Nepeta

Nep'eta Cata'ria, Cataria, Catnep, Catmint, N.F.—The dried leaves and flowering tops with not more than 5 p. c. of stems over 4 Mm. ($\frac{1}{6}$′) thick, or other foreign organic matter; Asia, Europe, naturalized in United States. Perennial herb, .6–1 M. (2–3°) high: Top 10–20 Cm. (4–8′) long, branched, crushed and broken; stems quadrangular, downy; leaves opposite, 2–7 Cm. ($\frac{4}{5}$–3′) long, ovate, cordate, acute, crenate, gray-green, hairy; flowers small, spikes, calyx tubular, 5-toothed, corolla whitish, purple-dotted, bilabiate, crenulate; odor faintly aromatic, mint-like; taste bitter, pungent, aromatic. Powder, grayish-green—parenchyma, palisade tissue with green plastids, numerous non-glandular hairs, glandular hairs, stomata, few collenchyma and lignified wood-fiber bundles; solvent: diluted alcohol; contains volatile oil, bitter principle, tannin, gum, fixed oil, ash 16 p. c. Carminative, stimulant, tonic, diaphoretic, emmenagogue, antispasmodic, aphrodisiac (cats); hysteria, chlorosis, colic, amenorrhea, toothache. Dose, gr. 15–60 (1–4 Gm.); 1. *Fluidextractum Catariæ* (43 p. c. alcohol), dose, ʒss–1 (2–4 cc.): Prep.: 1. *Elixir Catariæ et Fœniculi*, 10 p. c., + ol. fœnic. $\frac{1}{5}$, ol. menth. vir., $\frac{1}{10}$, sod. bicarb. $1\frac{3}{4}$, alcohol 15, syrup 20, aq. dest. q. s. 100, dose (infant), ♏x–30 (.6–2 cc.).

Nicotiana

Nicotia'na Tabac'um, Tabacum, Tobacco.—The commercial dried leaves, U.S.P. 1820–1890; C. and S. America (cultivated). Coarse robust annual, 1–2 M. (3–6°) high; stem erect, unbranched, solid, green, hairy; root long, fibrous; flowers rose-color, calyx bell-shaped, hairy, viscid, corolla 4–5 Cm. ($1\frac{3}{5}$–2′) long, tubular, inflated; fruit ovate capsule, 2.5 Cm. (1′) long, opening at summit; seed many, reniform, reticulate, brownish. Leaves, about .5 M. (20′) long, 10–15 Cm. (4–6′) wide, ovate-lanceolate, acute, entire, waved, brown, friable, hairy; odor heavy, peculiar; taste nauseous, bitter, acrid. Plant not known to be wild, and leaves in curing undergo a sweating process (chemical change) by which odor is modified through generation of a new volatile principle, and amount of nicotine decreases owing to its volatility; contains nicotine .7–5–11 p. c. (colorless oily liquid), nicoteine (nicotia) 2 p. c., nicotelline, nicotimine, pirolidine (?), nicotianin (tobacco camphor), tannin, resin, gum, malates, citrates, ash 14–18–27 p. c. (Ca, K, NH_4—phosphates, sulphates, malates, chlorides, nitrates); solvents: alcohol, hot water. Narcotic, sedative, diuretic, emetic, myotic, diaphoretic, cathartic, antiseptic; first stimulates (causing convulsions) then paralyzes motor nervous system (spine), produces vomiting, purging, collapse, contracted pupils, depressed then increased heart action (rapid, feeble pulse), cold extremities, death by paralysis of respiration and heart; excessive use causes dyspepsia, diminished sexual power, nervousness, angina pectoris, and in the young impairs body nutrition. So severe as to be little employed as a medicine, but may be used to relax spasms, relieve local pain, constipation, spasmodic asthma, tetanus, as an enema in intussusception,

Nicotiana Tabacum.

strangulated hernia, impacted cecum, hemorrhoids, scabies, strychnine poisoning. *Poisoning:* By tobacco or nicotine, give tannin, emetics, then strychnine (physiological antidote), alcohol, ammonia, digitalis, belladonna, iodides, artificial respiration, maintain recumbent position; tobacco heart (cardiac irregularity and palpitation)—abandon use. The toxic effect of tobacco smoke is mostly due to nicotine, but there are present collidine, pyridine, picoline, ethylamine, acids, etc. Dose, gr. $\frac{1}{2}$–3 (.03–.2 Gm.); wine (vinum), 10 p. c., ♏v–60 (.3–4 cc.); enema tabaci, 5 p. c.; Oleum Tabaci, U.S.P. 1850–1870 (from distilling leaves—acrid, poisonous, dark brown oily liquid); aqueous extract, fluidextract, infusion, ointment, poultice. *N. rus'tica, Wild Tobacco,* and *N. quadrival'vis,* Canada, E. United States. *N. repan'da,* Cuba. *N. Per'sica,* Persia. *N. rustica,* cultivated in Turkey, India, etc. All may be used similarly.

Olea

OLEA. OLIVE.

Oleum Olivæ. Olive Oil, *U.S.P.*

Olea europæa, *Linné.* } A fixed oil obtained from the ripe fruit.

Plant.—When wild a branched, thorny shrub; under cultivation a tree 3–9 M. (10–30°) high, resembling white willow; bark grayish-white; leaves 5–6 Cm. (2–$2\frac{2}{5}$′) long, lanceolate, acute, entire, coriaceous, glabrous, upper side glaucous-green, the lower silvery-white; flowers many, small, creamy-white, diandrous, racemes; fruit drupe, 12–25 Mm. ($\frac{1}{2}$–1′) long, ovoid, pointed, olive-green then deep purple, sarcocarp firm, fleshy, internally greenish and filled with oil; stone (putamen) thick, bony, ovoid, 1-seeded.

Olea europæa.

Constituents.—Fruit (sarcocarp): Fixed oil 70 p. c., water 25 p. c.

Oleum Olivæ. Olive Oil.—It is a pale yellow, light greenish-yellow, oily liquid, slight peculiar odor and taste, faintly acrid after-taste; slightly soluble in alcohol, miscible with ether, chloroform, carbon disulphide; sp. gr. 0.915; cooled from 10–8° C. (50–46° F.) somewhat cloudy from separation of crystalline particles, at 0° C. (32° F.) forms whitish, granular mass; contains olein 70 p. c., linolein 6 p. c., palmitin and arachin 28 p. c., phytosterin (unsaponifiable matter, once thought to be cholesterin), chlorophyll (from fruit, imparting greenish color). *Tests:* 1. Mix in test-tube 5 cc. with 5 cc. of equal vols. of

amyl alcohol and carbon disulphide, containing 1 p. c. of precipitated sulphur in solution, immerse to one-third its depth in boiling, saturated aqueous sodium chloride solution—no reddish color in 15 minutes (abs. of cottonseed oil). 2. Mix 2 cc. with 1 cc. of hydrochloric acid containing 1 p. c. of sucrose, shake half a minute, let stand 5 minutes, add 3 cc. of distilled water, shake—acid layer shows no pink color (abs. of sesame oil). Should be kept cool, in well-closed containers. Dose, adult, ʒss–1 (15–30 cc.), when for gall-stones ʒviij–16 (240–480 cc.); infant, ʒj–2 (4–8 cc.), in emulsion.

ADULTERATIONS.—Chiefly cottonseed oil, also peanut, poppy, rape, and sesame oils, etc., rarely less than 25 p. c.; all of these congeal at much lower temperature, and do not solidify when shaken with mercuric nitrate (12), as does pure olive oil.

Commercial.—Tree is grown successfully in California, but our supply of oil comes solely from Europe, it being obtained by crushing ripe fruit short of the putamen, subjecting marc, in coarse bags, to strong pressure, and running oil into vessels containing water, from which, after a few days subsidence, it is skimmed, thus constituting the first grade, *huile vierge—virgin oil;* the press-cakes are taken from the bags, finely broken up with hot water, and subjected to greater pressure, thereby removing both water and oil, the latter being drawn off from the surface, constituting *second-grade oil;* the remaining marc contains 9–12 p. c. of oil, which may be extracted by carbon disulphide, or by mixing with hot water in cisterns (enfer), and allowing partial fermentation, yielding on the surface a disagreeably smelling oil, *huile d'enfer;* sometimes inferior fruit is allowed to ferment in heaps or vats, giving by expression also an inferior oil, *huile fermentée.* In order to combine perfume, fineness, and sweetness the oil must be from fruit slightly ripe, and then stored 6–8 months, until the strong flavor has disappeared; it enters commerce in bottles, jugs, and barrels, under the brands: Provence, Florence, Gallipoli, Spanish, Sicily—the best from S. France, the most from Italy (one-half), and Spain (one-fifth).

PREPARATIONS.—1. *Sapo.* Soap. (Syn., Olive Oil Castile Soap, Sodium Oleate; Br. Sapo Durus, Hard Soap; Fr. Savon Médicinæ, Savon blanc d'Espagne; Ger. Sapo medicatus—(hispanicus), Medizinische Seife, Seife, Spanische Seife.)

Manufacture: Olive oil and sodium hydroxide are boiled together until saponified—$C_3H_5(C_{18}H_{33}O_2)_3 + 3NaOH = 3NaC_{18}H_{33}O_2$ (hard soap) $+ C_3H_5(OH)_3$. It is a white, whitish solid (in bars), hard, yet easily cut when fresh, or a fine, yellowish-white powder, faint, characteristic odor, free from rancidity, disagreeable, alkaline taste; soluble in water, alcohol, more readily with heat; aqueous solution alkaline. *Impurities:* Water, soap from animal fats, sodium hydroxide, sodium chloride, sodium carbonate, silica, metallic and other alcohol-insoluble substances.

Preps.: 1. *Linimentum Saponis.* Soap Liniment. (Syn., Lin. Sapon., Liquid Opodeldoc, Tinctura Saponis Camphorata, Spiritus Nervinus Camphoratus; Fr. Liniment savonneux camphré; Ger. Linimentum saponato-camphoratum, Opodeldok.)

Manufacture: 6 p. c. Dissolve camphor 4.5 Gm., oil of rosemary 1 cc. in alcohol 70 cc., add soap 6 Gm., water q. s. 100 cc.; agitate until soap dissolved, set in cool place for 24 hours, filter; used externally.

Preps.: 1. *Linimentum Chloroformi,* 70 p. c. 2. *Linimentum Aconiti et Chloroformi, N.F.,* 75 p. c.

2. *Extractum Colocynthidis Compositum,* 15 p. c. 3. *Pilulæ Aloes,* 2 gr. (.13 Gm.). 4. *Pilulæ Asafœtidæ,* 1 gr. (.06 Gm.). 5. *Dentifricium, N.F.,* 5 p. c. 5. *Emplastrum Saponis, N.F.,* 10 p. c. 7. *Lavatio Ori, N.F.,* 6 p. c., + gluside $\frac{1}{5}$ p. c., fuchsin $\frac{1}{500}$, ol. cinnam., ol. menth. pip., āā, $\frac{1}{2}$, ol. caryoph. 1, alcohol 75, water q. s. 100. 8. *Linimentum Saponato-Camphoratum,* Solid Opodeldoc, *N.F.,* sod. carb. monohyd. 1 Gm., acid. stear. 5, camphor 2.5, water 10 cc., ol. thymi .3, ol. rosmar. .6, aq. ammon. 5, alcohol q. s. 100. 9. *Pilulæ Aloes et Asafœtidæ, N.F.,* $1\frac{1}{2}$ gr. (.09 Gm.). 10 *Pilulæ Rhei, N.F.,* 1 gr. (.06 Gm.).

2. *Emplastrum Plumbi Oleatis,* q. s. 3. *Curatio Paraffini, N.F.,* 3 p. c. 4. *Emplastrum Fuscum Camphoratum, N.F.,* 60 p. c. 5. *Linimentum Calaminæ, N.F.,* 50 p. c. 6. *Oleum Phenolatum, N.F.,* 95 p. c. 7. *Unguentum Fuscum, N.F.,* 25 p. c.

Unoff. Preps.: Compound Pill of Soap (Br.), 60 p. c., + opium 20, syrup of glucose 20, dose, gr. 2–4 (.13–.26 Gm.). *Curd Soap* (Br.).

PROPERTIES.—Nutritious, demulcent, emollient, laxative, protection to mucous membrane against acrid or poisonous substances; it increases secretion of bile, peristalsis, and dissolves cholesterin, the chief constituent of gall-stones. Like other oils, it is partly emulsified and saponified in the intestines, its glycerin being set free, and fatty acid combining with free alkalies to form soap, which with the emulsion forms molecular basis of the chyle; it enters the blood through the lacteals, being finally oxidized into carbon dioxide and water. Soap has same properties.

USES.—Gall-stones, cantharides and other poisoning, infantile constipation in enema. Externally—burns, skin inflammations, to protect from air, insect-bites, stings, bruises, sprains, wounds, engorged mammæ, rectal ascarides; facilitates removal of crusts, scales, etc., and introduction of bougies, catheters, pessaries, sounds, specula; to lubricate machinery, in making liniments, plasters, cerates, ointments, etc.

Allied Products:

1. *Olive Gum, Lecca Gum.*—Resinous substance which exudes spontaneously from the trees. 2. *Leaves* and *young bark;* used externally as astringents, antiseptics; internally as tonics in intermittents. 3. *Olive Wood;* has beautiful veins, pleasant odor, capable of fine polish, highly esteemed for backs of brushes, boxes, and in cabinet-work. 4. *Olive Fruit;* as a dessert—for this the unripe fruit is steeped repeatedly in water containing lime and ashes, or solutions of NaOH and NaCl, then bottled in a slightly aromatic, concentrated salt solution; the small French or Provence and the large Spanish olives, "Queen olive," are used for this purpose. Ripe olive, Cal.—purplish-black; oil 50 p. c.; aperient.

Opopanax

Opop'anax Opopanax (Chiro'nium).—S. Europe. Root and stem exude yellowish milk, hardening into reddish-brown tears, having a waxy luster, and a bitter, balsamic taste.

Origanum

Orig'anum vulga're, Wild Marjoram.—The herb, U.S.P. 1820–1850; 1870–1880; Asia, Europe, N. Africa, naturalized in N. America. Perennial herb, .3–.5 M. (12–18′) high; stem square, purplish, downy; leaves 2.5 Cm. (1′) long, ovate, entire, pellucid-punctate, hairy beneath, flowers pale purple, calyx 5-toothed, corolla 2-lipped, 4 exserted didynamous stamens, aromatic, pungent, bitter; contains volatile oil 1 p. c., bitter principle, resin, tannin. *Oleum Origani*, U.S.P. 1820–1850, 1870; consists mainly of terpene, $C_{10}H_{16}$. Carminative, stimulant, emmenagogue, diaphoretic, tonic, fomentation; dyspepsia, indigestion, nausea, colic, rheumatism, neuralgia; in infusion. Dose, gr. 15–60 (1–4 Gm.); oil used in liniments, carious teeth, flatulence, ♏v–10 (.3–.6 cc.). The closely allied *Origanum Majora'na, Sweet Marjoram*, is cultivated largely, being used as a condiment in cooking.

