UNITED STATES PHARMACOPŒIA.

TENTH REVISION.

ABSTRACT OF PROPOSED CHANGES WITH NEW STANDARDS AND DESCRIPTIONS.*

PART II—FIRST PROOF.

BOTANY AND PHARMACOGNOSY.

The United States Pharmacopœial Convention of 1920 recommended that abstracts of changes proposed for the U. S. P. X and new standards and descriptions be published before final adoption, that those who are not members of the Revision Committee may have an opportunity for comment and criticism.

In compliance with this recommendation, the following abstracts are submitted. The nomenclature and the exact wording of the text do not necessarily represent that to be finally adopted and doses have not been appended. Abstracts will be issued from time to time covering other texts for the Pharmacopœia.

Comments should be sent to the Chairman of the Revision Committee,

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GENERAL POLICIES GOVERNING THE REVISION OF THE BOTANY TEXTS.

1. The definition consists of a complete sentence beginning with the official English title and stating the part or parts of the plant making up the drug and the botanical names and family name of the plants from which the drug is obtained.

2. A purity rubric covering the purity and quality of the drug follows the definition. The statement in the text is controlled by General Standards which it is suggested be included in the Introductory Notices.

All special standards deviating from the General Standards are so stated in the text. It will be noted that the figures for total ash have been eliminated and quite generally only the figures for acid-insoluble ash are included. This is done as the cleanliness of drugs is based for the most part upon the amount of allowable sand and dirt insoluble in hydrochloric acid.

The methods for determining these standards will be submitted later and will be included in another portion of the U. S. Pharmacopœia.

3. The descriptions of crude drugs follow the purity rubric and will be noted are in the substantive form with paragraph lead.

The lead "Structure" is used for the paragraph of histological description and the lead "Powder" for the description of the ground drug.

4. All unimportant technical language has been omitted or replaced by English terms so as to give greater emphasis to the standards included in descriptions and tests.

GENERAL STANDARDS FOR VEGETABLE DRUGS.

NOTE.—This matter is to replace the paragraph in Introductory Notices of U. S. P. IX on page XLVII.

VEGETABLE DRUGS. In the case of vegetable drugs the definition is qualified by the standards of purity given in the text for each drug. The standards provided in the text apply also to the powdered or ground drug.

Vegetable drugs are to be as free as practicable from insects or other animal life, animal material or animal excreta. They are to be free from moldiness and show no discoloration, abnormal odor, sliminess or disintegration due to any cause.

For preservation of vegetable or animal substances from the ravages of insects, it is directed in special cases that they be preserved in tightly closed containers and a few drops of chloroform or carbon tetrachloride added; it is not intended that this precaution should be used for drugs imported in bales or large original containers. This precaution is intended to aid in the preservation of drugs in the stock of a pharmacist.

The following drugs are prone to the attack of insects:

Aconitum	Cardamomi Semen	Glycyrrhiza	Pepo
Belladonnae Radix	Carum	Jalapa	Rheum
Calumba	Coriandrum	Linum	Rosa gallica
Capsicum	Ergota	Myristica	Strophanthus
			Zingiber

It is not commercially possible to obtain vegetable drugs in the state of absolute purity and a limited amount of innocuous extraneous or foreign matter adhering to the drug admixed with it, is usually not detrimental to the drug. It is desirable that vegetable drugs be obtained as nearly uniform as possible. In some cases the allowable percentage of foreign organic matter is specified in the text under the article. The presence or admixture of any poisonous or dangerous foreign substances, however, is not permissible. Foreign organic matter refers to any part of the plant or plants yielding the drug, except that part or those parts designated as constituting the drug; and to any other plant parts, vegetable tissues, material or substance.

Furthermore, it is not commercially possible to obtain vegetable drugs completely freed from a certain amount of sand or adhering inorganic impurities. In order that vegetable drugs be of a uniform quality and as free as practicable from foreign inorganic substances it is required that in all vegetable drugs the amount of foreign inorganic matter, estimated as ash insoluble in dilute hydrochloric acid, be not more than two per cent. of the weight of the drug. This tolerance applies to each vegetable drug recognized in the Pharmacopœia of the United States unless otherwise specified under the drug.

The proposed changes for the U. S. P. X follow:

Acacia.—Total ash per cent. eliminated, and rubric reads—"It yields not more than 1 per cent. of water-insoluble residue and not more than 15 per cent. of moisture."

Slight change in size of tears. It now reads: "Spheroidal tears up to *32 mm. in diameter.*"

Aconitum.—Total ash eliminated and now brought under General Standard as to acid-insoluble ash. "Aconite contains not more than 5 per cent. of stems or other foreign organic matter."

Slight change in thickness of root. It now reads: "1 to 3.5 cm. in diameter at the crown."

Slight change in size of starch grains. It now reads: "from 0.003 to 0.020 mm. in diameter."

Agar.—Nomenclature of definition changed—"Agar is the dried mucilaginous substance extracted from *Gelidium corneum* (Hudson) Lamouroux and other species of *Gelidium*, and associated Algae."

Rubric changed to read: "Agar contains not more than 1 per cent. of organic foreign matter nor more than 1 per cent. of acid-insoluble ash nor more than 16 per cent. of moisture."

