not become completely disintegrated, and 90 cc. of a 1 percent solution of sodium carbonate substituted. The digestion was then continued as described above until the pill had become completely disintegrated, or until a period of six hours had elapsed. Although the disintegration would undoubtedly have taken place more rapidly at a temperature of 37° C. and possibly faster in a weak pepsin solution, it is believed that for comparative purposes the results obtained are sufficient.

The results not only showed great variation among the several brands, but also considerable variation among the several pills of the same brand. The Laminoids disintegrated the most readily, but these were not coated. The next in order were the Parke, Davis & Co. brand of soft mass pills and the Sharp & Dohme brand of soft mass pills. It should be noted that the Lilly brand of soft mass pills disintegrated more slowly than the ordinary kind from that firm. The results are given in the table.

The results of the examination refute the commonly assumed instability of ready-made Blaud's pills. On the other hand, it is seen that the Blaud's pills of the market are not very reliable as to iron content. A range of from 77 to 182 percent of the claimed amount of ferrous carbonate denotes carelessness in manufacturing or lack of proper analytic control over the finished product. Further, the examination demonstrates that the "nascent" preparations, the soft mass pills, and the gelatin encapsulated oily suspension show no advantage over the ordinary kinds. In view of the findings, physicians should consider the advisability of directing the pharmacist to prepare Blaud's pills according to the U. S. P. whenever they are prescribed.

THE N. A. R. D. DRAFT FOR A STATE ANTI-NARCOTIC LAW.

J. H. BEAL, URBANA, ILL.

The N. A. R. D. Draft for an Anti-Narcotic Law suitable for state enactment was prepared by a special committee of three appointed by the N. A. R. D. Executive Committee, the special committee consisting of J. H. Beal, Mr. Hugh Craig, Editor of the N. A. R. D. Journal, and Frank H. Freericks, Esq., of Cincinnati.

The principal purposes of the draft are:

(1) To promote uniformity in state legislation respecting the possession and sale of anti-narcotic drugs.

(2) To provide a body of well-considered provisions from which selections can be made for use in states where the existing laws need to be revised in order to bring them into correspondence with the Harrison Act.

(3) To provide a list of provisions that can be utilized in preparing substitute bills for less acceptible measures which may be introduced into state legislatures.

To the objection that the bill seems rather lengthy it may be said that it is not really as long as it seems to be, its apparent length being due mainly to the separation of Section One into series of brief sub-sections or paragraphs, each dealing with some particular subject or exemption. It is true that all of these sub-sec-

tions might have been condensed into a single paragraph by the liberal use of general terms and connective, but the advantage gained by any such condensation would have been more than offset by the loss in directness and certainty, the two prime requisites in statutory enactments, especially in those which have a criminal bearing.

Another reason the committee had in mind was that an "expanded" or "open" form of draft would render it easier for legislative committees to select the provisions which, with slight modifications, will best suit their requirements.

The same advantage will apply in the striking out of specific provisions which may not be acceptable, or in adding other features which may be desired, since almost any of the specific provisions of the draft can be stricken out or modified without disrupting or destroying the general coherence of the bill.

The following brief review is intended to set forth some of the more important features of the draft.

The first paragraph of Section One adds to the drugs named in the Harrison Act "alpha- and beta-eucaine," and "synthetic substitutes," because it was thought that in most states there would be a demand for their inclusion. If it is not desired that these drugs be included the words can be stricken out without disarrangement of the paragraph.

The second paragraph of this section makes proof of possession *prima facie* evidence of dealing in the drugs possessed, which should be of value in the administration of the law in cases where considerable quantities of the drugs are found in the possession of persons not authorized to deal in them, but where no direct evidence of dealing in them can be secured. The presumption created by the paragraph being only *prima facie*, the defendant will be permitted to show that his possession was lawful and did not involve a dealing in the drugs possessed.

If not desired in the law, the provision can be dropped without marring the draft.

Taking them in their order, the various provisions or exceptions of Section One are as follows:

(*a*) This proviso exempts from all of the requirements of the law such chemical constituents and derivatives of opium, coca leaves, and their alkaloids as do not possess narcotic or habit-forming properties. There are quite a number of these innocent substances, such as meconic acid, apomorphine, etc., that are neither narcotic nor habit-forming, and it would be absurd to apply to them the restrictions imposed upon dealing in the harmful compounds and derivatives.