Ourouparia gambir GAMBIR. GAMBIR, *U.S.P.*

Ourouparia Gambir, *(Hunter) Baillon.* { The dried aqueous extract prepared from the leaves and twigs, yielding not less than 70 p. c. water-soluble extractive, nor less than 60 p. c. alcohol-soluble extractive.

Habitat. E. India Islands.

Syn. Gambier, Terra Japonica; Br. Catechu, Catechu Pallidum, Pale Catechu; Fr. Gambir cubique; Ger. Gambir Catechu, Gutta Gambir.

Ou-rou-pa'ri-a. Native name—*y-ourou-pari*, a Carib. name of the type species, fr. Gr. *οὐρα*, a tail, tailed +,— *i. e.*, the seed.

Gam'bir. Native Malayan name of the extract.

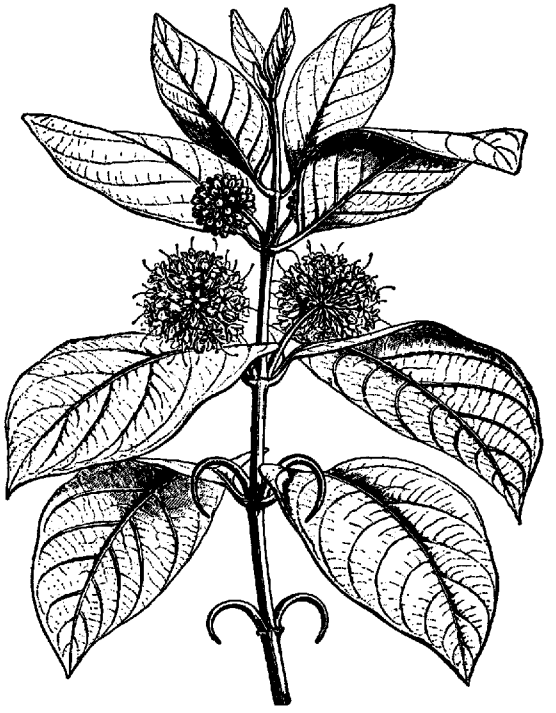
PLANT.—Strong shrubby climber, stem woody, often angular; leaves oblong-ovate, 7.5–10 Cm. (3–4′) long, petiolate, acuminate, entire, smooth; flowers small, pinkish, in clusters, calyx and corolla 5-divided, stamens 5, ovary 2-celled; fruit 2.5 Cm. (1′) long, narrow, ovoid tapering at each end, dehiscent, pericarp dry; seed numerous, minute, pale brown, rough, tailed at each end. EXTRACT (gambir), usually in cubical or rectangular masses 20–30 Mm. ($\frac{4}{5}$–$1\frac{1}{5}$′) broad, grayish-, reddish-brown, dull, porous, friable; internally light brown, dark gray color; inodorous; taste bitterish, very astringent. POWDER, light brown—masses of acicular crystals, few starch grains, .005–.030 Mm. ($\frac{1}{5000}$–$\frac{1}{833}$′) broad, epidermal fragments, few thick-walled, wavy non-glandular hairs. *Solvents:* water dissolves 65 p. c.; alcohol 60 p. c. Dose, gr. 5–30 (.3–2 Gm.).

Commercial.—The extract is made by boiling young leafy shoots in water for 6 hours, with continued stirring and bruising, evaporating decoction to proper consistency, allowing to cool under constant and peculiar stirring; within half an hour the gambir suddenly contracts and thickens, possibly by the sudden crystallization of the catechin. It is allowed to harden in various forms, the purest in thin cakes, flakes, small cubes. Nearly all exported in wooden cases from Singapore.

CONSTITUENTS.—Tannic acid 25–38 p. c., Catechin (catechuic acid) 20–29 p. c., ash 9 p. c.

PREPARATIONS.—1. *Tinctura Gambir Composita.* Compound Tincture of Gambir. (Syn., Tr. Gambir Co., Compound Tincture of Pale Catechu; Fr. Teinture de Gambir; Ger. Gambirtinktur.)

Manufacture: 5 p. c. Similar to Tinctura Cardamomi Composita, page 137—using gambir 5 Gm., cinnamon 2.5; menstruum: diluted alcohol q.s. 100 cc. Dose, ʒss–2 (2–8 cc.).



Ourouparia Gambir: blooming twig with the tendrils.

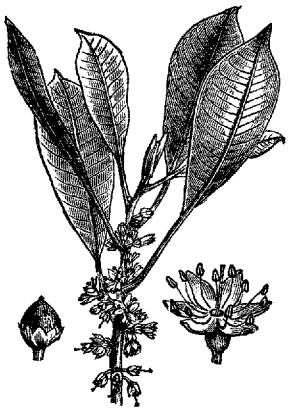
Prep: 1. *Tinctura Opii et Gambir Composita, N.F.*, 6.4 p. c.

Unoff. Preps.: Fluidextract. Infusion. Pulvis Gambir Compositus, 40 p. c., + kino 20, krameria 20, cinnamon 10, myristica 10, dose, gr. 10–45 –.6–3 Gm.). *Troches*, 1 gr. (.06 Gm.), dose, 1 occasionally.

PROPERTIES.—Similar to tannic acid, astringent, tonic. The darker colored product is most powerful, acting more energetically and harshly than kino.

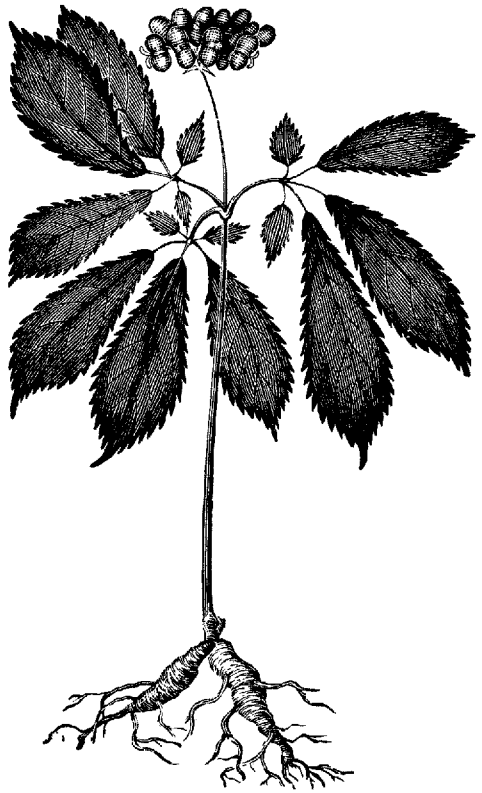
USES.—Diarrhea, leucorrhea, gonorrhea, cough, chronic sore throat, phthisis, bronchitis, hemorrhages, relaxed uvula, ulcerated nipples, chronic ulcers, relaxed oral mucous membrane and spongy gums (mouth-wash). In the arts—calico printing, dyeing, tanning, as an ingredient in boiler compounds to prevent formation of scaly crusts from certain kinds of water.

Palaquium



Palaquium Gutta.

Pala'quium Gut'ta, and *P. oblongifo'lium, Gutta-percha.*—Sapotaceæ. The purified, coagulated, milky exudation, U.S.P. 1860–1880; Malayan Peninsula and Islands, Singapore, Borneo. Tree, 18–21 M. (60–70°) high, .6–1 M. (2–3°) thick; bark reddish-gray; leaves 10–12.5 Cm. (4–5′) long, tomentose, silky beneath; flowers yellowish. Gutta-percha is obtained by incisions, or by felling trees, removing bark, and catching juice in plantain-leaf stalks, palm leaves, or cocoanut shells; it soon coagulates and occurs in yellowish, grayish masses, hard, heavier than water, flexible, plastic at 50° C. (122° F.), decomposes on melting; inodorous; tasteless; soluble in ether, chloroform, oil of turpentine, carbon disulphide; contains gutta, $C_{20}H_{32}$, 80 p. c., fine white powder; fluavil, $C_{20}H_{32}O$, yellow resin; albane, $C_{20}H_{32}O_2$, white resin. Used in surgery for splints, catheters, bougies, specula, pessaries, syringes, etc. *Liquor Guttæ Perchæ,* U.S.P. 1860–1880, 15 p. c., + lead carbonate 17, chloroform q. s. 100; employed as an adhesive and protective agent for wounds, abrasions, skin affections, sore nipples, erysipelas, smallpox, etc.



Panax (Aralia) quinquefolium.

Panax quinquefolium

Pa'nax quinquefo'lium (*Aralia quinquefo'lia*), *Panax, Ginseng.*—The root, U.S.P. 1840–1870; N. America. Small shrub, .3 M. (1°) high, smooth, leaflets 5's, serrate; flowers yellowish, fruit scarlet; root 5–12.5 Cm. (2–5′) long, fusiform, annulate, branched, brownish-yellow, wood yellowish, sweetish, aromatic; contains panaquilon, resin, volatile oil, starch, gum. Stimulant, demulcent, stomachic; infusion, decoction, tincture. The *Chinese Ginseng* (*Aralia Gin'seng*) is very similar to this, slightly larger. Used natively as nervine, aphrodisiac. Dose, ʒss–2 (2–8 Gm.).

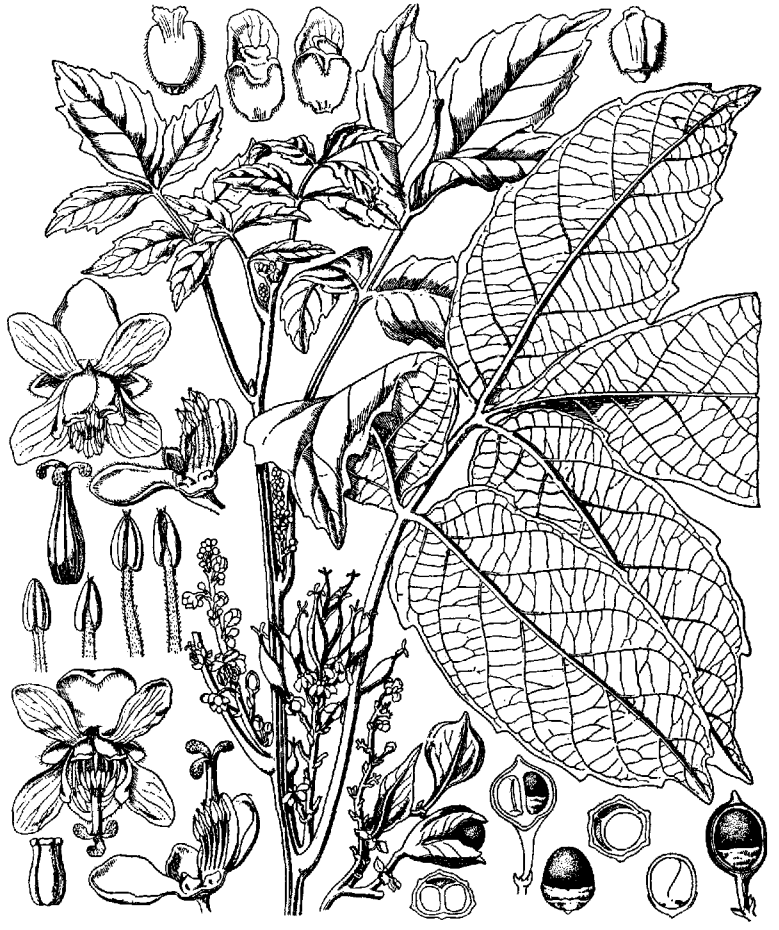
Papaver rhoeas

Papaver Rhœas.

Papaver Rhœas, Rhœados Petala, Red Poppy Petals Br.).—Europe; flowers large, beautiful red, petals mainly used for their coloring matter, which is yielded to water; its milky juice is sedative, demulcent, mild anodyne, probably due to *rhœadine,* also contains two coloring principles—rhœadic and papaveric acids. Syrupus Rhœados (Br.), 26 p. c. Dose, ʒss–1 (2–4 cc.).

Passiflora

Passiflo'ra incarna'ta, Passion Flower (*Vine*), *N.F.*—Passifloraceæ. The dried flowering and fruiting top with not more than 5 p. c. of stems over 8 Mm. (⅓′) thick or other foreign matter; S. United States (Va., N. C.). Slender climbing plant; stems glabrous, pubescent, variable length, 6–8 Mm. (¼–⅓′) thick, striate, woody, hollow; bark thin, greenish, purplish; wood porous, fracture uneven, fibrous; leaves broken, thick, glabrous or pubescent, orbicular, cordate, 3–5-lobed, serrate; many tendrils; flowers yellow, corona purplish, monadelphous in a tube; fruit, many-seeded berry; seed flat, yellowish; odor and taste slight. Powder, light green—non-glandular hairs, pith and wood parenchyma, tracheæ, chlorenchyma and epidermal cells, stomata, calcium oxalate rosettes; solvent: diluted alcohol; contains alkaloid, ash 3–12 p. c. Narcotic, anodyne, nerve sedative; insomnia, restlessness, neuralgia, convulsions, epilepsy, tetanus; burns, hemorrhoids, diarrhea. Dose, gr. 5–10 (.3–.6 Gm.); 1. *Tinctura Passiflorœ,* 20 p. c. (diluted alcohol), dose, ♏x–30 (.6–2 cc.); Inspissated juice of leaves, ʒj–4 (4–15 cc.).



a *b*

Paullinia Cupana: a, leafy branch with flowers; *b*, branch with ripe fruit, ½ nat. size; also male and hermaphrodite flowers, pistil, stamens, and fruit, enlarged.