Aloe.—New Test: "Intimately mix for two hours about 1 Gm. of powdered Aloe with 25 cc of cold water, filter and wash with cold water to make the filtrate up to 100 cc. The residue on the filter, dried over sulphuric acid, should not exceed in weight 50 per cent. of the weight of powdered Aloe taken. The color of the filtrate of Socotrine Aloe, viewed in the bulb of a 100-cc volumetric flask is light yellowish-brown, reddish-brown with Curaçao Aloe and yellowish with Cape Aloe. The filtrate darkens upon standing."

New test for distinction of commercial varieties: "To 5 cc of the filtrate mentioned above, add 2 cc of nitric acid; the mixture is of a yellowish to yellowish-brown color with Socotrine Aloe; a deep red color Curaçao Aloe, a reddish-brown color changing to vivid green with Cape Aloe."

Althaea.—No change.

Amylum.—Moisture percentage added to rubric—"Nor more than 14 per cent. of moisture."

New test. "Add 10 cc of distilled water to 1 Gm. of Starch and acidify with 0.5 cc of hydrochloric acid. The mixture should yield no blue color within five minutes on the addition of 3 drops of potassium ferrocyanide T. S. (*iron*)."

Asafoetida.—Limitations to species of Ferula indigenous to Persia and adjacent countries eliminated—"Asafoetida is the gum-resin obtained by incising the living rhizomes and roots of *Ferula Asafoetida* Linné and *Ferula Faetida* Regel and of other species of Ferula (Fam. *Umbelliferae*)."

Rubric changed and the standard the same for the resin as the powder—"Asafetida yields not less than 50 per cent. of alcohol-soluble constituents, not more than 15 per cent. of acid-insoluble ash."

Aspidium.—Definition simplified—"Aspidium, is the rhizome and stipes of *Dryopteris* Filix-mas (Linné) Schott (Fam. *Polypodiaceae*)."

Purity rubric changed: "Aspidium yields not less than 6.5 per cent. of oleoresin nor more than 3 per cent. of ash."

Structure amplified—"*Structure.* Externally a row of epidermal cells; and several rows of brown, thick-walled hypodermal cells; parenchyma with intercellular spaces into which project characteristic glandular hairs; vascular bundles bicollateral, each surrounded by an endodermis, the tracheae large, sclariform or reticulate; starch abundant, ellipsoidal or irregular, 0.002 to 0.025 mm. in length."

Aurantii Amari Cortex.—Total ash eliminated and rubric brings it under General Standards. "In thin, irregular bands (ribbons) or elliptical, somewhat curved and acutely pointed pieces (quarters) with recurved edges; outer surface yellowish or reddish or greenish-brown with numerous, minute pits and fine reticulate ridges; inner surface whitish with many slight conical projections and fine anastomosing lines formed by the vascular bundles; fracture hard, short; odor fragrant and aromatic; taste aromatic and bitter."

Structure amplified—"*Structure.* An outer epidermis of small, angular cells; an outer parenchyma of thick-walled cells containing chloroplasts or chromoplasts and occasionally calcium oxalate prisms, and bearing the large oil reservoirs, arranged mostly in 2 irregular rows; an inner spongy parenchyma of branched cells surrounding large intercellular spaces, and bearing delicate, anastomosing vascular bundles."

Length of crystals changed to maximum size of "to 0.045 mm. long."

Belladonnae Folia.—Rubric changed—"Belladonna Leaves contain not more than 3 per cent. of stems over 10 mm. in diameter and yield not more than 3 per cent. of acid-insoluble ash."

Size of seeds included in description—"Seeds, up to 2 mm. in width."

Structure extended—"*Structure.* Leaves of simple structure; epidermis with sinuate vertical walls and distinctly striated cuticle; stomata more numerous on the lower surface and usually with 3 neighboring cells; non-glandular hairs 2–6 celled; glandular hairs, short-stalked with one-to-many-celled heads; crystal cells large, filled with micro-crystalline calcium oxalate and numerous in the mesophyll. Raphides are wanting (absence of *Phytolacca leaves*)."

Statement of characteristics of the powder referred to the structure as shown in the following verbiage: "*Powder,* Green to brownish-green in color. The following are among the elements of identification; the separate micro-crystals, the dark gray crystal cells, the cuticular striping of the epidermal cells, the tracheae with bordered pores, the bast and wood fibers of the stem, the fibers and, rarely, the hairs and pollen grains."

Belladonnae Radix.—"Total ash eliminated and replaced by acid-insoluble ash, the quantity of which is not more than 4 per cent."

"Maximum of root increased from 2.5 cm. to 4 cm."

Structure simplified—"*Structure.* Cork, a few layers of thin-walled cells; large crystal cells, filled with micro-crystalline calcium oxalate, and relatively numerous in the younger roots, scattered through the abundant, starch-bearing parenchyma of the bark and wood; large porous or reticulate tracheae in scattered groups and, in the older roots, associated with wood fibers; cambium layer conspicuous; the medullary rays 1 to 5 cells wide."

Benzoinum.—Test of solubility in alcohol given more fully—"Treat about 1 gram of Benzoin with 25 cc of boiling alcohol, filter, wash the filter with 10 cc hot alcohol, and dry the residue; the insoluble portion of Siam Benzoin does not exceed 10 per cent.; that of Sumatra Benzoin does not exceed 25 per cent.; in both cases the alcoholic filtrate becomes milky upon the addition of water and is acid to litmus."