The presence of this saving clause in the bill will also tend to check the activity of over-zealous officials who might be inclined to stretch the meaning of the word "derivative" so as to include many other things not intended to be covered by the law as, for example, that "benzoic acid should be regarded as a derivative of cocaine because it is one of the substances produced by the decomposition of that alkaloid," etc.

It cannot be contended that the presence of this sub-section will in any way weaken the effectiveness of the measure for the control of the sale of habit-forming narcotic drugs, since in a later section it is provided that defendant claim-

ing the benefit of any exemption under the law must sustain the burden of proof to establish his right to such exemption.

(*b*) Sub-section *b* enumerates certain persons, manufacturers, hospitals, institutions etc., who may lawfully possess the drugs enumerated in the first paragraph of Section One. To prevent the possible organization of fictitious companies, hospitals, etc., for the purpose of dealing in these drugs in an illegitimate way, this sub-section makes it necessary for all such companies and institutions to be authorized or licensed in accordance with Section Three, and by reference to the latter section it will be seen that the only institutions which will need this special license will be those which do not have a licensed pharmacist, physician, dentist or veterinarian in their employ. As practically all reputable houses and institutions have one or more of such qualified persons on their staffs, this provision should not occasion any hardship to legitimate interests.

If deemed desirable by legislative committees, the list of persons covered by sub-section *b* can be either increased or decreased.

(*c* & *d*) Sub-sections *c* & *d* provide for the possession of the drugs by persons other than those who deal in them on their own account.

(*c*) Sub-section *e* provides for the possession and sale of mixtures containing certain limited amounts of narcotic drugs. The quantities named are the same as those specified in Section Six of the Harrison Act, but the wording is slightly modified to indicate that these permitted quantities can not be cumulated, i. e., that it will not be permissible in such preparations to use the maximum amount of one opium alkaloid plus the maximum amounts of each of the others, unless the total of such alkaloids will not exceed the maximum of that which would be contained in the extractive of two grains of opium. The accompanying proviso is also modified by requiring the admixture of other active drugs with the narcotic drugs, so that the intention of the act could not be defeated by dispensing the latter mixed with large quantities of inert diluents, as water or sugar.

(*f*) The provisions of sub-section *f* govern the sale of narcotics by authorized dealers, etc., to each other or to persons entitled to obtain them without a prescription. Though differing somewhat in their phraseology, these provisions are practically the same in effect as the corresponding provisions of the Harrison Act, so that the use of the order blank and the making of the records required by that act will serve as a compliance with the provisions of the state law, thus avoiding the duplication of records relating to the same transaction.

(*g*) Sub-section *g* relates to prescriptions and the requirements as to dating, filing, repetition, etc., and these requirements are substantially the same as are to be found in most of the state laws which deal with the subject. By the reference which is made to sub-section *e* it is evident that the requirements concerning filing, dating, repetition, etc., do not apply to prescriptions for the quantities specified in that sub-section.

The requirements for the labeling of containers are made specific, so as to prevent the dispensing of narcotic mixtures in such a manner that they cannot be traced to the prescriptions upon which they are alleged to be based.

(*h*) Sub-section *h* relates to the dispensing of narcotic drugs by licensed physicians, dentists, and veterinarians. It does not place any limit upon the *quantity*

which they may dispense in legitimate practice, but does require that a *record shall be kept* when more than the quantities specified are dispensed at one time.

It is conceded that there should be no unnecessary interference with the rights of licensed physicians to administer to their legitimate patients such drugs as they may deem necessary, but it must be remembered that exemptions of this kind, if too liberal, will permit of the practical nullification of the law by unscrupulous practitioners, and it is essential therefore that some limit be placed upon the quantities of such drugs which may be dispensed without keeping a record.

The committee does not assert that the quantities specified in this sub-section are the most appropriate or suitable quantities, and it will be open to legislative committees who may desire to use this sub-section to either increase or decrease these exempted quantities as in their discretion it may seem advisable.