Paullinia

Paullin'ia Cupa'na, Guarana, N.F.—Sapindaceæ. A dried paste consisting chiefly of the crushed seed, yielding not less than 4 p. c. of caffeine; N. and W. Brazil, Guiana, Venezuela. Woody climbing shrub; leaves imparipinnate; flowers yellowish; fruit size of grape, small horse-chestnut, 6-ribbed, splitting into 3 divisions, exposing 3 rounded brownish seed, size of filberts. Paste (guarana), usually cylindrical sticks 3–5 Cm. (1½–2′) thick, elliptical cakes, dark reddish-brown, hard, heavy; fracture uneven, often fissured in the center; internally pale reddish-brown, coarsely granular; odor slight; taste slightly astringent, bitter. Powder, light pinkish-brown—parenchyma, altered and unaltered starch grains, sclerenchymatous cells with thick yellowish non-lignified walls. *Test:* 1. Place .001 Gm. on slide, + 1 drop of gold chloride T. S., let stand—crystals of caffeine and gold chloride separate in orthorhombic plates and needles; solvent: 75 p. c. alcohol; contains caffeine (guaranine) 3–5 p. c., tannin 26 p. c., resin, volatile oil, fixed oil, catechin, saponin, starch, gum, ash 2–5 p. c. Nervine, stimulant, tonic, astringent—similar to coffee, tea, maté; produces gayety, restlessness, quick perception, wakefulness; slows pulse, impairs appetite, occasions vesical irritation; nervous sick headache (migraine), such as occurs with menstruation and debauch, attended with bloodshot eyes and throbbing head; diarrhea of phthisis, convalescence, general tonic. Native Indians used powder mixed with cassava or chocolate as food, and the grated (filed—1–2 teaspoonfuls) suspended in cold sweetened water (1 cup) as their habitual exhilarating yellow beverage, similar to our coffee and tea, which in excess may cause palsy; however, readily controlled by effort. Dose, gr. 15–60 (1–4 Gm.); 1. *Fluidextractum Guaranæ* (75 p. c. alcohol)—contains 3.6–4.4 p. c. of caffeine, dose, ♏xv–60 (1–4 cc.): Preps.: 1. *Elixir Guaranæ*, 20 p. c., + aromatic elixir 20, comp. elixir of taraxacum q. s. 100; 2. *Elixir Guaranæ et Apii*, 15 p. c., + fldext. celery fruit 15, fldglycer. glycyrrhiz., 3, glycerin 6, elix. aromatic q. s. 100, dose, each, ʒj–3 (4–12 cc.). Extract, gr. 2–5 (.13–.3 Gm.); Infusion, 5 p. c., ℥j–2 (30–60 cc.), Syrup, ʒij–4 (8–15 cc.); Tincture (extract 1, alcohol 30), ʒj–4 (4–15 cc.). *Sapin'dus margina'tus, S. Sapona'ria, Wild China Tree;* S. United States. Fruit, resembling that of azedarach, used as antiperiodic; fruits of many species of this genus substituted for soap—soap berries—in the tropics.

Petroselinum

Petroseli'num sati'vum, Petroselinum, Parsley Fruit, U.S.P. 1910.—The dried ripe fruit with not more than 5 p. c. of foreign seeds and other matter; S. Europe, Asia Minor, United States, cultivated in gardens universally. Annual herb, .6–1.2 M. (2–4°) high, stem furrowed, jointed; root biennial, conical 15 Cm. (6′) long, 12 Mm. (½′) thick, annulate, yellowish. Fruit, cremocarp, ovoid-crescent-shaped, 2–3 Mm. (1/12–⅛′) long, grayish-brown, brownish on aging, mericarps 2, separate, each with 5 filiform prominent ribs, commissural surface with 2 vittæ, dorsal 1–2 vittæ, endosperm large, oily; odor and taste characteristic, aromatic, especially when bruised; solvents: alcohol, water partially; contains volatile oil 5–6 p. c., apiol (white crystals), resin, fixed oil, 12 p. c., cariol, apiin, apiolin (greenish liquid), tannin, mucilage, ash 7 p. c. Diuretic, stimulant, emmenagogue, carminative, antiperiodic, insecticide, germicide; nephritis, cystitis, dropsy, amenorrhea, dysmenorrhea (beginning 3–4 days before the molimen); fresh juice in intermittents; root used similarly. Dose, gr. 10–30 (.6–2 Gm.). *Apiol,* gr. 3–8 (.2–.5 Gm.); *Oleoresin,* ♏v–15 (.3–1 cc.).

Physostigminæ Salicylas. Physostigmine Salicylate, $C_{15}H_{21}O_2N_3.C_7H_6O_3$, *U.S.P.*

Physostigma venenosum, *Balfour.* { The salicylate of an alkaloid obtained from the dried ripe seed.

Habitat. W. Africa (near mouths of Niger and Old Calabar Rivers, in the Gulf of Guinea); introduced into India and Brazil.

Syn. Calabar Bean, Ordeal Bean, Chop Nut, Split Nut; Physostigmatis Semina; Fr. Féve de Calabar; Ger. Faba Calabarica, Kalabarbohne; Physostig. Salicyl., Eserine Salicylate; Fr. Salicylate d'Esérine; Ger. Physostigminum salicylicum, Physostigminsalicylat.

Phy-so-stig'ma. L. fr. Gr. φύσα, a bladder, + στίγμα, stigma—*i. e.*, stigmatic appendage is hollow and inflated.

Ven-e-no'sum. L. *venenosus*, full of poison, poisonous—*i. e.*, plant's property.

Cal'a-bar Bean—i. e., bean from the Calabar district on W. African coast.

PLANT.—Woody, perennial climber; stem 12–15 M. (40–50°) long, 5 Cm. (2′) thick, smooth; root spreading; leaves large, pinnately trifoliate, leaflets 7.5–15 Cm. (3–6′) long, ovate pointed; flowers purplish, racemes; fruit June–Sept., legume 10–17.5 Cm. (4–7′) long, compressed, pale brown, 2-valved, dehiscent, inside woolly, 2–3-seeded. Seed, oblong, ellipsoidal, somewhat compressed reniform, 15–30 Mm. ($\frac{3}{5}$–$1\frac{1}{5}$′) long, 10–15 Mm. ($\frac{2}{5}$–$\frac{3}{5}$′) broad, 12 Mm. ($\frac{1}{2}$′) thick, reddish, chocolate-brown, smooth, brownish-black groove, 2 Mm. ($\frac{1}{12}$′) wide, extending almost the entire length of convex edge, margins of seed-coat on both sides of the groove somewhat elevated, brownish-red and

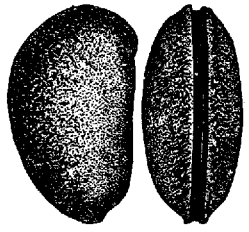
Physostigma venenosum.

thickened; 2 concavo-convex cotyledons; taste at first starchy, afterward acrid. Powder, grayish-white—numerous starch grains, fragments of seed-coat with thick cells resembling stone cells, occasional fragments with tracheæ. Embryo 72 p. c., integuments 28 p. c., the former when moistened with potassium hydroxide T. S.—pale yellow; solvent: alcohol. Dose, gr. 1–4 (.06–.26 Gm.).

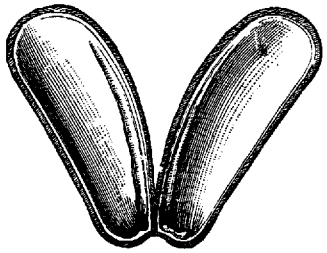
ADULTERATIONS.—*P. cylindrosper'ma*, seed 4 Cm. ($1\frac{3}{5}$′) long, nearly cylindrical, groove and hilum shorter, not extending quite to the end; *En'tada scan'dens*, seed round, flat, 5 Cm. (2′) broad (poisonous), also *Elæ'is guineen'sis, Oil Palm Seed*, and seeds of *Mucuna* species, none of which resemble Calabar bean.

Commercial.—Plant first noticed medicinally in 1846, and, except ligneous stem, resembles our String and Lima Beans (*Phase'olus multiflo'rus* and *P. luna'tus*), preferring banks of streams into which the fruit often falls only to be dispersed and conveyed to settlers more or less remote.

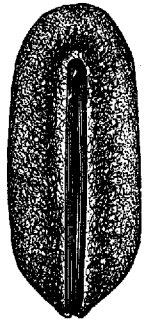
CONSTITUENTS.—Physostigmine (eserine) .1 p. c., eseridine, physovenine (strong myotic), eseroline, eseramine, $C_{16}H_{25}O_3N$ (crystalline physiologically inactive), calabarine (liquid, not yet obtained pure, antagonistic to physostigmine, tetanic, may cause diarrhea and convulsions, soluble in alcohol, water, insoluble in ether), phytosterin—separable into sitosterin 80 p. c., stigmosterin 20 p. c., which crystallizes with 1 molecule of H_2O, inactive, starch 48 p. c., proteins (albumin) 23 p. c., gum, fat, ash 3–4 p. c.



Physostigma: view from the side and edge, showing length of hilum.



Physostigma split, showing cotyledons.



Physostigma cylindrosperma.

Physostigmine, $C_{15}H_{21}O_2N_3$.—Chiefly in embryo; claimed to be a reduction product of geneserine, $C_{15}H_{21}O_3N_3$, and is obtained by mixing powdered bean with 1 p. c. of tartaric acid, exhausting with alcohol, evaporating, treating residue with water, agitating filtrate with ether to remove color, adding sodium bicarbonate, shaking with ether, evaporating, getting colorless, amorphous physostigmine; hygroscopic, liquefies at 45° C. (113° F.), tasteless, soluble in alcohol, ether, chloroform, benzene, carbon disulphide, slightly in water; forms salts (benzoate, citrate, hydrobromide, hydrochloride, nitrate, etc.). With alkalies or chlorinated lime yields red *rubreserine;* with sulphuric acid gives yellow, then olive-green. Dose, gr. $\frac{1}{120}$–$\frac{1}{60}$ (.0005–.001 Gm.).

Physostigminæ Salicylas. Physostigmine Salicylate, $C_{15}H_{21}O_2N_3.C_7H_6O_3$, *U.S.P.*—Obtained by neutralizing alcoholic or ethereal solution of

physostigmine with salicylic acid, allowing to crystallize; it is in colorless, faintly yellow, shining crystals, odorless, acquiring red tint on cold, saturated aqueous solution neutral or faintly acid, usually pink on standing. *Tests:* 1. Aqueous solution with ferric chloride T. S.—deep violet color; solution of .1 Gm. + 2 cc. of sulphuric acid—not darker than yellow within 5 minutes (abs. of readily carbonizable substances). 2. Evaporate .005 Gm. to dryness with a few drops of ammonia T. S.—blue residue, which dissolved in alcohol, + acetic acid in excess—red, fluorescent solution; cold saturated solution 5 cc., + few drops of sodium hydroxide T. S.—pink color rapidly develops; incinerate .1 Gm.—ash negligible. *Impurities:* Sulphate, readily carbonizable substances. Should be kept dark, in small, well-closed containers. Dose, gr. $\frac{1}{120}$–$\frac{1}{60}$ (.0005–.001 Gm.).

Eseridine, $C_{15}H_{22}O_3N_3$.—By some thought to be calabarine, is a derivative of physostigmine, from which it differs by containing H_2O, and into which it can be converted by dilute acids; obtained from its mother-liquor by precipitating with lead subacetate and ammonia, evaporating filtrate, treating residue with alcohol, precipitating with phosphotungstic acid, decomposing with baryta; occurs in 4-sided crystals, soluble in alcohol, chloroform, ether, acts similar to physostigmine. Dose, gr. $\frac{1}{20}$–$\frac{1}{10}$ (.003–.006 Gm.).

PREPARATIONS (Unoff.). SEED: *Extract*, gr. $\frac{1}{10}$–$\frac{1}{2}$ (.006–.03 Gm.), *Tincture*, 10 p. c. (alcohol), ♏v–20 (.3–1.3 cc.). *Lamellæ Physostigminæ* (Br.—sulphate), $\frac{1}{1000}$ gr. (.00006 Gm.).

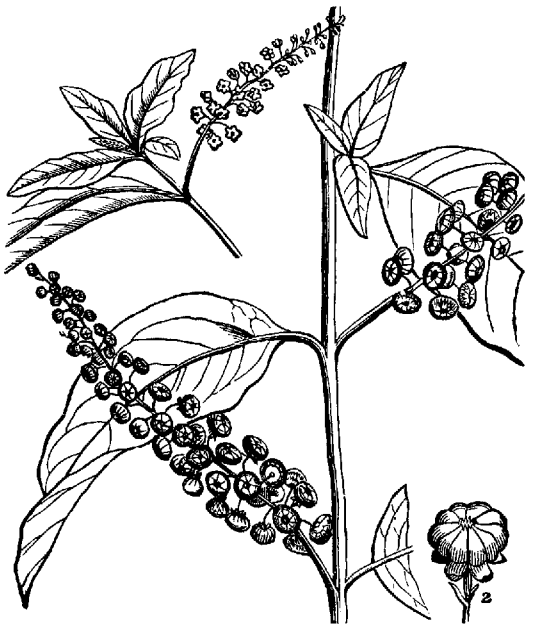
PROPERTIES.—Sedative, myotic, motor depressant, paralyzant, emetic, purgative, diaphoretic, sialagogue, poisonous. Stimulates salivary, gastric, and intestinal secretions, peristalsis, acting directly upon the unstriped muscle-fibers, quickens breathing, then retards it, heart becomes slow and irregular, but more powerful, finally feeble and ceasing altogether, depresses, ultimately paralyzes spinal cord reflex, and motor centers.

USES.—Tetanus, chorea, epilepsy, progressive paralysis, tonic convulsions, gastralgia, strychnine and atropine poisoning, constipation (combined with belladonna and nux vomica). Externally—in neuralgia, muscular rheumatism, malignant tumors. Physostigmine salicylate ($\frac{1}{2}$ p. c. in water, few drops into eye) for breaking up ocular adhesions (iris, cornea, lens), lessen intra-ocular tension, iritis, corneal ulcers, prolapsed iris, paralysis of the iris accommodation following diphtheria, glaucoma. In Africa as *ordeal bean* of Calabar for punishing criminals and for witchcraft, the accused having to eat them until they vomit or die: if former, innocent; latter, guilty (?). A paste of 20 seed will kill.

Poisoning: Have nausea, giddiness, abdominal pain, indistinct vision, diminished heart action, muscular tremors and weakness, then complete relaxation, retarded respiration, motor paralysis, sphincters contract, cold extremities, skin covered with cholera-like sweat. Conscious until death, which is caused by carbon dioxide narcosis, and paralysis of the respiratory centers and heart-muscle. Evacuate stomach (emetics, pump); give atropine (physiological antidote) hypodermically, gr. $\frac{1}{30}$ (.002 Gm.); tannin, chloral hydrate (spine), strychnine, diffusible stimulants, coffee, ammonia, digitalis, alcohol, artificial heat and respiration, electricity. Empty bladder often (catheter), as the drug is eliminated by kidneys (bile and saliva), and urine becomes poisonous.

Incompatibles: Vegetable astringents, tannin, caustic alkalies, atropine, chloral hydrate, motor and tetanizing excitants.

Synergists: Motor depressants, conium, gelsemium, amyl nitrite, etc.



Phytolacca americana: 2, single fruit, showing carpels.