Test with ether added—"Treat about 0.25 Gm. Benzoin with 5 cc of ether, decant about 1 cc of the ethereal solution into a porcelain dish and add to it 2 or 3 drops of sulphuric acid; the

solution of Sumatra Benzoin produces a deep red-brown coloration of the sulphuric acid; the solution of the Siam Benzoin produces a deep purplish-red coloration."

Permanganate test restored. "Heat about 0.5 Gm. of Benzoin in a test-tube with 10 cc of potassium permanganate T. S.; Sumatra Benzoin develops an odor of benzaldehyde; Siam Benzoin does not develop an odor of benzaldehyde."

Buchu.—Barosma crenulata added as a source of Short Buchu.

Rubric—amount of stems decreased to 8 per cent.

Size of leaf of Short Buchu increased—from 9 to 30 mm. in length and 4 to 20 mm. in breadth.

Breadth of leaf of Long Buchu is increased from 4 to 10 mm. in breadth.

Structure considerably lengthened—"*Structure.* Cuticle thick, somewhat uneven and striated. Hairs few, simple, one-celled, non-lignified up to 0.145 mm. in length (Short Buchu) or 0.180 mm. in length (Long Buchu). Stomata wanting on the upper surface, numerous on the lower surface, broadly oval, up to 0.040 mm. in length and surrounded by from 4 to 6 neighboring cells. Epidermal cells with inner walls mucilaginous and containing colorless sphero-crystals or crystal aggregates of Hesperidin, which strongly polarize light, the latter form giving a brilliant display of colors. A single row of large hypodermal cells beneath the upper epidermis containing mucilage and frequently brownish, feather-like crystal aggregates. Palisade cells in a single row below the mucilage cells, and bordering a loose mesophyll, the cells containing numerous plastides and a few rosette aggregates of calcium oxalate. Oil cavities circular in outline, with globules of oil and occurring mostly near the margin of the leaf."

"Fibro-vascular bundles of midrib and larger veins collateral, in crescent-shaped groups composed chiefly of tracheae, sieve tubes and non-lignified fibers and separated by colenchyma from the lower epidermis."

"Powder now included but based on structure. *Powder.* Light green; elements of identification are epidermal cells containing sphero-crystals or crystal aggregates of Hesperidin, rosette aggregates of calcium oxalate from 0.015 to 0.030 mm. in diameter, the few simple hairs, the numerous stomata of the lower epidermis, the oil secretion cavities and oil globules, and fragments of the fibro-vascular bundles."

Calumba.—Total ash replaced by—"Calumba yields not more than 2.5 per cent. of acid-insoluble ash."

Size increased to 10 cm. in diameter.

Structure inserted—"*Structure.* A thick corky layer of small cells with yellowish walls; a starch-bearing parenchyma layer with a few characteristic stone cells scattered singly or in small groups; the numerous, narrow wood bundles distinct and separated by broad, starch-bearing medullary rays; the phloem portion consisting of sieve with cells mostly collapsed; the xylem portion of tracheae and wood fibers frequently in small groups separated by starch-bearing parenchyma, especially in the inner portion."

Cambogia.—Purity rubric now includes standard for foreign organic matter and acid-insoluble ash—"Camboge contains not more than 1 per cent. of foreign organic matter and yields not more than 1 per cent. of acid-insoluble ash nor less than 65 per cent. of alcoholic extractive."

Cannabis.—"Size of crystals increased from 0.025 mm. to 0.030 mm. in diameter."

Cantharis.—No change.

Capsicum.—Botanical name changed and definition now reads: "Capsicum is the dried, ripe fruit of *Capsicum frutescens* Linné (Fam *Solanaceae*)."

Non-volatile ether extractive reduced to 14 per cent.

Diameter reduced to 8 mm. as maximum.

Number of seeds in pod increased to 20.

Extended histological description added—"*Structure.* Outer epidermis of mostly quadrangular cells 0.020 to 0.080 mm. long, 0.020 to 0.045 mm. wide and 0.015 to 0.020 mm. deep, arranged in regular rows, with thickened and cutinized outer and radial walls, the surface of the cuticle finely striated, the radial walls somewhat wavy but very slightly beaded; mesocarp of thin-walled parenchyma containing reddish-yellow oil globules; endocarp of elongated cells, some of them very thin-walled, others, in large oval areas, with thickened, beaded lignified walls. Seed epidermal cells irregular in outline up to 0.250 mm. long, with very wavy, contorted, lignified walls, those cells from the edge of the seed much thicker walled than those from the flat surface

of the seed. Embryo curved and embedded in the endosperm which consists of small, thin-walled parenchyma, containing small aleurone grains and fixed oil."

Elimination of Japanese or East Indian Capsicum. "Fragments of pericarp with outer epidermis consisting of irregular cells up to 0.100 mm. long, not arranged in regular rows and with strongly beaded radial walls and with a hypodermis of angular cells with thickened, beaded walls, should be absent (*Japanese or East Indian Capsicum*)."

Pungency test for identification added—"Mix well 1.0 Gm. of powdered Capsicum in 50 cc of alcohol in a stoppered flask and macerate for 24 hours; dilute 0.1 cc of the clear, supernatant liquid with 140 cc of distilled water containing 10 per cent. of sugar; 5 cc of this dilution swallowed at once will produce a distinct sensation of pungency and taste of capsicum in the mouth and throat."

Cardamomi Semen.—Change in botanical name of plant in definition. "Cardamom Seed is the dried seed of *Ammomum Cardamomum* Linné (Fam. *Zingiberaceae*)."