Section Two of the draft relates to the prescribing or furnishing of narcotic drugs for the use of habitues. It permits a licensed physician to prescribe or furnish whatever he may deem necessary for the treatment of a patient for the cure of a drug habit, but requires certain notices to the state board of health and the keeping of certain records, in order that unscrupulous members of the profession may not be tempted to abuse their professional privileges by supplying habitues with the drugs in quantity without making any attempt whatever to effect a cure.

The same section prohibits the prescribing or furnishing of the drugs by a dentist for the use of any person not under his professional treatment as a dentist, or for any other purpose than as a part of such treatment. Veterinarians are also forbidden to prescribe or furnish such drugs for the use of any human being.

Section Three provides that certain manufacturers, dealers, hospitals, etc., that do not have a licensed pharmacist, physician, dentist, or veterinarian in their employ to dispense the drugs covered by the law, must obtain a license from the state board of pharmacy before they can lawfully possess or handle them.

The second paragraph of this section authorizes the sale of preparations containing the quantities exempted in sub-section *e* of Section One only by dealers having a fixed place of business and located at least one mile distant from a licensed pharmacist or physician, and only when specially licensed by the state board of pharmacy. That is to say, itinerant vendors will not be permitted to sell preparations containing narcotic drugs in the quantities named in subsection *e* of Section One, nor will general stores be permitted to handle them unless their place of business is at least one mile distant from the place of business of a licensed pharmacist or the office of a licensed physician.

(This licensing feature, of course, has nothing to do with pharmacists or other persons who are authorized to deal in these drugs by other provisions of the bill.)

Under the third paragraph of this section the state board of pharmacy will not grant such special license unless satisfied that the preparations will be used only for legitimate purposes.

Section Four of the draft relates to penalties. In addition to the offenses ordinarily provided for in anti-narcotic laws, it introduces some necessary prohibitions regarding the forgoing, altering, or destruction of prescriptions or other records, the making of false pretenses for the purpose of obtaining narcotic drugs,

etc., and exempts pharmacists from liability for the innocent dispensing of such drugs upon false or altered prescriptions, etc.

The penalties prescribed are *maximum* penalties only, so that the court will be able to "make the punishment fit the crime," by inflicting a light fine for merely technical or trivial offenses.

The last paragraph of this section makes it necessary for those who claim the benefit of exemptions in the law to show by the evidence that they are entitled to such exemptions, and is a quite necessary provision if the law is to be effectively enforced.

Section Five provides for suspension or revocation of the license of persons who have been twice convicted of violating the law, but the convictions must be obtained in a "court of record," i. e., in a court above the grade of the ordinary magistrate's court, and must be for "substantial," and not for merely trivial or technical violations.

The same section also provides the means for the revocation of the license of one who has become so addicted to the use of drugs as to make him an unsafe person to handle them.

The last paragraph of Section Five also makes it possible to prosecute separately a member or agent of a corporation, etc., and inflict upon such persons the penalty of imprisonment and revocation of license.

The remaining sections are of the usual sort, and present no features deserving of comment.

The committee do not offer the draft as an ideal measure that cannot be improved upon, but rather as one which has been formulated after a considerable study of the subject and as one presenting a variety of provisions that should be useful to legislative committees who are charged with the framing of bills for state enactment.

It is natural to expect that in a bill the length of this there will be particular features to which all will not agree. The committee itself did not always reach its decisions by a unanimous vote, and therefore will not feel aggrieved if its conclusions do not in every instance meet with the full approval of those who were not members of the committee.

It is perhaps needless to add that the committee does not advocate the enactment of this or of any other measure unless there is a real need for new legislation to correct existing state laws or to bring them into correspondence with the Federal law, known as the Harrison Act.

Never to despise, never to judge rashly, never to interpret other men's actions in an ill sense; but to compassionate their infirmities, bear their burdens, excuse their weakness, make up and consolidate the breaches of charity happened by their fault, to hate imperfections, and ever to love men, yea, even your enemies; therein the touchstone of true charity is known.—*N. Caussin.*

REPORT OF COMMITTEE ON UNOFFICIAL STANDARDS.

The following portion of the report of the Committee on Unofficial Standards relates to certain crude drugs and chemicals suggested for inclusion in the next revision of the National Formulary, and by order of the Council is published in the Journal in order to afford opportunity for discussion before the standards proposed are finally adopted.