Phytolacca

Phytolac'ca america'na, Phytolacca, Poke Root, N.F.—Phytolaccaceæ. The dried root with not more than 5 p. c. of stem-bases nor 2 p. c. of other foreign organic matter; N. America, waste places. Perennial herb, 1.3–2.5 M. (4–8°) high, stem annual, 2.5–5 Cm. (1–2′) thick, purplish, hollow; leaves 12.5 Cm. (5′) long, ovate, smooth, rich-green, entire; flowers greenish-white, racemes; fruit purplish berry, 8 Mm. ($\frac{1}{3}$′) thick, 10-seeded, juice purplish-red. Root, cylindrical, 3–7 Cm. (1–3′) thick, transverse or longitudinal slices, yellowish-brown, longitudinally wrinkled, annulate; internally fibro-vascular tissue and parenchyma, the latter much retracted; odor slight, taste sweetish, acrid. Powder, brownish-yellow, sternutatory—starch grains, calcium oxalate raphides, fragments of parenchyma, tracheæ, cork tissue; solvents: diluted alcohol, boiling water; contains glucoside—active, poisonous, saponin-like—starch, sugar, calcium oxalate (phytolacc-ine, -in, -ic acid). Alterative, laxative, emetic, resolvent,

Phytolacca root: transverse section, natural size.

anodyne, paralyzant; rheumatism, skin diseases, syphilis, ulcers, scabies, eczema, tonsillitis, diphtheria. *Poisoning:* Symptoms and treatment similar to aconite. Dose, alterative, gr. 1–5 (.06–.3 Gm.), emetic, gr. 10–30 (.6–2 Gm.); 1. *Fluidextractum Phytolaccæ* (diluted alcohol), dose, ♏v–30 (.3–2 cc.); 2. *Fluidextractum Trifolii Compositum*, 10 p. c. *Decoction*, 5 p. c., ℥iv–8 (15–30 cc.); *Tincture*, 10 p. c., ♏x–60 (.6–4 cc.). *P. octan'dra*, C. and S. America, and *P. acino'sa*, N. India, are used similarly. All of these furnish young shoots which in spring may be eaten for asparagus, spinach, etc., imparting no odor to urine, but when old none should be taken except in medicinal doses.

Picramnia

Picram'nia pentand'ra (?), *Cascara Amarga, Honduras Bark, N.F.*—The dried bark of an undetermined species with not more than 2 p. c. of foreign organic matter; C. America, Large handsome tree. Bark, quills 50 Cm. (20′) long, 3 Cm. (1⅕′) broad, bark 8 Mm. (⅓′) thick, sometimes broken curved pieces, yellowish-brown, grayish lichens, fissured, reddish-brown when cork removed; inner surface brownish, striated, transverse markings, groups of stone cells, odor faint; taste extremely bitter, persistent. Powder, light brown—groups of bast-fibers, crystal-fibers, calcium oxalate prisms, stone cells, medullary ray tissue and parenchyma, starch grains, brown cork, lignified fibers; solvents: water, diluted alcohol; contains picramnine 3 p. c., starch 2 p. c., ash 4.5 p. c. Alterative, bitter aromatic, agreeable flavor. Dose, gr. 15–30 (1–2 Gm.); 1. *Fluidextractum Trifolii Compositum*, 10.8 p. c.: Prep.: 1. *Syrupus Trifolii Compositus*, 30 p. c.

Picrasma QUASSIA. QUASSIA, *U.S.P.*

Picrasma excelsa, (*Swartz*) *Planchon,*
Quassia amara, *Linné.* } The wood.

Habitat. 1. W. Indies (Jamaica, St. Kitt's, Antigua, St. Vincent. 2. Surinam, W. Indies, Brazil, Guiana, Columbia, Panama.

Syn. Quass., Bitter Wood, Bitter (Ash, Bark) Quassia, Lofty Quassia, Bitterwood Tree; Br. Quassiæ Lignum; Fr. Quassia de la Jamaïque, Bois (amer) de Quassia; Ger. Lignum Quassiæ, Quassiaholz.

Pic-ras'ma. L. fr. Gr. πικρός, bitter—*i. e.*, the plant's chief property.

Quas'si-a. L. fr. *Quassi, Quassy, Quash*, name of Surinam negro slave who used the bark as a secret remedy in curing malignant fevers (febrifuge).

Ex-cel'sa. L. *excelsus*; *ex*, out, + *celsus*, beyond, surpassing—*i. e.*, highest species of the genus.

A-ma'ra. L. *amarus*, bitter—*i. e.*, the intense bitterness of the wood.

PLANTS.—*Picrasma excelsa*, tree 15–24 M. (50–80°) high, .6–1 M. (2–3°) thick, erect, spreading; bark grayish-brown, smooth, wrinkled; leaves imparipinnate, 4–5 pairs; leaflets 5–10 Cm. (2–4′) long, ovate, petiolate, when young covered with fulvous down; flowers, Oct.–Nov., small, yellowish-green, panicles, polygamous; fruit Dec.–Jan., black drupe, size of a pea; *Quassia amara*, small branching tree or shrub; flowers bright red, rather large racemes, hermaphrodite, decandrous; fruit 2-celled capsule, seed globular. WOOD (*P. excelsa*): *Jamaica*, usually in chips, raspings, shavings, occasionally billets 5–20 Cm. (2–8′) thick, yellowish-white, with few light gray pieces somewhat coarsely grained; tracheæ in groups 2–6, medullary rays 1–5 cells wide, 10–20 rows deep, calcium oxalate, starch grains; fracture tough, fibrous; odor slight; taste very bitter; *Q. amara: Surinam*, similar to preceding, but billets usually thinner, tracheæ smaller, single or in pairs, medullary rays 1–2 cells wide, 10–30 rows deep, calcium oxalate crystals few or absent. POWDER, yellowish—fragments of tracheæ, bordered pores; wood-fibers, oblique pores; medullary rays and parenchyma with pores, calcium oxalate 4–6-sided prisms, crystal-fibers, starch grains. *Solvents:* water, diluted alcohol. Dose, gr. 15–60 (1–4 Gm.).

Picrasma excelsa.

Commercial.—Plants resemble our common ash and contribute two varieties: 1, *Jamaica* (*P. excelsa—Quassia* (*Simaruba*) *excelsa*), the larger, and furnishing most of the supply; 2, *Surinam* (*Q. amara*), the smaller and the original source of drug, upon which the slave Quassi established his own and its reputation, being prevailed upon to reveal his secret for compensation, 1756, when the wood was taken to Stockholm and soon became a popular remedy in Europe and elsewhere; owing to scarcity, smallness of plant, and great demand there arose

the necessity of recognizing the larger and more abundant source. The plants are felled, cut into segments, 1–1.2 M. (3–4°) long, 5–20 Cm. (2–8′) thick, and shipped from Jamaica or Surinam with or without the bark, and upon reaching us are turned into cups, etc., reserving the shavings for store use; the wood at first is white, but changes by age to yellow.

CONSTITUENTS.—Picrasmin (quassiin) .05–.15–.75 p. c., alkaloid (yellowish, blue fluorescence with acidified alcohol), resin, mucilage, pectin; Surinam quassia also contains trace of tannin, giving black or bluish-black with ferric salts.

Picrasmin.—Obtained by neutralizing infusion with sodium hydroxide, precipitating with tannin, decomposing precipitate by heating with lead oxide or lime, dissolving out with alcohol. It is a mixture of two crystalline compounds, *a*-picrasmin, $C_{35}H_{46}O_{10}$, and *b*-picrasmin, $C_{36}H_{48}O_{10}$, homologous with quassiin, $C_{32}H_{40}O_{10}$, of Surinam quassia, crystallizing in needles or prisms, soluble in alcohol, chloroform, water (1200). Dose (amorphous) gr. $\frac{1}{2}$–1 (.03–.06 Gm.); (crystalline) gr. $\frac{1}{3\,2}$–$\frac{1}{3}$ (.002–.02 Gm.).

PREPARATIONS.—1. *Fluidextractum Quassiæ, N.F.* (33 p. c. alcohol). 2. *Tinctura Quassiæ, N.F.* (33 p. c. alcohol). Dose, ♏xv–60 (1–4 cc.).

Unoff. Preps.: Extract (water), gr. 1–3 (.06–.2 Gm.); *Infusion* (Br.), 1 p. c., ℥iv–8 (15–30 cc.); Concentrated Solution, 10 p. c.; Syrup, for fly poison.

PROPERTIES.—Tonic, febrifuge, anthelmintic, simple bitter (similar to calumba).

USES.—Atonic dyspepsia, diarrhea, gastric vertigo, constipation, loss of appetite, poisons flies (*papier mouri*), fish, dogs, rabbits. Infusion (℥viij; 240 cc.), patient being in the knee-chest position, as enema for thread worms (*Oxyu'ris vermicula'ris*) or ascarides of rectum; internally for lumbricoid worms. Large doses cause headache, nausea, vertigo, vomiting, diarrhea, cramps, narcosis. Substituted for hop in making beer and ale.

Pilocarpus — PILOCARPUS. PILOCARPUS.

Pilocarpinæ Hydrochloridum. Pilocarpine Hydrochloride, *U.S.P.*
Pilocarpinæ Nitras. Pilocarpine Nitrate, *U.S.P.*

Pilocarpus { **Jaborandi,** *Holmes,* / **microphyllus,** *Stapf.* } The hydrochloride and nitrate of pilocarpine, an alkaloid obtained from the dried leaflets.

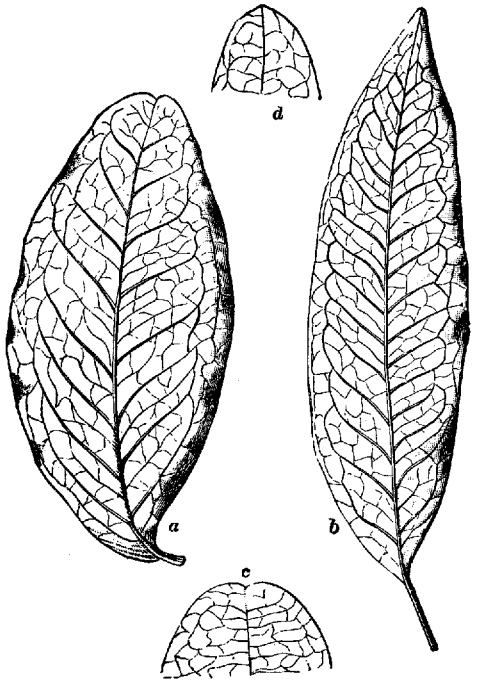
Habitat. 1. Brazil—from Pernambuco; 2, Brazil—from Maranham; Paraguay, Uruguay; in forest-cleanings on the hill-slopes.

Syn. Pilocarp., Jaborandi, Pilocarpi Foliata; 1. Pernambuco Jaborandi. 2. Maranham Jaborandi; Fr. Jaborandi; Ger. Folia Jaborandi, Jaborandiblätter; Pilocarpin. Hydrochl., Pilocarpine Chloride, Pilocarpinæ Hydrochloras; Fr. Chlorhydrate de Pilocarpine; Ger. Pilocarpinum hydrochloricum, Pilokarpinhydrochlorid; Pilocarpin. Nit.; Fr. Azotate de Pilocarpine; Ger. Pilocarpinum nitricum, Pilokarpinnitrat.

Pi-lo-car'pus. L. *pilus,* hair, or fr. Gr. πῖλος a cap, + καρπός fruit—*i. e.,* fruit hat-shaped.

Jab-o-ran'di. L. fr. Port. *zha-bo-ran-de'*—*i. e.,* South American name.

Mi-cro-phyl'lus. L. fr. Gr. μικρός small, + φύλλον leaf—*i. e.,* having small leaves.



Pilocarpus Jaborandi: variously shaped leaflets. *a* and c, emarginate; *b* and *d*, pointed, blunt.

PLANTS.—Shrubs 1.2–1.5 M. (4–5°) high, branches erect; bark smooth, with gray and white dots, roots 18 Mm. ($\frac{3}{4}$′) thick; flowers small, pinkish-purple, pedicellate, racemes 45 Cm. (18′) long; fruit, 5 carpels 4 Cm. ($1\frac{3}{5}$′) long, compressed, curved ridges dotted with oil-glands, carpels 1-seeded, reniform, black; leaves imparipinnate, .3–.4 M. (1–$1\frac{1}{2}$°) long, 2–5 pairs. Leaflets (*P. Jaborandi*): *Pernambuco,* oval, oblong, elliptical, 4–10.5 Cm. ($1\frac{3}{5}$–4′) long, 2–4 Cm. ($\frac{4}{5}$–$1\frac{3}{5}$′) broad, short, stout petiolules, acute, emarginate (rounded), base rounded or acute, mostly unequal, entire, narrowly revolute, smooth, shiny, coriaceous, glandular-punctate, grayish-brownish-green above, midrib mostly depressed, yellowish-, greenish-brown beneath, slightly pubescent on the prominent midvein; peculiarly aromatic when crushed; taste bitterish, becoming pungent with sialagogue effect; (*P. microphyllus*): *Maranham,* rhomboidally oval, obovate, elliptical, 1.5–5 Cm. ($\frac{3}{5}$–2′) long, 1–3 Cm. ($\frac{2}{5}$–$1\frac{1}{5}$′) broad, lateral ones nearly sessile, terminal ones on margined petiolules, .5–1.5 Cm. ($\frac{1}{5}$–$\frac{3}{5}$′) long, nearly uniform grayish-, yellowish-green, rather thin, otherwise resembling the preceding. Powder, dark green-, greenish-brown—epidermal cells 5–6-sided, stomata usually with 4 neighboring cells, fragments of fibro-vascular bundles showing tracheæ, wood-fibers, bast-fibers, rosette aggregates of calcium oxalate, oil-secretion reservoirs with oil globules, non-glandular hairs; solvents: diluted alcohol; boiling water partially. Dose, gr. 15–30 (1–2 Gm.).

ADULTERATIONS.—Leaves from which pilocarpine has been extracted, or leaves of *Pilocarpus* species possessing little activity or of piperaceous plants (thin, subcoriaceous, ovate, not emarginate but acuminate, finely granular, not pellucid-punctate), or of *Monnie'ra trifo'lia* and *Casca'ria* species, or leaflets of *Swart'zia decip'iens* (ovoid, short hairy petiole, upper surface shining, lower minutely hairy, not pellucid-punctate, some only 5 Mm. (1/5') long) for "Maranham Jaborandi," sometimes 30 p. c., or "False Jaborandi"—leaves of *Hæmatoxylon campechianum*, notched apex, pellucid-punctate, without alkaloid, with red-brown secreting vessels, cinnamon and clove odor.

Commercial.—Plant was introduced into Europe, 1847, and now is cultivated. The names *Jaborandi, Jamborandi, Iaborandi* are applied natively, in both generic and specific sense, to several dissimilar pungent plants having sialagogic, diaphoretic and sudorific properties, as *Serro'nea Jaborandi, Piper Jaborandi* (possibly the true Jaborandi), *P. unguicula'tum, P. citrifo'lium, P. reticula'tum, P. Mollico'mum, Erte'la* (*Auble'tia*) *trifo'lia, Xanthoxylum el'egans*. Leaves should be collected when grown, after rainy season, and, inclining to mustiness, should be dried thoroughly before packing. The once official species are high-priced, scarce, and subject to much substitution, while the Rio Jaborandi (*P. Selloanus*), also once official and popular, continues to have a limited demand in spite of great irregularity in characteristics and constituents.