Size of calcium oxalate in reserve cells of seed given as follows: "Containing one or more prisms of calcium oxalate 0.010 to 0.025 mm. in diameter."

Carum.—No change.

Caryophyllus.—Change in the botanical name in the definition—"Clove is the dried flower-buds of *Caryophyllus aromatica* Linné (Fam. *Myrtaceae*)."

Volatile ether extract increased to 15 per cent.; insoluble ash increased to 0.75 per cent.

Cimicifuga.—Ash statement changed—"and yields not more than 4 per cent. of acid-insoluble ash."

Length of Roots stated—"3 to 12 cm."

Cinchona.—Structure amplified—"*Structure.* Cork, frequently bearing dense masses of lichen tissues on its outer surface, consists of rectangular, thin-walled cells with brown contents; parenchyma brown-walled, usually containing starch grains, single or 2–5 compound, up to 0.020 mm. in diameter, but some widely scattered cells are filled with calcium oxalate microcrystals; laticiferous ducts widely separated in a single row near the inner edge of the primary bark, circular or oval in transverse section, up to 0.120 mm. in diameter; medullary rays usually 1 to 3 cells wide with rectangular thin-walled cells, frequently tangentially elongated in the outer part of the ray; bast fibers numerous, isolated or in small bundles between the medullary rays, spindle-shaped, 0.300 to 1.350 mm. long, 0.050 to 0.135 mm. wide, with thick, strongly lignified lamellated walls having numerous simple or branched pores."

Cinchona Rubra.—No change.

Cinnamomum.—Specific name of species is given—"Cinnamon is the dried bark of *Cinnamomum Loureirii* Nees (Fam. *Lauraceae*)."

Coccus.—No change.

Colchici Cormus.—No change.

Colchici Semen.—"Increase in size of starch grains to 0.020 mm. in diameter."

Colocynthidis Pulpa.—No change.

Coriandrum.—No change.

Cubeba.—No change.

Digitalis.—Maximum size of leaf reduced to 25 cm. in length.

Anatomical description inserted. "*Structure.* Upper epidermis with slightly sinuate vertical walls, no stomata, and numerous hairs, lower epidermis with sinuate vertical walls, numerous oval stomata and many hairs and not attached over irregular areas to the cell layer within, especially near the veins; chlorenchyma of a single layer of short palisade cells and several layers of mesophyll; vascular bundles of larger veins and petiole, numerous, separated by medullary rays one cell wide."

Ergota.—Histological description introduced—"*Structure.* A thin outer portion of small compact cells generally deep violet in color and which turn red with sulphuric acid (50 per cent.) or with chloral hydrate T. S.; the inner portion, simulating parenchyma tissue, of thin-walled colorless cells usually less than 0.015 mm. wide but slightly elongated and containing numerous globules of fixed oil."

Erodictyon.—Description of Powder introduced—"*Powder.* Greenish; non-glandular hairs 1-celled stalk and 6 to 8-celled heads, the latter up to 0.075 mm. in diameter; tracheae with spiral thickenings or simple pores and associated with lignified fibers; starch grains few,

0.003 to 0.020 mm. in diameter; calcium oxalate crystals numerous, in rosette aggregates from 0.005 to 0.030 mm. in diameter."

Eucalyptus.—Description of powder introduced. "*Powder.* Light green; containing fragments of epidermis with nearly invisible stomata because of the thickened cuticle; fragments of chlorenchyma with broken oil reservoirs; fragments of brownish cork; long, slightly lignified bast fibers associated with small dotted trachcae; calcium oxalate in rosettes or prisms, 0.015 to 0.025 mm. in diameter."

Galla.—Definition simplified—"The gall on the young twigs of *Querous infectoria Olivier* and other allied species of *Querous* (Fam. *Fagaceae*)."

Histological description inserted—"*Structure.* The external and largest part of the gall consists of thin-walled parenchyma cells, containing masses of tannin and occasionally rosettes and prisms of calcium oxalate; a middle layer of thick-walled stone cells and an inner layer of thick-walled parenchyma containing starch granules with occasionally small globules of fatty oil."

Test for tannin in nutgall with ferric chloride T. S. omitted.

Gambir.—Alcoholic and aqueous extractives increased. "Gambir yields not less than 70 per cent. of aqueous extractive nor less than 65 per cent. of alcoholic extractive."

Cold water extractive added. "Gentian yields not less than 30 per cent. of cold extractive."

Thickness increased to 40 mm.

Histological description introduced. "*Structure.* Cork four to six rows of thin-walled cells; hypodermis of several rows of thick-walled cells; inner bark of many layers of more or less tangentially collapsed parenchyma and numerous sieve bundles and separated from the wood by a distinct cambium ring; medullary rays indistinct; wood rays consisting of a few large tracheae scattered through an abundance of brown thin-walled parenchyma."

Glycyrrhiza.—Botanical names changed slightly. "Glycyrrhiza is the dried rhizome and roots of *Glycyrrhiza glabra* Linné, known in commerce as Spanish Licorice or of *Glycyrrhiza echinata* Linné, known in commerce as Russian Licorice (Fam. *Leguminosae*)."

Names related commercial varieties no longer specified under Spanish Licorice.

Maximum size of crystals of calcium oxalate increased to 0.030 mm.

Granatum.—"Total ash 16 per cent. replaced by admission to General Standards. Pomegranate Bark contains not more than 2 per cent. of wood or other foreign organic matter."