Manufacturers, importers, analysts, and others interested in any of the proposed standards, are requested to send their criticisms and comments to the chairman of the committee, George M. Beringer, 501 Federal St., Camden, N. J.

ALUMINI CHLORIDUM.

Aluminum Chloride.

1. It contains Aluminum Chloride ($AlCl_3 + 6H_2O = 241.57$) corresponding to not less than 20.5 percent of Aluminum Oxide Al_2O_3. Aluminum chloride is to be kept in well-stoppered containers.

2. White, or yellowish white, deliquescent, crystalline powder; nearly odorless; taste sweet and very astringent.

3. Soluble in about 1 part of water and about 3 parts of Alcohol at 25° C., also soluble in glycerin.

4. An aqueous solution (1 in 10), should be clear, and show an acid reaction to litmus, and yield with silver nitrate T. S. a white curdy precipitate insoluble in nitric acid, and with ammonia water a white gelatinous precipitate almost insoluble in an excess of ammonia water, and with potassium hydroxide T. S. a white gelatinous precipitate completely soluble in an excess of the reagent.

5. 10 cc. of an aqueous solution (1 in 100), after the addition of .2 cc. of barium chloride T. S. must not become cloudy within one minute (limit of sulphate).

6. 10 cc. of an aqueous solution (1 in 50), must not respond to the Time-Limit Test for *heavy metals* omitting the addition of ammonia water.

7. The addition of .3 cc. of potassium ferrocyanide T. S. to 20 cc. of an aqueous solution (1 in 150), must not produce a blue coloration within one minute (Iron).

8. 5 cc. of an aqueous solution (1 in 25), must not respond to the U. S. P. Modified Gutzeit Test for Arsenic.

9. Dissolve about .5 gm. of the salt, accurately weighed, in 100 cc. of water, add 1 gm. of ammonium chloride and then precipitate the aluminum hydroxide by the addition of a slight excess of ammonia water to the boiling solution. Collect the precipitate on a filter, wash it with distilled water, dry, ignite thoroughly and weigh. The weight of the aluminum oxide so obtained must not be less than 20.5 percent of the weight of the aluminum chloride used.

ALUMINI SULPHAS.

Aluminum Sulphate.

1. It should contain not less than 99.5 percent of pure Aluminum Sulphate $Al_2(SO_4)_3 + 16\,H_2O = 630.67$.

2. A white, crystalline powder, or shining plates, or crystalline fragments; without odor, having a sweetish and afterwards an astringent taste, and permanent in the air.

3. Soluble in 1 part of water at 25° C. (77° F.), more soluble in boiling water, but insoluble in alcohol.

4. When gradually heated to about 200° C. (392° F.), it loses its water of crystallization (45.7 percent of its weight).

5. The aqueous solution of the salt has an acid reaction upon blue litmus paper.

6. The aqueous solution of the salt yields, with barium chloride T. S., a white precipitate insoluble in hydrochloric acid; and with potassium hydroxide T. S., a white, gelatinous precipitate which is soluble in an excess of the alkali, but which is again separated on the addition of a sufficient amount of ammonium chloride T. S.

7. If 1 gm. of Aluminum Sulphate be gently heated with 5 cc. of potassium hydroxide T. S., the liquid should not evolve the odor of *ammonia*.

8. A filtered, aqueous solution of the salt (1 in 10) should not become more than faintly opalescent within five minutes after the addition of an equal volume of tenth-normal sodium thiosulphate V. S. (limit of *free acid*).

9. The aqueous solution of the salt (1 in 20) should not respond to the U. S. P. Time-Limit Test for *heavy metals*.

10. The addition of 5 drops of potassium ferrocyanide T. S. to 20 cc. of the aqueous solution of the salt (1 in 50) should not pro-

duce at once a blue coloration (limit of *iron*).

11. 5 cc. of an aqueous solution (1 in 25) must not respond to the U. S. P. Modified Gutzeit Test for Arsenic.

12. Dissolve about .5 gm. of the salt, accurately weighed, in 100 cc. of water, add 1 gm. of ammonium chloride and then precipitate the aluminum hydroxide by the addition of a slight excess of ammonia water to the boiling solution. Collect the precipitate on a filter, wash it with distilled water, dry, ignite thoroughly and weigh. The weight of the aluminum oxide so obtained must not be less than 16.1 percent of the weight of the aluminum sulphate used.