CONSTITUENTS.—Pilocarpine .5–1 p. c. (1874), isopilocarpine, pilocarpidine, jaborine (?), volatile oil .5 p. c., (resin, tannin, malic acid, salts), ash 7 p. c.

Pilocarpine (Pilocarpina), $C_{11}H_{16}O_2N_2$.—This liquid alkaloid, as first obtained under the name of jaborandine, was believed to be volatile, but this is not true, although it occurs as a colorless, syrupy liquid. It may be prepared by moistening powdered leaves with solution of sodium carbonate, exhausting with warm benzene, shaking out with diluted hydrochloric acid, after separation rendering acid solution alkaline with solution of sodium carbonate, shaking out with chloroform, evaporating chloroformic liquid getting residue of crude alkaloids; neutralize with diluted nitric acid, evaporate to dryness, purify by repeated crystallization from alcohol, dissolve pilocarpine nitrate in water, render alkaline with ammonia, shake out with chloroform, evaporate getting pure pilocarpine as a colorless syrupy liquid; it is soluble in water, alcohol, chloroform, slightly in ether, forms crystallizable salts (hydrochloride, nitrate, etc.); resembles nicotine in action.

Pilocarpinæ Hydrochloridum. Pilocarpine Hydrochloride, $C_{11}H_{16}O_2N_2.HCl$.—Obtained by neutralizing diluted hydrochloric acid (17.5) with pilocarpine (10), concentrating, setting aside over sulphuric acid to crystallize; it is in colorless, translucent crystals, odorless, faintly bitter taste, hygroscopic on exposure, soluble in water (.3), alcohol (3), hot alcohol (1.5), chloroform (366), insoluble in ether; aqueous solution (1 in 20) slightly acid, melts at 197° C. (387° F.). *Tests:* 1. To aqueous solution (.01–.02 in 2) add 2 cc. acid hydrogen dioxide T. S., cover with 1 cc. benzene, add 3–4 drops potassium dichromate solution (1 in 300), shake, benzene layer—violet, aqueous layer—yellow (dist. from other alkaloids). 2. Aqueous solution with silver nitrate T. S.—white precipitate, insoluble in nitric acid. 3. Solution of .1 Gm. in 2 cc. sulphuric acid—colorless or faintly yellow (abs. of readily carbonizable substances). 4. Add to 10 cc. aqueous solution (1 in 100) ammonia T. S., or potassium dichromate T. S.—no turbidity (abs. of foreign alkaloids); ash from .1 Gm.—negligible. *Impurities:* Foreign alkaloids, readily carbonizable substances. Should be kept dark, in well-closed containers. Dose, gr. 1/8–1/2 (.008–.03 Gm.), administered best hypodermically (2 p. c. aqueous solution).

Pilocarpinæ Nitras. Pilocarpine Nitrate, $C_{11}H_{16}O_2N_2.HNO_3$.—Obtained by neutralizing diluted nitric acid (121) with pilocarpine (40), evaporating to dryness, redissolving in alcohol, crystallizing; it is in shining crystals, odorless, permanent, soluble in water (4), alcohol (75), hot alcohol (21), insoluble in chloroform, ether, melts at 172° C. (342° F.). *Tests:* 1. Aqueous solution mixed with equal volume of ferrous sulphate T. S. and carefully poured over sulphuric acid without shaking—brown ring at juncture of two layers. 2. To 5 cc. aqueous solution (1 in 50), acidulated with nitric acid, + few drops silver nitrate T. S.—no immediate opalescence (abs. of chloride); ash from .1 Gm.—negligible. *Impurities:* Chloride, etc. Should be kept dark, in well-closed containers. Dose, gr. 1/8–1/2 (.008–.03 Gm.), administered best hypodermically (2 p. c. aqueous solution).

Isopilocarpine.—Obtained by action of heat or alkali on pilocarpine; it is a colorless, viscid oil, oxidizing into pilocarpic acid, $C_{11}H_{16}O_5N_2$, boiling at 261° C. (502° F.), distilling without decomposition, isomeric with pilocarpine; pilocarpidine, $C_{10}H_{14}O_2N_2$, found in *P. Jaborandi* but not in *P. microphyllus*, is a liquid body, differing from pilocarpine by auric chloride not precipitating aqueous solutions, in being weaker, deliquescent, oxidizing in air to syrupy jaboridine (possibly identical with jaborandine, $C_{10}H_{12}O_3N_2$; jaborine, $C_{22}H_{32}O_4N_4$, is of doubtful occurrence, although formerly believed to be in the leaves and to be formed by evaporating acid solutions of pilocarpine; as such it was yellow, amorphous, less soluble in water, but more so in ether than pilocarpine, isomeric with it (same molecular formula), but antagonizing its action, resembling atropine; the commercial jaborine has been found to be a brown oil composed of isopilocarpine, pilocarpidine, pilocarpine, and coloring matter.

Volatile Oil.—Obtained by distillation at 176° C. (350° F.), and is chiefly a terpene (pilocarpene) $C_{10}H_{16}$, with little solid paraffin-like substance, sp. gr. 0.875.

PREPARATIONS.—(Unoff.). LEAVES: *Fluidextract* (67 p. c. alcohol), dose, ♏xv–30 (1–2 cc.). *Extract*, gr. 3–10 (.2–.6 Gm.). *Infusion*, ℥j–2 (30–60 cc.). *Tinctura Pilocarpi* (*Jaborandi*), 20 p. c., ℥ss–2 (2–8 cc.). Pilocarpine, phosphate, acetate, hydrobromide, dose, each gr. 1/8–1/2 (.008–.03 Gm.), hypodermically.

PROPERTIES.—Diaphoretic, sialagogue, myotic, cardiac depressant, emetic, diuretic (repeated small doses), galactagogue, abortive. Full doses cause flushed face, quickened circulation and respiration, profuse sweating and salivation (lasting 2–4 hours, losing in perspiration 9–15

ounces (.27–.45 L.), in saliva 10–27 ounces (.3–.8 L.), these always being in the inverse ratio); increases bronchial, nasal, mammary, gastric, and intestinal secretions, lowers temperature 1–4 degrees, contracts pupils, produces chilliness and weakness. The heart soon becomes slowed and arterial pressure lowered, by stimulating the terminations of the vagus, or by depressing the motor centers in the heart-muscle. Both the fluid and solids (especially urea) of the perspiration are increased by direct influence on the nerve-endings governing its secretion, while the cells of the salivary glands are stimulated directly. Pilocarpine produces identical effects of the drug; isopilocarpine is 8–10 times weaker than pilocarpine, while jaborine irritates the stomach, causing nausea, vomiting, etc.

USES.—Dropsies, pleurisy, uremia, pulmonic edema, catarrhal jaundice, mumps, rheumatism, coryza, cold, influenza, Bright's disease, meningitis, diabetes, agalactia, parotitis, asthma, hiccough, erysipelas, diphtheria; best antidote to atropine, hyoscyamine, daturine, agaricin, etc.; powerful stimulant to hair growth—locally and internally. In ophthalmia use pilocarpine, in amblyopia (from alcohol or tobacco), detached retina, chronic iritis, keratitis, glaucoma, atrophic choroiditis, instead of physostigmine as a myositic. To avoid nausea, may give in form of enema.

Poisoning: Have profuse sweating, dizziness, salivation, vomiting, purging, contracted pupils, pain in eyes. Empty the stomach and wash it out with tannin; give atropine hypodermically and morphine to control nausea and vomiting; cardiac stimulants if necessary.

Incompatibles: Atropine, agaricin, morphine, tannin, caustic alkalies, ferric and metallic salts.

Synergists: Aconite, veratrum viride, gelsemium, sarsaparilla, spirit of ethyl nitrite, and drugs which paralyze the vasomotor system. *P. Selloa'nus* (possibly the same as *P. pinnatifo'lius*, leaflets under both names formerly official); *P. grandiflo'rus*, *P. pauciflo'rus*, *P. heterophyl'lus*, *P. spica'tus*, *P. trachylo'phus*—all have similar medicinal value.

Pimenta acris

Pimenta ac'ris, Myrcia, Bay, Wild Clove; Oleum Myrciæ, Oil of Bay, N.F.—The volatile oil distilled from the leaves; W. Indies, Jamaica, cultivated. Tree, beautiful, fragrant, 9–12 M. (30–40°) high; leaves 5–8 Cm. (2–3′) long, oval, coriaceous, pellucid-punctate, exhaling aroma when bruised similar to clove (volatile oil); flowers small, white with red tinge; fruit globular berry, size of a pea, blackish, resembling allspice; contains volatile oil, tannin. Oleum Myrciæ, is a yellowish liquid, pleasant aromatic odor, pungent, spicy taste, with equal volume of alcohol (acid reaction), acetic acid, or carbon disulphide—slightly turbid solutions, sp. gr. 0.976, levorotatory; contains eugenol 65 p. c., chavicol, myrcene, phellandrene, citral. *Impurities:* Oil of pimenta, oil of clove, phenol. Should be kept cool, dark, in small well-stoppered, amber-colored bottles. Astringent, tonic, stimulant, perfume; nervous headache, faintness, chafing, hair washes, perfumery; 1. *Spiritus Myrciæ Compositus, Bay Rum*, $\frac{4}{5}$ p. c., + oil of orange, oil of pimenta, āā, $\frac{1}{20}$ p. c., alcohol 61, water q. s. 100; better grades made by distilling leaves with St. Croix rum (Jamaica, imported bay rum).

Pimenta off. *Pimen'ta officina'lis, Pimenta, Allspice, N.F.*—The dried, nearly ripe fruit with not more than 3 p. c. of foreign organic matter nor .4 p. c. of acid-insoluble ash; C. and S. America, W. Indies, cultivated. Handsome evergreen tree, 9–12 M. (30–40°) high; bark smooth, gray; leaves 10–15 Cm. (4–6′) long, oval-oblong, entire, bright green, pellucid-punctate; flowers white. Fruit, subglobular, 4–7 Mm. ($\frac{1}{6}$–$\frac{1}{4}$′) broad, apex with 4 calyx teeth, dark brown, glandular-punctate, pericarp brittle 1 Mm. ($\frac{1}{25}$′) thick, 2-celled, each cell 1-seeded; odor and taste, particularly the pericarp, aromatic, distinctive. Powder, dark brown—numerous starch grains with central cleft, many stone cells with lumina often filled with yellowish amorphous substance, oil secretion reservoirs with oil, parenchyma cells with tannin masses; stem fragments few, characterized by non-glandular hairs, calcium oxalate rosettes, tracheid-like wood tissues and long bast-fibers; yield of crude fiber does not exceed 25 p. c.; solvents: alcohol extracts the virtues, water absorbs the flavor, and, if hot, some constituents; contains volatile oil 3–4 p. c., resin, fixed oil 6–8 p. c., tannin, sugar, gum, ash 6 p. c. Dose, gr. 5–30 (.3–2 Gm.).

Pimenta officinalis (Pimenta).

Oleum Pimentæ, Pimento Oil, Oil of Pimenta (Allspice), N.F.—This volatile oil distilled from the fruit, yielding not less than 65 p. c., by volume, of eugenol, comes over in two fractions mixed together, one light, the other heavy; it is a colorless, yellow, or reddish liquid, darker with age, characteristic odor and taste of allspice; soluble (clear) in equal volume of 90 p. c. alcohol, in 2 vols. of 70 p. c. alcohol, sp. gr. 1.033, levorotatory. Should be kept cool, dark, in well-stoppered, amber-colored bottles. Dose, ♏j–5 (.06–.3 cc.). Fruit: 1. *Tinctura Guaiaci Composita*, 3.2 p. c. (diluted alcohol). *Water*—25 Gm. + water 1000, distil 500 cc.; *Infusion*, 5 p. c. Oil: 1. *Liquor Pepsini Aromaticus*, $\frac{1}{40}$ p. c. 2. *Spiritus Myrciæ Compositus*, $\frac{1}{20}$ p. c. Stomachic, carminative, condiment; flatulency, nausea, intestinal colic, corrective to griping purgatives—similar to clove.

Pinus alba

P. Stro'bus, Pinus Alba, White Pine Bark, N.F.—The dried inner bark, with not more than 2 p. c. of outer bark and 2 p. c. of foreign organic matter; N. America. Large handsome tree. Bark in flat pieces of variable size, 1–3 Mm. ($\frac{1}{25}$–$\frac{1}{8}$′) thick, yellowish, brownish, periderm patches, cottony, scattered pits, inner surface finely striate; fracture short; odor slight, terebinthinate; taste slightly mucilaginous, bitter, sweet, astringent. Powder, brownish—starch grains, calcium oxalate

prisms, resin, few tracheids. Dose, ʒss–1 (2–4 Gm.); 1. *Syrupus Pini Albæ Compositus*, 8.5 p. c. Prep.: 1. *Syrupus Pini Albæ Compositus cum Morphina*, morphine sulphate $\frac{1}{25}$ p. c. Dose, each, ʒss–1 (2–4 cc.).

Pinus montana

PINUS PUMILIO. DWARF PINE.

Oleum Pini Pumilionis. Oil of Dwarf Pine Needles, *U.S.P.*

Pinus montana, *Miller.* — A volatile oil distilled from the fresh leaves, yielding not less than 5 p. c. esters calculated as bornyl acetate.

Habitat. C. Europe: Tyrolese Alps, Carpathian Mountains, 1300–2500 M. (4200–8200°) elevation.
Syn. Dwarf Pine, Mountain Pine; Ol. Pin. Pumil., Dwarf Pine Oil, Pine Needle Oil; Ger. Latschenkieferöl, Krummholzöl.
Mon-ta'na. L. *montanus*, mountainous—*i. e.*, preferred place of growth.
Pu-mil'io. L. *pumilio, onis*, fr. *pumilus*, dwarfish, diminutive—*i. e.*, in reference to its small size.

PLANT.—Small tree, branches decumbent or knee-like, more or less erect; bark persistent, dark colored; leaves 2 in a sheath, 2–5 Cm. ($\frac{3}{4}$–2′) long, straight, scythe-shaped, obtuse apex, dull green, slightly glaucous; fruit (cones) ovoid, 4 Cm. ($1\frac{3}{4}$′) long, pyramidal protuberance on each scale on exposed side (outer).

CONSTITUENTS.—Volatile oil, resin, tannin, bitter extractive.

Oleum Pini Pumilionis. Oil of Dwarf Pine Needles.—This volatile oil, distilled from the fresh leaves (needles), is a colorless, faintly yellowish liquid, pleasant, aromatic odor, bitter, pungent taste, sp. gr. 0.861, no portion distils below 165° C. (329° F.), levorotatory, neutral, slightly acid; contains *l*-pinene, *l*-phellandrene, sylvestrene, bornyl acetate (to which odor is due), cadinene. Should be kept cool, dark, in well-stoppered, amber-colored bottles. Dose, ♏j–5 (.06–.3 cc.), on sugar, capsules, pastilles.