Histological structure introduced. "*Structure.* Cork thin, of alternating rows of thin-walled suberized cells and lignified cells with greatly thickened inner walls; primary cortex of parenchyma with a few large stone cells; isolated or in small groups; medullary rays mostly one cell wide; rosette aggregates of calcium oxalate very numerous in the parenchyma."

Hydrastis.—Ash standard introduced, "yields not more than 3 per cent. of acid-insoluble ash."

Hyoscyamus.—Purity rubric changed—"Hyoscyamus contains not more than 25 per cent. of its stems and none should be more than 7 mm. in thickness; and yields not more than 12 per cent. of acid-insoluble ash nor less than — per cent. of the alkaloids of Hyoscyamus."

Histological structure introduced—"*Structure.* Leaves: one layer of palisade with frequent large intercellular spaces; the upper row of mesophyll cells with prisms or rosette aggregates of calcium oxalate; in the midrib a girdle of collenchyma about the vascular bundle and the parenchyma occasionally with sphenoidal micro-crystals of calcium oxalate. Stems: Cortex thin, wood with numerous tracheae and lignified fibers, follow with a few pith parenchyma. Seed: campylatropous, the coat strongly reticulated, with curved embryo embedded in the endosperm."

Epidermal cells no longer described and size of stomata not retained.

Size of micro-crystals given as follows: "0.006 to 0.012 mm."

Size of pollen grains eliminated.

Ipecacuanha.—Botanical origins of both commercial varieties of Ipecac now referred to C. Ipecacuanha. "Ipecac is the dried root of *Cephaelis Ipecacuanha* (Brotaetro) A. Richard, known in commerce as Rio Ipecac (Brazillian Ipecac) or as Cartagena Ipecac. (Fam. *Rubiaceae*)."

Histological Structure of Rio Ipecac is now given. "*Structure of Rio Ipecac Root.* Outer layer dark brown, consisting of several layers of cork cells some showing distinct granular masses of protoplasm covering the tangential walls bark grayish-white, consisting chiefly of parenchyma cells filled with starch grains, a few containing raphides of calcium oxalate; wood cylinder light

yellow, consisting of tracheids with bordered or slit-like pores, modified medullary rays of prosenchymatic cells containing starch grains, not exceeding 0.010 mm. in diameter and a few lignified fibers with oblique slit-like pores and more or less attenuated ends."

Cartagena Ipecac is described being referred to Rio Ipecac. "*Cartagena Ipecac.* As compared with Rio Ipecac, from 4 to 6.5 mm. in thickness; externally grayish-brown; annulations less numerous; single starch grains, in the average, larger in the medullary rays of the wood."

Size of starch grains and calcium oxalate increased. "The starch grains single and up to 5- to 7-compound, the single grains up to 0.020 mm. in diameter, raphides of calcium oxalate up to 0.050 mm. long."

Ipomoea.—(To replace Scammony Root):

IPOMOEA.
Ipomoea Root.

Mexican Scammony Root. Levant Scammony.

Ipomoea is the dried root of *Ipomoea orizabensis* Ledenois (Fam. *Convolvulaceae*).

Ipomoea yields not less than 15 per cent. of total resin, nor more than 3 per cent. of acid-insoluble ash.

In nearly flattened transverse slices, from 2 to 12 cm. in diameter and from 1 to 5.5 cm. in thickness; externally light to dark brown, very deeply wrinkled; fracture tough, fibrous; inner surface light brown, showing concentric rings from which coarse fibers protrude; odor, distinct, somewhat aromatic, taste slightly sweet, becoming somewhat acrid.

Structure. A corky layer consisting of several rows of brownish, thin-walled, narrow tabular cells; outer cortex of several layers of colorless, thin-walled cells; a broad cortical layer made up of thick-walled, tangentially elongated cells, containing either starch grains or crystals of calcium oxalate and numerous large brownish resinous laticiferous cells; alternate rings or zones of collateral fibrovascular bundles separated by broad medullary rays; sieve in somewhat hemisperical strands outside of the wood wedges; resinous laticiferous cells numerous and distributed throughout the parenchyma and medullary rays; the parenchyma both in and surrounding the bundles more or less collapsed and containing either starch or calcium oxalate crystals.

Powder. Light grayish-brown; starch grains from 0.003 to 0.035 mm. in diameter, mostly single, also 2- to 4- compound and usually with a central cleft; calcium oxalate crystals numerous, mostly in rosette aggregates, occasionally in the form of rhombohedra, from 0.010 to 0.045 mm. in length; fragments of yellowish-brown resin cells; tracheae mostly with simple pores and associated with numerous thick-walled wood fibers with bordered pores."

Jalapa.—Yield of resin increased to 9 per cent. "Jalap yields not less than 9 per cent. of the total resins of Jalap."

Histological structure introduced. "*Structure.* Cork of several or many rows of small, thin-walled brownish cells; cortex narrow; fibro-vascular bundles small, numerous, arranged in several concentric zones, bicollateral, each bundle with 2 or 3 tracheae, several small groups of sieve tissue and inconspicuous cambium except in the outermost zone where the cambium is conspicuous, with 6 to 10 rows of cells and forming a complete circle; parenchyma abundant, starch-bearing, with numerous, large latex cells scattered through it."

Kino.—Purity rubric changed. "Kino yields not less than 70 per cent. of alcoholic extractive, not less than 90 per cent. of aqueous extractive."