ANTIMONII OXIDUM.

Antimony Oxide.

1. It contains not less than 97 percent of antimonous oxide (Sb_2O_3=288.4).

2. Antimony Oxide is a white or grayish white powder odorless and tasteless.

3. It is insoluble in water, alcohol or nitric acid, readily soluble in hydrochloric acid without effervescence, and also in a warm solution of tartaric acid or in a boiling solution of potassium bitartrate.

4. When heated it turns yellow, becoming white again on cooling. At a dull red heat it fuses to a yellowish liquid, volatilizing at a higher temperature.

5. When dissolved in a slight excess of hydrochloric acid and this solution diluted with a large volume of water, a white precipitate is produced which is changed to orange by hydrogen sulphide.

6. The solution of 0.1 gm. of the oxide in 3 cc. of hydrochloric acid and 5 cc. of distilled water is not rendered turbid at once by a few drops of barium chloride T. S. (sulphate).

7. The solution of 0.1 gm. of the oxide in 10 cc. of distilled water and 1 gm. of tartaric acid does not become more than slightly opalescent after the addition of 0.2 cc. nitric acid and 0.2 cc. silver nitrate T. S. (chloride).

8. Dissolve 0.5 gm. of the oxide in 10 cc. of hydrochloric acid, dilute the solution with distilled water until it begins to become permanently turbid and then precipitate with hydrogen sulphide. This precipitate when thoroughly washed with distilled water dissolves in ammonium or sodium sulphide T. S., without leaving a black insoluble residue (copper, lead).

9. A solution of 0.1 gm. of Antimony Oxide in 5 cc. of hydrochloric acid does not respond to Bettendorf's test for arsenic.

10. Weigh accurately about 0.2 gm. of Antimony Oxide, dissolve it by warming with a solution of 1 gm. of tartaric acid in 10 cc. of distilled water, (adding a few drops of hydrochloric acid to aid the solution), nearly neutralize the solution with sodium carbonate, then add 40 cc. of a cold saturated solution of sodium bicarbonate and titrate at once with tenth-normal iodine, using starch T. S., as indicator.

11. The titration shows not less than 97 percent of antimonous oxide. Each cc. of tenth-normal iodine corresponds to 0.007210 gm. of antimonous oxide.

ANTIMONII SULPHIDUM PURIFICATUM.

Purified Antimony Sulphide.

1. It contains antimony corresponding to not less than 97 percent of antimony trisulphide (Sb_2S_3=336.61).

2. Purified Antimony Sulphide is a heavy grayish black powder, odorless and tasteless.

3 It is insoluble in water or alcohol, soluble in hydrochloric acid with the evolution of hydrogen sulphide.

4. At a temperature below a red heat it fuses to a dark brown liquid.

5. A solution made by boiling the sulphide with a moderate excess of hydrochloric acid, until the vapors no longer blacken lead acetate paper, yields, when added to about ten times its volume of water, a white precipitate which is changed to orange by hydrogen sulphide.

6. Intimately mix 2 gm. of the sulphide with 8 gm. of pure sodium nitrate, fuse the mixture in a porcelain crucible, and after cooling boil the mass with 25 cc. of distilled water and filter. Acidulate the filtrate with nitric acid, boil it until no more nitrogen oxide is evolved, then dissolve in the solution about 0.1 gm. of silver nitrate, filtering again, if necessary, and cautiously over lay 10 cc. of this solution with a few drops of ammonia water. Not more than a white cloud, but no red or reddish precipitate appears at the line of contact of the two liquids (limit of arsenic).

7. Weigh accurately about 1 gm. of Purified Antimony Sulphide, mix it with 20 cc. of hydrochloric acid, and then with a clear solution of 5 gm. of tartaric acid in 10 cc. of water and heat the mixture gently on the

water bath until the vapors no longer blacken lead acetate paper. Now filter the solution, wash the residue, if any, with distilled water until the washings are neutral to litmus and ignite it. The weight of the residue does not exceed 1 percent.

8. Dilute the filtrate and washings from the preceding test to 200 cc., nearly neutralize 50 cc. with sodium carbonate, add 40 cc. of a cold saturated solution of sodium-bicarbonate and titrate at once with tenth-normal iodine, using starch T. S. as indicator.