PROPERTIES AND USES.—Antirheumatic, expectorant, stimulant, antiseptic; chronic rheumatism (internally), chronic bronchitis, laryngitis (inhaled); may rub on rheumatic joints, and cover with cotton; inhalant or vapor (oil 10 cc., + magnesium carbonate 5 Gm. + distilled water q. s. 100 cc.; of this add ʒj (4 cc.) to hot water ℥xx (600 cc.) and inhale through it; allays irritation and diminishes bronchial secretion, catarrhal inflammation. A juice (Hungarian balsam) exudes spontaneously from the tips of young branches, to which flasks are attached for easy collection, and this possesses properties of turpentine as well as of the oil.

Pinus sylvestris

P. sylves'tris, Wild Pine, Scotch Fir.—Europe. Tree 21–24 M. (70–80°) high, leaves and cones only 5–7.5 Cm. (2–3′) long; this yields much of the common European turpentine; *P. Pinaster* (*P. marit'ima*), S. Europe, much used for obtaining turpentine, pitch, and tar.

Pinus taeda

Pinus Tæ'da, Loblolly, Old Field or *Frankincense Pine.*—Delaware, Florida, thence Texas, Arkansas. Grows along with *P. palustris*, and like it is a large tree, 18–30 M. (60–100°) high, but leaves (15–25 Cm.; 6–10′ long) and cones (7.5–12.5 Cm.; 3–5′ long) are smaller. This yields not near so great a per cent of oleoresin as official plant, but one quite as good, consequently it is utilized for this and other purposes.

Pinus palustris

TEREBINTHINA. TURPENTINE, *N.F.*

1. **Oleum Terebinthinæ. Oil of Turpentine,** *U.S.P.*
2. **Resina. Rosin,** *U.S.P.*

Pinus palustris, *Miller,* and other species, yielding exclusively terpene oils. — The volatile oil (1), and residue left (2) from distilling the oleoresin (turpentine).

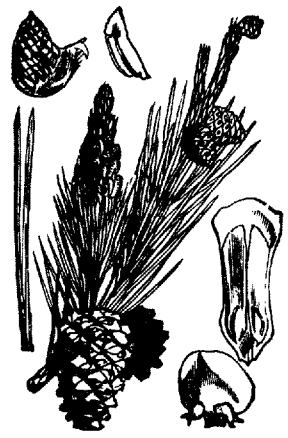
Habitat. S. United States, Virginia to Texas, near the coast.
Syn. Long leaved (Yellow Pitch, Broom, Pitch, Swamp, Georgia) Pine; Common Frankincense, Terebinthina Communis, Thus Americanum, Frankincense, Crude Turpentine: 1. Ol. Tereb., Turpentine Oil, Spirits of Turpentine; Fr. Térébinthine (du Pin) de Bordeaux; Essence de Térébenthine officinale; Ger. (Gemeiner) Terpentin; Terpentinöl: 2, Resin, Colophony; Fr. Résine blanche (jaune); Ger. Colophonium, Kolophonium, Geigenharz.
Pi'nus. L. see etymology, page 72, of Pinaceæ.
Pa-lus'tris. L. *paluster*, swampy—*i. e.*, it inhabits swamps or near marshy places.
Ter-e-bin'thi-na. L. *terebinthus;* Gr. τερέβινθος, of or from the *terebinth—turpentine tree.*
Tur'pen-tine, fr. *turbentine, terebinthine, terebinthina.*

PLANT.—Large tree, 18–30 M. (60–100°) high, .3–.6 M. (1–2°) thick; bark thin, scaled, furrowed; wood hard, resinous; leaves many, crowded at end of branches, in 3's, 25–40 Cm. (10–16′) long, very narrow, sharp-pointed, triquetrous, in clusters surrounded by a sheath 25 Mm. (1′) long; flowers sterile in violet aments, 5 Cm. (2′) long; Fruit cone, large, oblong, 15–25 Cm. (6–10′) long, scales armed with short spine. Oleoresin—Terebinthina, Turpentine, *N.F.* Concrete oleoresin containing not more than 2 p. c. of foreign matter, occurs in yellowish, opaque masses, lighter internally, sticky, more or less glossy, brittle in cold; odor and taste characteristic; freely soluble in alcohol, ether, chloroform, glacial acetic acid; alcoholic solution acid reaction; rarely seen as yellow, opaque, viscid liquid.

CONSTITUENTS.—(CONCRETE) OLEORESIN: Volatile oil 20–30 p. c., Rosin (resina, resin) 50–60 p. c., bitter principle, formic, succinic, and possibly other resin acids—pinic and sylvic acids.

1. **Oleum Terebinthinæ. Oil of Turpentine,** $C_{10}H_{16}$.—Obtained by distilling with water or steam the (concrete) oleoresin (turpentine); it is a colorless liquid, characteristic odor and taste, both becoming stronger and less pleasant on aging or exposure (owing to formation of ozone, resin, formic and acetic acids), soluble in 5 vols. of alcohol, sp. gr. 0.861, rotation — dextro (variable), with hydrochloric acid forms artificial crystalline camphor, $C_{10}H_{16}HCl$; contains chiefly *d*-pinene (French oil *l*-pinene), also derivatives of pinene, and often camphene and fenchone. *Tests:* 1. Evaporate 5 cc. over boiling

water—residue .1 Gm. (abs. of petroleum, paraffin, rosin oils). 2. Expose to air 3 drops on unsized white paper—evaporates without leaving permanent stain (abs. of fixed oils). 3. Shake vigorously 5 cc. with equal volume of hydrochloric acid—only a light straw-yellow color in either acid or oily layer on standing 5 minutes, no brown or green. Must be added to fuming acids drop by drop, and should be kept cool, in well-stoppered containers.

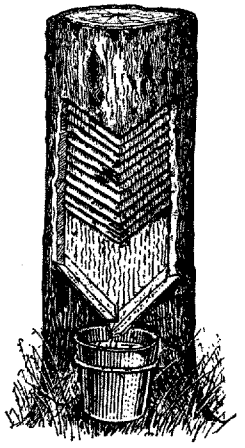


Pinus palustris.

ADULTERATIONS. — Tar oils, kerosene, petroleum benzin, paraffin oils, rosin oil, etc.

2. **Resina. Rosin.**—This residue, left after distilling off the volatile oil from the (concrete) oleoresin (turpentine), is usually in sharply angular, translucent, amber-colored fragments, frequently covered with a yellow dust, fracture brittle at ordinary temperatures shiny and shallow-conchoidal; odor and taste slightly terebinthinate; freely soluble in alcohol, ether, benzene, glacial acetic acid, fixed or volatile oils, dilute solutions of the fixed alkali hydroxides; contains anhydride of abietic acid, $C_{44}H_{62}O_4$, 80–90 p. c., pinic and sylvic acids. *Tests:* 1. Alcoholic solution—acid; sp. gr. 1.08. 2. Easily fusible and burns with a dense yellowish smoke; ash .05 p. c. 3. Shaken with warm diluted alcohol—abietic anhydride converted into abietic acid, $C_{44}H_{64}O_5$, crystalline; boiled with alkaline solution—greasy salts of abietic acid (rosin soap); distil with super-heated steam—benzene and toluene. The varieties depend upon color, and this upon degree of heat employed in distillation; the older the trees, the greater the yield of rosin, the smaller the yield of oil.

Commercial.—The *P. palustris* (*P. austra'lis*—*i. e.*, southern) grows in dry sandy soil from the sea to 100 miles (160 Km.) inland, the young trees resembling brooms, the older furnishing (Florida, Georgia, N. and S. Carolina) most of the turpentine and rosin of commerce. The oleoresin secretes in the sapwood, and sparingly exudes spontaneously, so that to obtain it economically on a large scale the trees are *cornered* and *chipped*, which consists in removing, according to size of tree, one or two sections of bark—each one-fourth the entire circumference, and a foot from the ground upward 4–5 feet—then hacking the exposed wood in shape of the letter L, which may be extended slightly higher every few weeks to increase the flow. Formerly at the base of each decorticated section the experienced axman cut a triangular-shaped cavity (box—*boxing*), 4–8 pints (2–4 L.), capacity, to catch the exudation, which was ladled out with "turpentine dippers" every 2–3 weeks, poured into barrels (250 pounds; 110 Kg.) and subsequently distilled at a nearby station. But these deep-seated wounds were so depleting as to render the trees worthless, save for lumber, in 4–5 years, consequently this method has been replaced by the less destructive "cup and gutter system," which consists in suspending from a zinc nail near the base of scarified section a detachable terra cotta (Herty) or zinc cup, similar in appearance to the quart-flower pot, and above that nailing at incline, on either side of median line, a zinc gutter, 6 x 2′, to direct flow into the cup, which, when filled, is easily removed, emptied into barrels and returned. The first season's yield is about 100 gallons per 100 trees, diminishing thereafter. The "crude" begins to flow early in March, becomes most rapid July-August when hot and dry, then slackens September-October. The first year's product is best, *virgin dip*, yielding 6½ gallons (24 L.) of oil per barrel and "window-glass rosin;" succeeding years give *yellow dip*, yielding 4 gallons (15 L.) of oil per barrel and medium grades of rosin; some hardens on trees, *scrapings*, *scrape*, yielding 2 gallons (7.5 L.) of oil per barrel and brownish-black rosin. In France covered pails or cups with lips, to avoid evaporation, chips, bark, etc., are used, into which the sap flows by a gutter through comparatively small hacked spaces, which, when alternating 5 working with 2 resting seasons, insures a handsome yield for 2 generations. The comminuted wood has been distilled with water, steam, alkali, etc., but with questionable satisfaction.



Cup and gutter system, cornered and chipped pine tree.

In the distillation of concrete oleoresin, when the volatile oil ceases to come over, the resin (rosin) while hot is run off from the bottom of still and strained into barrels, while the condensed distillate (oil), floating above the water, is dipped out and barrelled for market.

PREPARATIONS.—I. OIL: 1. *Oleum Terebinthinæ Rectificatum.* Rectified Oil of Turpentine. (Syn., Ol. Tereb. Rect., Rectified Turpentine Oil; Fr. Essence de Térébenthine rectifiée; Ger. Gereinigtes Terpentinöl.)

Manufacture: Shake thoroughly oil of turpentine, a convenient quantity, with an equal volume of sodium hydroxide solution, recover about three-fourths of the oil by distillation, separate the clear oil from the water, dry it by shaking with anhydrous calcium chloride or anhydrous sodium sulphate, filter. It is a colorless liquid, conforming to the properties and tests of oil of turpentine, sp. gr. 0.858; evaporate 5 cc.—residue .015 Gm. Should be kept cool, dark, in well-stoppered, amber-colored bottles, and dispensed when oil of turpentine is required for internal use. Dose, stimulant, diuretic, ♏v–30 (.3–2 cc.); anthelmintic, ʒss–4 (2–15 cc.), on sugar or emulsified.

Preps.: 1. *Emulsum Olei Terebinthinæ.* Emulsion of Oil of Turpentine. (Syn., Emuls. Ol. Tereb., Turpentine Emulsion; Fr. Emulsion d'essence de Térébenthine; Ger. Terpentinölemulsion.)

Manufacture: 15 p. c. Add to dry bottle acacia 15 Gm., then rectified oil of turpentine 15 cc. and water exactly 10, agitate briskly until emulsified, add water q. s. 100 cc. Dose, ʒj–8 (4–30 cc.).

2. *Terpini Hydras.* Terpin Hydrate, $C_{10}H_{18}(OH)_2.H_2O$. (Syn., Terpin. Hyd.; Fr. Dihydrate de térébenthène (terpilène); Ger. Terpinum hydratum, Terpinhydrat.)

Manufacture: This hydrate of the dihydric alcohol terpin is obtained by mixing in a shallow dish rectified oil of turpentine (4), alcohol (3), nitric acid (1), allowing to stand 3–4 days, collecting crystals, draining, drying on filter paper, recrystallizing from alcohol rendered slightly alkaline to remove adhering acid. It is in colorless, lustrous, rhombic prisms, nearly odorless, slightly aromatic (resembling fresh lilacs, but not turpentine); somewhat bitter taste, efflorescent in dry air; soluble in water (200), boiling water (34), alcohol (13), boiling alcohol (3), chloroform (135), boiling glacial acetic acid (1); hot, saturated aqueous solution not acid to litmus. *Tests:* 1. Heated slowly at 100° C. (212° F.)—sublimes in fine needles; quickly heated—melts at 116° C. (241° F.) with the loss of water; also loses water of crystallization slowly over sulphuric acid. 2. Hot aqueous solution with a few drops of sulphuric acid—turbid, developing a strongly aromatic odor; incinerate 2 Gm.—ash .05 p. c. Should be kept cool, in well-closed containers. Dose, gr. 2–15 (.13–1 Gm.).

Preps.: 1. *Elixir Terpini Hydratis, N. F.*, 1.75 p. c. Prep.: 1. *Elixir Terpini Hydratis et Codeinæ, N. F.*—codeine $\frac{1}{8}$ p. c.; 2. *Elixir Terpini Hydratis et Creosoti Compositum, N. F.*, .44 p. c. + creosote .44, calcium glycerophos. .875, sodium glycerophos. .875. Dose, each, ʒj–2 (4–8 cc.).

2. *Terebenum.* Terebene, $C_{10}H_{16}$. (Syn., Tereben.; Fr. Terebène; Ger. Tereben.)

Manufacture: This liquid, consisting of dipentene (chiefly) and other hydrocarbons (terpinene, cymol, camphene, etc.) is obtained by adding gradually sulphuric acid (1) to oil of turpentine (20), allowing to stand for 24 hours, removing supernatant layer, neutralizing with chalk, distilling, further rectifying with steam. It is a colorless, thin liquid, rather agreeable, thyme-like odor, aromatic, somewhat terebinthinate taste, soluble in alcohol (3), slightly in water; on exposure to light gradually becomes resinified and of acid reaction, sp. gr. 0.863, boils at 166° C. (331° F.). *Impurities:* Rosin, unaltered oil of turpentine. Should be kept dark, in well-closed containers. Dose, ♏v–15 (.3–1 cc.).

3. *Ceratum Cantharidis,* 15 p. c. 4. *Linimentum Terebinthinæ, Kentish Ointment, N. F.*, 35 p. c., + rosin cerate 65. 5. *Linimentum Opii Compositum, N. F.*, 22 p. c. 6. *Linimentum Terebinthinæ Aceticum, Linimentum Album, Stoke's Liniment, St. John Long's Liniment, N. F.*, 40 p. c.—triturate 40 cc. + 2 fresh eggs + yolks of 2 other eggs, oil of lemon 16; then add acetic acid 80, water q. s. 1000 cc. 7. *Petroxolinum Sulphuratum Compositum, N. F.*, 30 cc. in 100 cc. product.