KRAMERIA.
Krameria.

Rhatany.

Krameria.—Krameria is the dried rot of *Krameria triandra* Ruiz et Pavon, known in commerce as Peruvian Rhatany, or of *Krameria argentea* Martius, known in commerce as Para or Brazilian Rhatany (Fam. *Leguminosae*).

Peruvian Rhatany. Crown knotty, several to many-headed, with numerous branching roots; the latter up to 50 cm. in length and usually less than 1 cm. in thickness, cylindrical or somewhat tapering, flexuous or wavy, externally light reddish-brown or brownish-red, more or less marked with darker scaly cork especially in the upper portion, somewhat longitudinally wrinkled but devoid of transverse fissures; fracture of bark slightly fibrous, of wood tough and splintery; the bark

pinkish-brown internally and less than one-third of the residue, the wood yellowish or pinkish-white and finely radiate; inodorous; bark astringent, wood nearly tasteless.

Para Rhatany. Roots usually separate from the crown, less flexuous, tapering, tough and internally darker in color than those of Peruvian Rhatany, and usually not exceeding 12 mm. in thickness; externally purplish-brown or chocolate-brown and marked with numerous fissures; the bark about two-fifths or more of the radius.

Powder. Reddish-brown, starch grains, single or 2- to 4-compound, the individual grains spherical, ellipsoidal, or plano-convex and sometimes with a central, radial, or starlike cleft, from 0.003 to 0.035 mm. in diameter; bast fibers more or less wavy in outline with very much attenuated ends and with non-lignified walls; tracheae with simple or bordered pores associated with numerous wood-fibers which are now narrow, spindle-shaped and with thick, porous, slightly lignified walls; numerous cellular fragments with yellowish or reddish-brown walls; calcium oxalate in monoclinic prisms, 0.010 to 0.100 mm. in length, and occasionally in spherical micro-crystals.

Limonis Cortex.—Microscopical description eliminated.

Linum.—No change.

Lobelia.—8 per cent. of total ash replaced by 5 per cent. of acid-insoluble ash.

Lycopodium.—No change.

Manna.—Standard for Mannite introduced in rubric.

Mentha Piperita.—Limit of size of stems as given in rubric changed. "Peppermint contains not more than 10 per cent. of stems over 1 mm. in diameter."

Description of Powder introduced. "*Powder.* Green, fragments of lead epidermis with wavy vertical walls and, if from the lower surface of the leaf, with numerous oval stomata and glandular and non-glandular hairs, especially along the veins; glandular hairs with a 1- to 2-celled stalk and 1- to 8-celled head usually set in a depression in the leaf and containing a volatile oil; non-glandular hairs with thin, papillose walls, 1 to 8 cells long, the terminal cell pointed or sometimes globular; fragments of chlorenchyma with vascular tissue, the tracheae spiral or with simple pores and but slightly lignified; fragments of collenchyma and of thin-walled, non-lignified fibers associated with parenchyma; pollen grains spheroidal and smooth."

Mentha Viridis.—Limit of size of stems as given in rubric changed—"Spearmint contains not more than 10 per cent. of stems over 1 mm. in diameter."

Myristica.—Modification in definition. "Myristica is the dried ripe seed of *Myristica fragrans* Houtuyn (Fam. *Myristicaceae*) deprived of its seed coat and with or without a thin coating of lime."

Introduction of some of the important government standards in the rubric. "Myristica yields not less than 25 per cent. of non-volatile ether extractive nor more than 0.5 per cent. of acid-insoluble ash."

Myrrha.—Definition changed as follows: "Myrrh is a gum-resin obtained from *Commiphora* (Fam. *Burseraceae*)."

Rubric now applies to gum resin as well as powder. Resin content reduced to 30 per cent. and acid-insoluble ash is now 4 per cent. "Myrrh yields not less than 30 per cent. of alcoholic extractive nor more than 4 per cent. of acid-insoluble ash."

Description of powder very much condensed as follows: "*Powder.* Yellowish-brown; consisting of numerous angular fragments of resin and gum, a few fragments of lignified tissue and a very few starch grains."

Nux Vomica.—No change.

Opium.—No change.

Opii Pulvis.—No change.

Pepo.—Rubric gives allowance of defective or ungerminating seeds as follows: "Pepo contains not more than 5 per cent. of defective seed or other foreign organic matter."

Podophyllum.—Limit of size of starch grains increased to 0.020 mm.

Prunus Virginiana.—Thickness of bark increased to 8 mm.

Size of rosette aggregates increased to 0.075 mm.

Size of starch grains changed to 0.002 to 0.015 mm. in diameter.

Pulvis Glycyrrhizae Compositus.—No change.

Pulvis Ipecacuanhae et Opii.—No change.

Pulvis Jalapae Compositus.—No change.

Pulvis Rhei Compositus.—No change.

Quassia.—No change.

Rhamnus Purshiana.—Title changed from Cascara Sagrada.

Age limit in former editions of U. S. P. restored. "Rhamus Purshiana should be collected at least one year before being used for making medicinal preparations."

Size of Calcium oxalate crystals changed. "Calcium oxalate in monoclinic prisms or rosette aggregates from 0.006 to 0.020 mm. in diameter."

Rheum.—Maximum size of starch grains increased to 0.025 mm. in diameter.

Test for detection of Rhapontic Rhubarb given. Powdered Rhubarb, upon the addition of alkalies, becomes red.