9. The titration indicates an amount of antimony corresponding to not less than 97 percent of antimony trisulphide. Each cc. of tenth-normal iodine consumed corresponds to 0.008415 gm. of antimony trisulphide.

BERBERIS.

Berberis (Oregon Grape Root).

1. The rhizome and roots of species of the section *Odostemon Rafinesque* of the genus *Berberis* Linné (*Fam. Berberidaceae*).

2. Cylindrical, more or less knotty, strongly branched, usually cut into pieces of varying length and up to 45 mm. in diameter; externally light yellowish-brown, longitudinally wrinkled and short scaly; fracture hard and tough; bark 1 mm. in thickness, easily separable into layers, wood yellow, the color more pronounced upon wetting, distinctly radiate, and showing rings of growth; pith of rhizome small, sometimes excentral; slightly odorous; taste distinct, very bitter, tingeing the saliva yellow.

3. Pieces without the bark should be rejected.

4. *Powder*—Yellowish-brown; composed chiefly of fragments of wood-fibers associated with a few tracheæ and medullary rays; wood fibers yellowish, scarcely giving any reaction with phloroglucinol T. S. and hydrochloric acid, and with large, simple, transverse pores; tracheæ chiefly with bordered pores, occasionally reticulate; medullary rays 1- to 12-cells wide, and in very long rows; starch grains single or 2- to 3- compound, the individual grains being irregularly spherical, 0.003 to 0.010 mm. in diameter and occasionally larger.

BISMUTHI CITRAS.

Bismuth Citrate.

1. Containing Bismuth Citrate [$BiC_6H_5O_7$= 397.04] equivalent to not less than 55 percent, nor more than 59 percent of pure bismuth oxide.

2. Bismuth Subnitrate, one hundred grammes .....100 gm.
Citric Acid, seventy-five grammes 75 gm.
Distilled Water, a sufficient quantity.

Mix the Bismuth Subnitrate and the Citric Acid with 400 cc., *four hundred cubic centimeters* of Distilled Water, and heat on a bath of boiling water, with frequent stirring, until a drop of the mixture yields a clear solution with ammonia water. Then add *five hundred cubic centimeters* of Distilled Water, allow the suspended matter to deposit, wash the precipitate, first by decantation, and afterwards on a strainer, with Distilled Water, until the washings are tasteless, and dry the residue at a gentle heat.

3. A white, amorphous or micro-crystalline powder, odorless and tasteless. Insoluble in water or alcohol, but soluble in ammonia water, and in solutions of alkali citrates.

4. When strongly heated the salt chars, and, on ignition, leaves a more or less blackened residue having a yellow surface, and soluble in warm nitric acid. This solution, when dropped into a large excess of water, occasions a white turbidity.

5. A solution of 1 gm. of Bismuth Citrate in ammonia water, when treated with hydrogen sulphide in excess, yields a black precipitate.

6. Deprive the filtrate from the latter of the excess of hydrogen sulphide by heating it; a cooled portion of the liquid boiled with an excess of lime water, yields a white precipitate.

7. Mix 0.01 gm. of the salt with 1 cc. of water, add 5 cc. of sulphuric acid, cool the mixture and then carefully pour over it 5 cc. of ferrous sulphate T. S. without mixing; no red or brown zone should appear within 5 minutes (*nitrate*).

8. Ignite 3 gm. of the salt, dissolve the residue in just a sufficient quantity of warm nitric acid, and pour the solution into 100 cc. of distilled water; a white precipitate is produced. Separate the filtrate from this precipitate and evaporate it on a water-bath to 30 cc., again filter the liquid and divide the new filtrate into portions of 5 cc. each; these should respond to the tests for purity described under *Bismuthi Subcarbonas* (See U. S P. IX), (*lead, copper, silver* and sulphates).

9. Three gm. of Bismuth Citrate, after ignition and treatment with nitric acid as di-

rected in the following test, should not respond to the Bettendorf's Test for *arsenic* as stated in the U. S. P.