II. Rosin: 1. *Ceratum Resinæ.* Rosin Cerate. (Syn., Cerat. Res., Basilicon Ointment, Unguentum Tetrapharmacum; Br. Unguentum Resinæ; Fr. Cérat (onguent) de Résine anglais; Ger. Königssalbe, Harzsalbe, Zugsalbe.)

Manufacture: 35 p. c. Heat until liquefied rosin 35 Gm., add yellow wax 15, lard 50, strain, allow to congeal, stirring occasionally; in cold weather may use yellow wax 12, lard 53.

Prep.: 1. *Linimentum Terebinthinæ, N. F.*, 65 p. c., see above.

2. *Emplastrum Adhæsivum.* Adhesive Plaster. (Syn., Emp. Adhæs., Emplastrum Elasticum, Rubber Adhesive Plaster; Fr. Emplâtre caoutchouté simple; Ger. Kautschukheftpflaster.)

Manufacture: Mix mechanically rubber 20–30 p. c., resins, waxes, and an absorbent powder (zinc oxide, orris root or starch), and spread upon cotton cloth.

3. *Ceratum Cantharidis,* 17.5 p. c. 4. *Ceratum Resinæ Compositum, N. F.*, 22.5 p. c. 5. *Solutio Resinæ Chloroformica, N. F.*, 20 p. c.

III. Oleoresin: 1. *Ceratum Resinæ Compositum, Deshler's Salve, N. F.*, 11.5 p. c.—melt rosin 22.5 Gm.; yellow wax 22.5, turpentine 11.5, prepared suet 30, add linseed oil 13.5, strain, stir.

Properties. I. Oil of Turpentine and Oleoresin.—Internally—stimulant, carminative, cathartic, anthelmintic, hemostatic, expectorant, diuretic, diaphoretic, antipyretic. Externally—rubefacient, irritant, counter-irritant, antiseptic, disinfectant; contracts vessels, increases peristalsis, gastric secretion, stimulates heart, depresses nervous system. Large doses produce gastro-enteritis, vomiting, diarrhea, suppressed urine, lumbar pains, urethral burning, hematuria, strangury, insensibility, death by paralyzed respiration. It is excreted by the skin, bronchi, and kidneys; inhaling vapors give nasal, ocular, and renal irritation.

II. Terpin Hydrate.—Antiseptic (arresting the development of tubercle bacilli), expectorant, diuretic, diaphoretic.

III. Terebene.—Stimulant, disinfectant, expectorant, astringent.

IV. Resin.—Antiseptic, slight stimulant.

Uses.—I. Oil of Turpentine and Oleoresin: Internally—chronic bronchial catarrh, cystitis, gonorrhea, leucorrhea, gleet, chronic urinary troubles, piles, hemorrhages, puerperal fever, inflammation of bowels, traumatic erysipelas, intestinal worms, pneumonia, phosphorus-poisoning (old oil). Externally—rheumatism, sciatica, lumbago, neuralgia, bronchitis, pleurisy, peritonitis, tympanites, renal colic, gangrene, sprains, wounds, scabies, ringworms, enlarged glands, burns, frost-bites, colic; vapors of oil in whooping-cough, diphtheria, laryngitis. Often associated with various liniments, chloroform, camphor, olive oil, narcotic extracts, etc. The oleoresin may be given in pill form, hardened with magnesium oxide. Dose, gr. 15–60 (1–4 Gm.).

II. Terpin Hydrate.—Acute and chronic bronchitis, hay fever, whooping-cough, chronic nephritis, chronic cystitis, gonorrhea.

III. Terebene.—Chronic bronchitis by inhalation and on sucrose (sugar) fermentative dyspepsia.

IV. Resin.—Indolent ulcers, sores, wounds, in plasters, ointments, as emulsifying agent, chronic enteritis.

Poisoning: Have giddiness, gastro-enteritis, strangury, bloody, scanty urine, with violet odor; may have purging, cyanosis, dilated pupils, stertorous breathing, feeble, rapid pulse, coma, collapse. Give emetics, if no purging use enema, then plenty of water and demulcent drinks, hot fomentations to loins, opium to allay pain.

Pix Pini, Pine Tar, *U.S.P.*—(Syn., Pix Pin., Pix Liquidæ, Resina Empyreumatica Liquida; Fr. Goudron végétal; Ger. Holztheer, Theer.) A product obtained by the destructive distillation of the wood of *Pinus palustris* or other species of *Pinus* (*P. Tæ'da, P. rig'ida, P. sylves'tris,* and *Larix sibir'ica.*)

Manufacture: Refuse pine wood, cut in billets, is stacked compactly and covered with earth, except an opening at the apex for ignition and the escape of gases; slow combustion without flame is allowed to proceed, while a ditch at the bottom serves to run off the tarry liquid that is ladled into barrels; the wood is converted into charcoal and this becomes a valuable by-product. In Europe permanent clay furnaces are used over and over. It is a true, impure turpentine, semi-liquid, viscid, blackish-brown, non-crystalline, translucent in thin layers, granular and opaque with age; odor empyreumatic, terebinthinate, taste sharp, empyreumatic; miscible with alcohol, ether, chloroform, glacial acetic acid, fixed or volatile oils; heavier than water, slightly soluble in it—solution pale yellowish-brown, acid reaction; ash .25 p. c. *Test:* 1. Shake 1 cc., for 10 minutes, with water 10, add to filtrate a drop of ferric chloride T. S.—greenish, then brown color. Dose, gr. 5–30 (.3–2 Gm.), in pill.

CONSTITUENTS.—Acetic acid, small quantities of formic, propionic, capronic acids, acetone, methyl alcohol, mesit, toluol, xylol, cumol, methol (all passing over with the light oil of tar), naphthalene, pyrene, chrysene, paraffin, phenols, creosote (25 p. c.), pyrocatechin, empyreumatic resin.

PREPARATIONS.—1. *Unguentum Picis Pini.* Tar Ointment. (Syn., Ung. Pic. Pin., Unguentum Picis Liquidæ: Fr. Pomatum cum Pice, Pommade de Goudron; Ger. Theersalbe.)

Manufacture: 50 p. c. Melt yellow wax 15 Gm., add petrolatum 35, and to melted mixture pine tar 50, previously warmed, incorporate thoroughly, strain, stir until congealed.

2. *Oleum Picis Rectificatum.* Rectified Oil of Tar. (Syn., Ol. Pic. Rect., Oleum Picis Liquidæ Rectificatum; Fr. Huile volatile de Goudron rectifiée; Ger. Gereinigtes Theeröl.)

Manufacture: Distil wood-tar and collect that fraction of the distillate lighter than water, redistil. This volatile oil is a thin liquid, dark reddish-brown color, strong, empyreumatic odor and taste; soluble in alcohol, solution being acid, sp. gr. 0.975; contains hydrocarbons, phenols, acetic acid and other acids, undetermined empyreumatic products present in tar, being largely oil of turpentine. Dose, ♏ij–5 (.13–.3 cc.), in pills, water, or syrup.

Preps: 1. *Syrupus Picis Pini.* Syrup of Pine Tar. (Syn., Syr. Pic. Pin., Syrupus Picis Liquidæ, Syrup of Tar, Syrupus Piceus; Fr. Sirop de Goudron; Ger. Theersirup.)

Manufacture: $\frac{1}{10}$ p. c. Mix oil .1 cc. with water 45, agitate mixture frequently during 15 minutes, set aside 24 hours, shaking occasionally; dissolve in filtrate sucrose 85 Gm., add water q. s. 100 cc., mix thoroughly, strain. Dose, ʒj–4 (4–15 cc.).

2. *Unguentum Picis Compositum, N.F.,* 4 p. c. + zinc oxide 3, tincture of benzoin 2.

3. *Glyceritum Picis Pini, N.F.,* 6.3 p. c., glycerin 25.

PROPERTIES.—Pine tar similar to oil of turpentine, but milder, scarcely ever vesicates, stimulant, expectorant, counter-irritant, insecticide. Internally—disturbs digestion, large doses may cause vomiting, colic, pain, headache, dark urine similar to phenol.

USES.—Internally—bronchitis, phthisis, vesical catarrh, constipation. Externally—scabies, scaly eruptions, eczema, burns, boils, sores, ulcers, gangrene, fissured nipples, hemorrhoids; fumes destroy foul odors.

Piper angustifolium

Matico: natural size.

Piper angustifo'lium, Matico, N.F.—The dried leaf with not more than 5 p. c. of stems, flower spikes or other foreign organic matter, yielding not more than 6 p. c. of acid-insoluble ash; S. America—Andes of Peru, Bolivia. Large soft-wooded shrub or small tree; branches quadrangular, the younger hairy; flowers small, yellowish; fruit small, hard, black, 1-seeded; leaves, usually broken in compressed, matted masses, 10–20 Cm. (4–8′) long, 2–5 Cm. ($\frac{4}{5}$–2′) broad, lanceolate, acute, unequal cordate, crenulate, dark green above, tessellated, pale green below, reticulate with prominent midrib and veins, quadrangular-meshed, pubescent; odor distinct, aromatic; taste pungent, pepper-like. Powder, greenish-yellow—non-glandular hairs, epidermal cells with stomata, secretion cells; solvents: alcohol (50–75 p. c.), boiling water; contains volatile oil 2–3 p. c., artanthic acid, pungent resin, bitter principle, tannin, mucilage—maticin is only a potassium salt. Stimulant, tonic, diuretic, styptic, vulnerary, aphrodisiac (similar to cubeb—mostly due to volatile oil); bronchitis, gonorrhea, menorrhagia, hemorrhoids, diarrhea, dysentery, hematuria, hemorrhage, vesical catarrh, incontinence of urine; locally to bleeding surfaces, owing to the many hairs promoting blood-clot. *Adulterations:* Leaves of allied species of its own genus, and those of *Eupato'rium* and *Walthe'ria* genera—none being tessellated above or rough and hairy beneath. Dose, gr. 15–60 (1–4 Gm.); 1. *Fluidextractum Matico* (75 p. c. alcohol), dose, ♏xv–60 (1–4 cc.). *Infusion,* 5 p. c., ʒj–2 (30–60 cc.); *Tincture,* 10 p. c., ʒj–2 (4–8 cc.).

Piper cubeba

CUBEBA. CUBEB, *U.S.P.*

Piper Cubeba, *Linné filius,* **(Cubeba Cubeba,** *(Linné filius) Lyons*).

The dried, nearly full-grown, unripe fruit, with not more than 5 p. c. shriveled fruits or stems nor 2 p. c. foreign organic matter, yielding not less than 10 p. c. volatile ether-soluble extractive.

Habitat. Java, Sumatra, Borneo; cultivated in two former islands, and in W. Indies, Ceylon.

Syn. Cubeb, Cubebs, Tailed Cubebs, Cubeb-, Java-, or Tailed-Pepper; Br. Cubebæ Fructus (Baccæ), Piper Caudatum; Fr. Cubèbe, Poivre à Queue; Ger. Cubebæ, Kubeben.

Pi'per. L. see etymology, above, of Piperaceæ.

Cu-be'ba. L. fr. Gr. κουβέβα, of Actuarius; name used since the 10th century; Pers. *kababa,* their native name of the plant.

PLANT.—Climbing woody perennial; stem jointed, flexuous, 6 M. (20°) high; leaves 15 Cm. (6′) long, lanceolate, leathery, shining, nerved, petiolate; flowers dicœcious, spikes, 2.5–5 Cm. (1–2′) long. FRUIT, upper portion globular, 3–6 Mm. ($\frac{1}{8}$–$\frac{1}{4}$′) broad, abruptly contracted into a slender, stem-like portion (stipe, thecaphore—not a true pedicel, but stigma remnant), 5–7 Mm. ($\frac{1}{5}$–$\frac{1}{4}$′) long; pericarp brown, dark brown, rarely gray, coarsely reticulate, .3 Mm. ($\frac{1}{75}$′) thick; 1-locular, 1-seeded, the seed attached at base of pericarp, usually not completely filling loculus; odor aromatic, characteristic; taste strongly aromatic, pungent. POWDER, brown—numerous starch grains, .002–

Piper Cubeba.

.012 Mm. ($\frac{1}{1250}$–$\frac{1}{2000}$′) broad, and stone cells with yellowish porous walls; few wood bundles with spiral tracheæ and fibers; with sulphuric acid against white background—crimson-red. *Solvents:* ether; alcohol. Dose, gr. 15–60 (1–4 Gm.).

ADULTERATIONS.—FRUIT: Rachis or stalks (inodorous, increasing fibro-vascular tissue and ash), partially grown fruit, siftings (darker and without starch masses), black pepper and other piperaceous fruits (*P. cani'num, P. cras'sipes, P. Lo'wong, P. mollis'simum, P. ribesoi'des, P. Clu'sii, Sit'sea citra'ta,* etc.), all distinguished by characteristic shape, odor, and taste. *Rhamnus cathartica* fruit (pedicellate and contains 4 seed), allspice (much larger, 2-seeded, no pedicel). *Juniperus communis* fruit (much larger, different taste); POWDER: Deteriorates unless kept in tight containers, hence best to powder only when needed, sometimes mixed with powdered allspice, flour, or starch.

Commercial.—Plant grows extensively in coffee plantations or on grounds reserved for the purpose, being supported usually on shade trees; fruit is gathered when full-grown, but before ripe—still of a green color—dried carefully in the sun, and exported from Java to Singapore, whence it enters market.

CONSTITUENTS.—Volatile oil 5–15 p. c., Resin 2.5–3.5 p. c., Cubebin .4–3 p. c., Cubebic acid 1–3.5 p. c., fixed oil 1 p. c., gum 8 p. c., starch, ash 5–8 p. c. (cubeb stalks 10 p. c.).

Oleum Cubebæ. Oil of Cubeb.—This volatile oil, distilled with water or steam from the unripe fruit, is a colorless, pale green, yellowish-green liquid, characteristic odor and taste of cubeb, sp. gr. 0.915, levorotatory, soluble in equal volume of alcohol, neutral reaction; contains a little dipentene, $C_{10}H_{16}$, but mostly sesquiterpene, cadinene, $C_{15}H_{24}$. If old, or distilled from old fruit, has additionally an inodorous stearoptene, cubeb camphor, $C_{15}H_{24}.H_2O$, which soon deposits. Dose, ♏v–20 (.3–1.3 cc.).

Cubeb: fruit, natural size, and magnified.

Resin.—Extracted by ether, which also takes up volatile oil, fixed oil, cubebin, chlorophyll, and wax; evaporate off volatile oil, when cold cubebin and wax deposit; decant from these, separate fat and have left the resin, which is amorphous, soluble in alkalies, alcohol, not precipitated by alcoholic solution of lead acetate.