"Boil 10 Gm. of powdered Rhubarb for 15 minutes with 50 cc of diluted alcohol under a reflux condenser, filter and concentrate to 10 cc; cool, shake with 15 cc of ether and set aside for 24 hours. Yellowish, prismatic crystals should not form at the junction of the liquids (absence of *Rhapontic Rhubarb*)."

Tests for emodin and Chrysophanic acid are dropped.

RHUS GLABRA.

Rhus Glabra.

Sumach Berries.

Rhus Glabra is the dried, ripe fruit of *Rhus glabra* Linné (Fam. *Anacardiaceae*).

Rhus Glabra contains not more than 5 per cent. of stems or other foreign organic matter.

Flattened ovoid, nearly globular or somewhat reniform; 3.5 to 5.5 mm. long, nearly as broad, but usually somewhat less in thickness; a raised scar at the apex and the five-parted calyx with a short pedicel occasionally at the base; externally dark red, velvety with short hairs; endocarp smooth shiny, crimson to yellowish-red; 1-locular, 1-seeded; seed brown, very hard, almost tasteless; inodorous; taste acidulous and astringent.

Powder. Brownish-red; non-glandular hairs numerous, elliptical, ovoid or spatulate, 0.125 to 0.300 mm. in length and 0.045 to 0.080 mm. in width, usually several-celled, uniseriate, the cells filled with pink or red sap in which occasionally occur red-shaped crystals; also a few, slender, one-celled, colorless, non-glandular hairs; glandular hairs numerous, brownish or brownish-red, with short, one-celled stalks and multicellular heads, from 0.45 to 0.085 mm. in length; fragments of red-celled epicarp with adhering mesocarp having spiral tracheae; stone cells of endocarp very small and with irregularly thickened walls; fragments of embryo with small angular cells containing aleurone and fixed oil.

Rosa Gallica.—Histological description deleted.

Sassafras.—Length of Calcium oxalate in raphides stated—"up to 0.150 mm. in length."

Santalum Rubrum.—No change.

Sarsaparilla.—Rubric added to—"Sarsaparilla contains not more than 2 per cent. of foreign organic matter."

"Mexican Sarsaparilla yields not more than 4 per cent. of acid-insoluble ash, the other official varieties conforming to the General Standards."

Scammoniae Radix.—Replaced by Ipomoea, which see.

Scilla.—No change.

Senega.—"Test for detection of Methyl Salicylate deleted."

Senna.—Name "Tinnevelly" replaces "India."

Histological structure introduced. "*Structure.* Epidermal cells polygonal, with straight walls and frequently containing mucilage; stomata numerous, broadly elliptical, mostly 0.020 to 0.035 mm. long, usually bordered by 2 neighbor-cells with their long axes parallel with that of the stoma, and rarely, though more frequently in Alexandria Senna, a third epidermal cell at the end of the stoma; hairs non-glandular, 1-celled, conical, often curved, with thick papillose walls, from 0.100 to 0.350 mm. long; palisade cells in a single layer underlying both surfaces; calcium oxalate in rosette aggregates in the mesophyll parenchyma and in 6 to 8 sided prisms in crystal fibers, surrounding the conducting tissues of the veins."

Size of calcium oxalate crystals changed. "Free calcium oxalate rosettes and prisms 0.010 to 0.020 mm. in length."

Serpentaria.—Ash standard introduced in rubric. "Serpentaria consists of not more than 10 per cent. of its stems or other foreign organic matter; and yields not more than 10 per cent. of acid-insoluble ash."

Powder description introduced. "*Powder.* Grayish brown; starch grains numerous, single and 2- to 4-compound, the individual grains more or less spherical or plano-convex, frequently with a central cleft and from 0.003 to 0.018 mm. in diameter; lignified elements numerous, consisting of tracheae, wood-fibers, medullary ray cells and pith cells; occasionally a few non-glandular hairs from the stem."

Sinapis Nigra.—Botanical origin in definition—"Black Mustard is the ripe seed of *Brassica nigra* (Linné) Kock and *Brassica juncea* (Linné) Cosson and varieties related to these species (Fam. *Cruciferae*)."

Standard based on amount of volatile oil of mustard now given in rubric. "Black Mustard consists of not more than 5 per cent. of other seeds or other foreign organic matter; and yields not less than 0.6 per cent. of volatile oil of mustard (calculated as allylisothiocyanate)."

Stramonium.—Rubric changed—"Stramonium contains not more than 3 per cent. of stems over 8 mm. in diameter and yields not more than 4 per cent. of acid-insoluble ash."

Size of leaves eliminated.

Histological description included. "*Structure.* Upper epidermis of thin-walled cells, with few stomata and trichomes; palisade, 1-rowed, and resting upon a single row of small parenchyma cells extending through the middle of the blade, nearly every cell of the layer containing a rosette aggregate of calcium oxalate; spongy parenchyma loosely arranged; lower epidermis similar to the upper but more uneven and with more stomata, the latter slightly elevated and with guard cells nearly circular in outline and distinctly beaked. At the midrib and larger veins, epidermis walls thickened; a characteristic ridge of collenchyma just beneath the upper epidermis, large, rounded parenchyma cells with intercellular spaces; a bicollateral radial vascular structure with narrow, medullary rays; calcium oxalate in the form of prisms, rosette aggregates and sphenoidal crystals."

