxicology are taught, as well as chemical and microscopical examinations of human excretions and secretions. A course in first aid is included in the curriculum. Special stress is laid on practical knowledge. Studies dealing with legislation pertaining to public health and pharmacy, as well as historical and commercial knowledge, are freely encouraged. After these three years of university study the candidate may apply for the degree of Master of Pharmacy. After another year, spent in studying at the university, the 'Master of Pharmacy' may apply for the degree of 'Doctor of Pharmacy.' For this purpose he must publish a thesis dealing with any chosen subject per-

taining to pharmacognosy or a pharmaceutical theme. Foreign students who have obtained similar preliminary teaching may be admitted to the laboratories and classes, and holders of a foreign pharmaceutical diploma may obtain their qualification here if their studies are equivalent to those described above."

#### CODES OF ETHICS.

The pharmaceutical press has given publicity to the Code of Ethics of the American Pharmaceutical Association, and other publications have favorably commented on its adoption. There is evidently a growing desire to fix standards which should guide actions in trades and professions.

The American Bar Association, headed by Chief Justice Taft, has prepared a tentative code for the judiciary. It is understood that the code of ethics undertakes to regulate the private lives of judges as well as prescribe their actions on the bench. In that connection it has been stated, and rightly so, "that a judge will not be made much better by a written code;" however, it will fix a standard which the public can be guided by as well as the judges. The same thought is applicable to the code of the American Pharmaceutical Association.

The code of the American Society of Mechanical Engineers prohibits "betrayal of professional confidences, undignified or misleading advertising and questionable professional associations and practices."

Fellowship in the American College of Surgeons provides that the member will "place the welfare of patients above all else; to advance constantly in knowledge by the study of surgical literature, the instruction of eminent teachers, interchange of opinion among associates, and attendance on the important societies and clinics."