10. Ignite 1 gm. of Bismuth Citrate thoroughly, in a porcelain crucible, and, after cooling, add 5 cc. of nitric acid to the residue, drop by drop, warming until complete solution is effected, then evaporate to dryness, and again ignite it; a residue of bismuth oxide should be left weighing not less than 0.56 gm., nor more than 0.58 gm.

11. *Average dose.* — 0.125 gm.=125 milligrammes (2 grains).

BRAYERA.

Brayera. Cusso. Kousso.

1. The dried panicles of the pistillate flowers of *Hagenia Abyssinica* (Bruce) Gmelin (Fam. *Rosaceae*).

2. In rolls or flattened bundles from 25 to 40 cm. long, reddish-brown, each branch arising from the axil of a sheathing bract, and two rounded bracts at the base of each flower; calyx-tube top-shaped, pubescent, and subtended by a circle of five rigid, spreading, obovate, purple-veined bracts, which are larger than the five usually shrivelled and incurved calyx lobes; petals five, caducous and usually absent in the drug; carpels two; styles exserted, stigmas broad and hairy; odor slight; taste bitter.

3. The large stems should be rejected.

4. *Average dose.*—16 gm. (240 grains).

BROMUM.

Bromine.

1. It should contain not less than 97 percent of Bromine Br=79.92, and not more than 3 percent of chlorine. Bromine should be kept in glass-stoppered bottles in a cool place, the bottle being enclosed in a larger vessel with the space between filled with some compound capable of absorbing and combining with any Bromine vapors which might be given off.

Bromine is a heavy, dark brownish-red, mobile liquid, evolving, even at ordinary temperatures, reddish fumes, highly irritating to the eyes and lungs, and having a peculiar, suffocating odor, resembling that of chlorine.

3. Specific gravity: About 3.016 at 25° C. Boiling point, about 63° C.

4. Bromine is soluble in water, and freely soluble in alcohol, ether, chloroform and carbon disulphide.

5. On exposure to air or to heat, it is volatilized.

6. Bromine destroys the color of solutions of litmus and indigo, and imparts a yellow color to starch T. S.

7. On adding 5 cc. of Bromine to an excess of potassium hydroxide T. S., it should combine to form a permanently clear liquid, without the separation of oily drops (*organic bromine compounds*).

8. On shaking 10 cc. of a saturated aqueous solution of Bromine with a slight excess of reduced iron until it becomes nearly colorless, the filtered liquid, on the addition of 5 drops of ferric chloride T. S. and of 5 drops of starch T. S., should not assume a blue color (*iodine*).

9. Dissolve 10 gm. of potassium iodide in 25 cc. of distilled water, introduce the solution into a 100 cc. glass-stoppered graduated flask and determine accurately the weight of the flask and its contents. Add about 1 gm. of Bromine to the contents of the flask and determine its exact weight by noting the increase over the previous weighing and then fill the flask to the mark with distilled water. The titration of 25 cc. of this solution with tenth-normal sodium thiosulphate V. S., using starch T. S. as indicator and the calculation to the amount of Bromine originally taken, should show not less than 97 percent of Bromine (with not more than 3 percent of chlorine). Each cubic centimeter of tenth-normal sodium thiosulphate V. S. used corresponds to 0.007992 gm. of Bromine (Br) and 0.003546 gm. of Chlorine (Cl).

Each gramme of Bromine, U. S. P., (containing not more than 3 percent of chlorine) corresponds to not more than 129.831 cc. of tenth-normal sodium thiosulphate V. S.

CALCII PHOSPHAS PRÆCIPITATUS.

Precipitated Calcium Phosphate.

1. It should contain, when dried to constant weight, not less than 96 percent of Calcium Phosphate, $Ca_3(PO_4)_2$=310.29.

2. Precipitated Calcium Phosphate occurs as a white, amorphous or micro-crystalline, bulky powder, odorless and tasteless; permanent in the air. At an intense, white heat, the salt fuses without decomposition.

3. Almost insoluble in cold water; partly decomposed by boiling water, which dissolves out the acid salt; almost insoluble in acetic acid, except when freshly precipitated; easily dissolved by hydrochloric or nitric acid; insoluble in alcohol.

4. When moistened with silver nitrate T S., either before or after ignition, the salt

acquires a yellow color (distinction from *acid calcium phosphate*, which, after ignition, when moistened with silver nitrate T. S., remains white).