"Maximum size of crystals now 0.025 mm. in diameter."

Strophanthus.—Size of seeds now given. "*Strophanthus Kombe.* Oblong-lanceolate, flattened and obtusely edged; 8 to 25 mm. long, 2.5 to 5 mm. broad and 0.5 to 2 mm. thick.

"Size of starch grains 0.004 to 0.008 mm. in diameter."

Tragacantha.—No change.

Ulmus.—Histological structure now given. "*Structure.* Bast fibers in small bundles arranged in numerous tangential rows alternating with rows of mucilage cells, the latter from 0.100 to 0.400 mm. in diameter; medullary rays 4 to 6 cells wide and bearing starch; sieve containing elongated tapering cells with porous walls and parenchyma cells containing starch or prismatic monoclinic crystals or twin crystals of calcium oxalate, the crystal cells frequently so elongated and the crystals superimposed as to form short, non-lignified crystal-fibers."

Size of crystals increased. "Calcium oxalate prisms 0.010 to 0.035 mm. long. Size of starch grains increased, usually 0.003 to 0.015 mm."

Uva Ursi.—Size stomata increased. "Stomata about 0.040 mm. in length."

Size of crystals increased. "Monoclinic prisms, from 0.006 to 0.030 mm. in diameter."

Valeriana.—Ash standard changed—"Valerian yields not more than 10 per cent. of acid-insoluble ash."

Veratrum Viride.—Ash standard introduced—"Veratrum Viride contains not more than 5 per cent. of stems or other foreign organic matter; and yields not more than 4 per cent. of acid-insoluble ash."

"Structure of endodermal cells. Endodermal cells with inner and radial walls thickened and slightly lignified; U-shaped cavity about one-third the cell width."

Zingiber.—Definition limited to Jamaica and African varieties. "Ginger is the dried rhizome of *Zingiber officinale* Roscoe (Fam. *Zingiberaceae*), known in commerce as Jamaica Ginger or African Ginger."

Rubric changed—"Jamaica Ginger yields not less than 15 per cent. of cold water extract. African yields not less than 12 per cent. of cold water extract."

Histological description introduced. "*Structure.* Chiefly thin-walled, starch-bearing parenchyma cells; numerous scattered secretion cells and small vascular bundles; the latter very numerous adjacent to the inner face of the narrow endodermis secretion cells, similar in size and shape to the parenchyma cells and with yellowish or orange-colored oil or oleo-resin or reddish-brown resin; vascular bundles collateral, with a few tracheae, small phloem cells and usually accompanied by fibers lying on the inner face or completely surrounding the vascular tissues; cork of several or many rows of cells in African Ginger."

HOUSE OF DELEGATES, AMERICAN PHARMACEUTICAL ASSOCIATION.

ABSTRACT OF THE MINUTES OF THE SESSIONS HELD IN KENILWORTH INN, ASHEVILLE, N. C., SEPTEMBER 4–7.

The first session of the House of Delegates with the first General Session of the American Pharmaceutical Association is reported in the October number of the JOURNAL A. PH. A., p. 893 *et seq.* The report of the Recording Secretary, Wm. B. Day, is printed on pp. 897–899. The address of Chairman Evander F. Kelly will be found on pp. 882–883 and the report of the Committee on Resolutions in brief is printed on pp. 906–909; see also pp. 1009, 1016, etc.

SECOND SESSION.

The second session of the House of Delegates was called to order by Chairman E. F. Kelly at 2:00 P.M., Wednesday, September 4. He announced that the address of the Chairman had been read at the first session and also the report of the Recording Secretary, and that a committee would be appointed later to consider these.

The next order of business was roll-call. The Recording Secretary stated that the names of delegates would be read according to the credentials submitted by the officers of the respective states. If any changes are necessary, these should be promptly reported. The California delegates were announced as Bruce Philip, Laird J. Stabler and A. R. Maas. The Secretary stated that William D. Jones, Townes R. Leigh and D. W. Ramsaur were present from Florida and that Curtis P. Gladding was in attendance from Connecticut.

The Chairman advised that delegates from departments of the U. S. Government had the privileges of the floor and of the meeting.

The reading of the list of delegates was dispensed with.*

Major von Zelinski of the U. S. Army was introduced. He stated that he was a pharmacist and felt honored to have known many who were and are active in the Association, and then spoke, in part, as follows:

"The Surgeon General is very desirous of having the coöperation of the American pharmaceutical profession in the building up of a reserve corps of pharmacists in the Army. It is the first time in the history of the Army that there has been a definite policy as to the members of the American Pharmaceutical Association who give all or part of their time to the National Army, the National Guard or the Organized Reserves. The Organized Reserves are made up of officers with a personnel taken from the various professions, like the dental, pharmaceutical, medical, engineering and many others.

"There are commissions available for graduate pharmacists in the Medical Administrative Corps; it is a part of the Medical Department just the same as the Medical Corps, and the Veterinary Corps, and the Dental Corps. It is proposed that we will secure the services or coöperation of pharmacists through this corps. The Administrative Corps has to do with the handling of medical supplies, the administrative work in hospitals—base and evacuation hospitals and other activities and departments of the Medical Department of the Army. The idea is to have the graduate pharmacists supplied with staff commissions who will get into this Administrative Corps. In order for the graduate pharmacist to get into this Corps and secure one of these commissions, application is usually made to the headquarters of the corps area.

* See list at end of these minutes.