5. For applying tests of identity and of purity, shake 2 gm. of precipitated Calcium Phosphate with 20 cc. of distilled water, add nitric acid, drop by drop until solution is effected, and then add sufficient water to make the liquid measure 40 cc. While making this solution, no effervescence should occur on adding the acid (carbonate).

6. From a portion of this solution the salt is precipitated unchanged by a slight excess of ammonia water. Silver nitrate T. S. added in excess to this mixture and then acetic acid, drop by drop, until the excess of ammonia is neutralized, will cause the color of the precipitate to change from white to yellow.

7. From another portion ammonium molybdate T. S. precipitates yellow ammonium phosphomolybdate; the reaction is accelerated by a gentle heat, not exceeding 65° C.

8. Five cc. of the solution, acidulated with nitric acid to which 0.5 cc. of silver nitrate T. S. is added should result in the production of not more than a slight turbidity (chloride).

9. Five cc. of the solution, strongly acidulated with nitric acid, to which 1 cc. of potassium sulphate T. S. is added, should not result in turbidity upon standing 15 minutes, (*barium*).

10. An aqueous solution of Calcium Phosphate (1 in 20) obtained by shaking the salt with distilled water, adding hydrochloric acid, drop by drop, and heating until solution is effected, should not respond to the U. S. P. Time-Limit Test for *heavy metals*.

11. Five cc. of a solution of Calcium Phosphate, in diluted hydrochloric acid (1 in 25) should not respond to the U. S. P. Test for *arsenic*.

12. *Average dose.*—1 gm. (15 grains).

CALENDULA.

Calendula.

1. The dried ligulate florets of *Calendula officinalis* Linné (Fam. *Compositae*).

2. Florets, 15 to 25 mm. long, yellow or orange-colored, one- to three-toothed, the short hairy tube occasionally enclosing the remnants of a filiform style and bifid stigma; odor slight, somewhat heavy; taste slightly bitter, faintly saline.

3. *Average dose.*—1 gm. (15 grains).

CASSIA FISTULA.

Cassia Fistula.

1. The dried fruit of *Cathartocarpus fistula* Persoon (Fam. *Leguminosae*).

2. Cylindrical, 25 to 50 cm. long, about 20 mm. in diameter, chestnut-brown in color, on one side a longitudinal groove and on the other a smooth line or slight ridge, indicating the sutures; indehiscent, the cavity divided transversely into numerous compartments, each containing a reddish-brown, glossy, flattish-ovoid seed embedded in a blackish-brown sweet pulp; odor resembling that of prunes.

3. *Average dose.*—4 gm. (60 grains).

CATARIA.

Cataria. Catmint. Catnep.

1. The dried leaves and flowering tops of *Nepeta cataria* Linné (Fam. *Labiatae*).

2. Tops, when whole, 10 to 20 cm. in length, much branched, commonly crushed and broken; stems quadrangular, downy; leaves opposite, those of the stem petiolate 2 to 7 cm. long, rounded heart-shaped at the base, oblong, pointed at the apex, pale gray-green, soft hairy above, downy beneath, margin deeply crenate, floral leaves small, bract like; flowers in dense, interrupted spikes; flower small, calyx hairy, tubular, curved obliquely and equally 5 toothed, corolla whitish, dotted with purple, throat dilated, bilabiate, the upper lip erect, 2 cleft, leaves spreading, 3 cleft, the middle lobe largest, sometimes notched; stamens 2 pairs ascending under the upper lip, lower pair shorter. Odor faintly aromatic and mint-like; taste bitter, pungent, aromatic.

It should yield not more than 16 percent of ash.

CHIMAPHILA.

Chimaphila Pipsissewa.

1. The dried leaves of *Chimaphila umbellata* (Linné) Nuttall (Fam. *Ericaceae*), with not more than 5 percent of stem or other foreign substances.

2. Oblanceolate, 2.5 to 5 cm. long, 8 to 18 mm. broad, the upper portion coarsely and sharply serrate, acute or somewhat obtuse, the lower wedge-shaped and nearly entire; coriaceous, smooth and uniformly dark green on the upper surface, paler beneath, the veins being very prominent; odor slight; taste astringent and bitter.

3. *Average dose.*—2 gm. (30 grains).

(to be continued)