Cubebin, $C_{10}H_{10}O_3$.—This constitutes the precipitate from oleoresin upon standing; it is white, crystalline, inodorous, inert; alcoholic solution bitter.

Cubebic Acid, $C_{14}H_{16}O_4$.—Brownish, resin-like mass, soluble in alkalies, alcohol, ether, chloroform, precipitated by lead acetate; diuretic. Dose, gr. 5–10 (.3–.6 Gm.). Last three are red with sulphuric acid.

PREPARATIONS.—1. *Fluidextractum Cubebæ, N.F.* (alcohol), dose, ♏xv–60 (1–4 cc.). 2. *Oleoresina Cubebæ, N.F.* (alcohol); on standing deposits waxy crystalline precipitate—must use only liquid portion, dose, ♏v–30 (.3–2 cc.). 3. *Tinctura Cubebæ, N.F.*, 20 p. c. (alcohol), dose, ʒss–2 (2–8 cc.). 4. *Fluidextractum Buchu Compositum, N.F.*, 12.5 p. c. 5. *Pilulæ Antiperiodicæ, N.F.*, ½ gr. 6. *Tinctura Antiperiodica, N.F.*, ½ p. c.

Unoff. Preps.: Extract, gr. 2–10 (.13–.6 Gm.). *Infusion,* 5 p. c., ʒj–2 (30–60 cc.). *Troches* (each ½ gr. oleoresin).

PROPERTIES.—Diuretic (resin + cubebic acid), stimulant, carminative, expectorant, disinfectant, local irritant (volatile oil), may cause headache, giddiness, nausea, purging, paralysis; it is eliminated by bronchial mucous membrane, skin, and kidneys, all being stimulated and the increased secretions disinfected; imparts to urine a peculiar odor.

USES.—Gonorrhea, urethritis, vesical irritability, cystitis, abscess of prostate gland, piles, chronic bronchitis, catarrh. Arabians used it similarly to black pepper, and were the first to introduce it into Europe.

1. *Piper Lo'wong* (*Cubeba Lowong*) and *P. ribesoi'des* (*C. Wallich'ii*), fruit of both much like the official.

2. *P. cani'num* (*C. canina*), fruit smaller than official, contracted below into a stalk half the length of the globular portion, and *P. cras'sipes* (*C. crassipes*), fruit larger than the official.

3. *False Cubeb.*—Origin unknown, fruit wrinkled, brownish-gray, size of the official, stalk 5 Mm. ($\frac{1}{5}'$) long, odor mace-like.

Piper methysticum

Piper methys'ticum, Kava, Methysticum, Kava Kava, N. F.—The dried rhizome and roots with not more than 1 p. c. of foreign organic matter; Sandwich Islands; cultivated. Tall, soft-wooded herb. Rhizome, irregular knotty crown, 12 Cm. (5′) thick, from which radiate many tough roots with ends separating fibro-vascular bundles, sometimes cut into angular pieces; crown soft, light, spongy, granular, starchy, dark brown—crown, lighter where scraped, internally white; odor faint, characteristic; taste aromatic, pungent, bitter—more or less anesthesia. Powder, whitish—starch grains, yellow resin and oil cells, sclerenchymatous fibers, tracheæ with markings, parenchyma cells (stem); solvent: diluted alcohol; contains resins (alpha-, beta-) 2 p. c., yangonin, kavaine, methysticin (kavahin—resembles piperine), volatile oil, starch 50 p. c., ash 8 p. c. Local anesthetic—lasts several days, but too irritating for general use; on mucous membranes—tingling sensation then anesthesia; natives prepare a beverage *kava*, by fermenting infusion which produces drowsiness, mutterings, weakness of limbs, without impairing intelligence. Diuretic; cystitis, vaginitis, acute and chronic diarrhea, leucorrhea. Dose, gr. 15–30 (1–2 Gm.); 1. *Fluidextractum Kavæ* (60 p. c. alcohol).

Piper longum

Piper officina'rum (*lon'gum*), *Long Pepper.*—The immature fruit dried in the sun, U.S.P. 1830; Java, India, Ceylon, Philippine Islands, Bengal. Shrub like *P. nigrum;* leaves cordate; flowers spikes; fruit spike-like cone 2.5–4 Cm. (1–1$\frac{3}{5}'$) long, 5 Mm. ($\frac{1}{5}'$) thick, cylindrical, uneven, dusty, blackish-gray, the many coalesced fruits spirally arranged, each crowned with style remnant; odor, taste, properties, and composition like that of *P. nigrum.* The Bengal long pepper is darker and shorter (2.5 Cm.; 1′ long) than that from elsewhere.

Piper album

Piper al'bum, White Pepper.—The ripe fruit of *P. nigrum* deprived of the pericarp from which it separates easily, and may be facilitated by gathering spikes, cleaning, immersing in water, and rubbing with the hands in baskets. It is somewhat larger than the *black*, smooth, yellowish, hard, horny, mealy within, odor and taste similar but less powerful. There are four varieties: 1, Tellicherry; 2, Penang; 3, Batavia; 4, Singapore. Largely used in China. Still another variety is made by soaking off (or using mechanical means) the outer portion (pericarp) of black pepper, or simply drying the very young and immature fruit, but this is smaller and inferior. *Adulterations:* Same as in *black.*

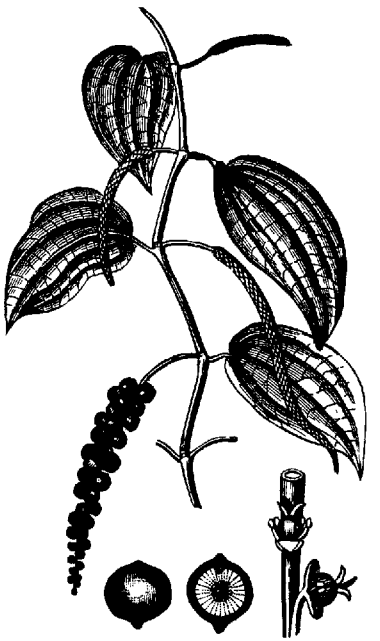
Piper sp.

Piper Famecho'ni, Kissi, Kissine, Guinea Pepper; Upper Guinea. Fruit in cylindrical clusters—small blackish-brown, ovoid berries, each with cubeb-like pedicle at base; aromatic odor, agreeable taste; contains volatile oil 4.5–11.5 p. c., piperine 3.5–5 p. c. Used like pepper.

Piper. Be'tel.—India. Climbing plant; leaves chewed by the Malays with lime and areca-nut shavings. *P. Carpun'ya,* Chile, Peru; small tree. *P. pelta'tum, P. umbella'tum;* Tropical America. Diuretic; skin diseases, tumors.

Piper nigrum

Piper ni'grum, Piper, Pepper, Black Pepper, N. F.—The dried, unripe fruit with not more than 2 p. c. of stems or other foreign matter, yielding not less than 6 p. c. of non-volatile extract, soluble in ether; S. Asia; cultivated. Perennial woody, evergreen climber; leaves 10–15 Cm. (4–6′) long, ovate, entire, smooth, leathery, dark green, 5–7-nerved; flowers, spikes, whitish. Fruit, berry-like—green, red, yellow (ripe), nearly globular, 3.5–6 Mm. ($\frac{1}{7}$–$\frac{1}{4}'$) broad, epicarp thin, easily separable from sarcocarp, grayish-black, coarsely reticulate, unilocular, 1-seeded, seed nearly white, hollow, adhering to pericarp; odor aromatic, slightly empyreumatic; taste aromatic, very pungent. Powder, grayish-black—fragments of pericarp—blackish-brown, of perisperm and embryo—whitish, starch grains, stone cells (epicarp) with reddish-brown pigment, or (endocarp) with reddish-brown substance; oil cells with yellowish oil that may separate piperine prisms; solvents: ether, acetone, alcohol, water partially; contains piperine 5–8 p. c., piperidine .56 p. c., volatile oil 1–2 p. c., resin (pungent), chavicin, piperic acid, starch 25–45 p. c., fixed oil 7 p. c. The commercial *oil of black pepper* (Oleum Piperis), a by-product in making piperine, consists of the volatile oil, fixed oil, and pungent resin—practically the oleoresin. Stimulant, tonic, antiperiodic, carminative, rubefacient; intermittents, colic, indigestion, flatulence; gargle for throat; gums; plaster for rheumatism; universal condiment. There are several varieties: 1, Malabar—heaviest; 2, Penang—strongest; 3, Singapore—darkest; 4, Straits Settlements—chief and best; the first three suitably mixed furnish popular trade brands. *Adulterations.*—FRUIT: That



Piper nigrum.

of allied species, stalks, siftings, grape seeds, ivory nut, cinnamon, mace. POWDER: starch, flour, mustard, husks, flaxseed, capsicum—all recognized by microscope. Dose, gr. 5–20 (.3–1.3 Gm.); 1. *Tinctura Antiperiodica*, $\frac{1}{80}$ p. c. *Oleoresin*, 5–6.5 p. c., ♏ss–2 (.03–.13 cc.). *Fluidextract*, ♏v–20 (.3–1.3 cc.).

Piscidia

Ichthyome'thia Piscip'ula (*Piscid'ia Erythri'na*), *Jamaica Dogwood.*—W. Indies. Well-developed tree, whose root-bark has long been used for catching fish, orange-yellow, fissured, tough, fibrous, odor opium-like, taste bitter, acrid; contains piscidin piscidic acid, resin, starch, fat. Narcotic, analgesic, soporific; neuralgia, nervous insomnia, whooping cough, dysmenorrhea; similar to opium, but less powerful, and devoid of unpleasant after-effects. Dose, ʒss–1 (2–4 Gm.); extract, fluidextract.

Pistacia

Pista'cia Lentis'cus, Mastiche, Mastic, N.F.—The concrete resinous exudation with not more than 1 p. c. of foreign organic matter; Mediterranean Basin (Spain, France, Italy, Morocco, Greece, etc.), Island of Scio, Grecian Archipelago, etc. Small tree, 3–4.6 M. (10–15°) high, branched, bark smooth, brownish-gray; leaves paripinnate; leaflets 3–5 pairs, lanceolate, entire, mucronate, sessile; flowers small, dicœcious; fruit drupe, 6 Mm. ($\frac{1}{4}$′) thick, orange-red. Resin (mastic), subglobular, lenticular pear-shaped tears, 3 Mm. ($\frac{1}{8}$′) broad, pale yellow, greenish-yellow, transparent, glass-like luster, surface sometimes dusty, brittle, plastic when chewed; odor slight balsamic; taste mild, terebinthinate; loses plasticity and deepens in color with age. Secretes in long ducts in the bark from which it is obtained by making longitudinal or transverse incisions in stem and branches, whereupon it slowly exudes, becoming within 2–3 weeks sufficiently hard to be collected carefully in soft-lined baskets. There are two varieties: 1, Separate tears (best, recognized by *N.F.*); 2, Agglutinated tears (allowed to run to the ground, often collected with sand, bark, etc.—inferior); yield 10 pounds (4.5 Kg.), per plant; solvents: chloroform, not less than 97 p. c. in ether, nor less than 80 p. c. in alcohol; contains volatile oil 1–2 p. c., alpha-resin (mastic(h)ic acid) 90 p. c., beta-resin (masticin), soluble in ether, oil of turpentine, bitter principle. Stimulant, diuretic, protective (solution); bronchial, vesical catarrhs, leucorrhea, gastric debility, chronic diarrhea, toothache (saturated ethereal solution in cavity allowed to harden—temporary filling), masticatory (preserves teeth), fumigation; in alcohol, oil of turpentine as varnish for maps, etc.; seldom used internally. Dose, gr. 15–30 (1–2 Gm.); 1. *Pilulæ Aloes et Mastiches*, $\frac{2}{3}$ gr. (.04 Gm.); 2. *Solutio Mastiches Chloroformica Composita*, Pulp Capping Varnish, 30 p. c., + balsam of Peru 30, chloroform q. s. 100—should be kept in small, well-stoppered bottles.

Pistacia Lentiscus: a, staminate branch; *b*, pistillate branch; *c*, fruit branch, $\frac{1}{4}$ nat. size; also flowers, pistil, pollen, fruit, and embryo, enlarged.

Podophyllum PODOPHYLLUM. PODOPHYLLUM, *U.S.P.*

Podophyllum peltatum, *Linné.* { The dried rhizome and roots with not less than 3 p. c. of resin.

Habitat. N. America (Canada, United States) in rich woods, thickets.

Syn. Podoph., Mandrake, May Apple Rhizome, American (Wild) Mandrake, Ground (Wild) Lemon, Hog (Indian, Devil's) Apple, Duck's Foot, Umbrella Plant, Vegetable Mercury (Calomel); Br. Podophylli Rhizoma; Fr. Rhizome de Podophyllum; Ger. Fussblattwurzel.

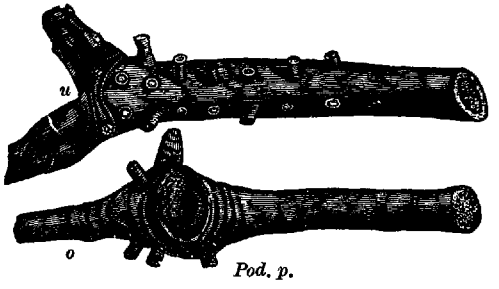
Pod-o-phyl'lum. L. fr. Gr. *ποδός*, foot, + *φύλλον*, leaf—*i. e.*, its 5-7-parted leaf resembles the foot of aquatic birds or domestic fowls, as ducks, etc.

Pel-ta'tum. L. *peltatus*, having a pelta or light shield—*i. e.*, petioles attached to the middle of the lamina instead of to the margin.

May apple—*i. e.*, plant blooms in May, thus starting the fruit, which ripens in summer (August).

PLANT.—Perennial herb; stem .3 M. (1°) high, pale green, divides near the summit into 2 petioles, each bearing a palmately 5–7-deeply-lobed, peltate leaf 10–15 Cm. (4–6′) wide, segments wedge-shaped, coarsely toothed at their ends, glaucous-green, petioles 7.5 Cm. (3′) long; flowers May, borne at fork of petioles, single, nodding, white 5 Cm. (2′) broad, 6–9 petals, 12–18 stamens; fruit yellowish berry, 2.5–5 Cm. (1–2′) long, ovoid, fleshy, soft, indehiscent; seed about 12; often eaten by animals, hence some of its names. RHIZOME, of horizontal growth, creeping, subcylindrical, jointed, compressed on upper and lower surfaces, sometimes branched, 3–20 Cm. ($1\frac{1}{5}$–8′) long, internodes 2–9 Mm. ($\frac{1}{12}$–$\frac{1}{3}$′) thick, nodes annulate, 12 Mm. ($\frac{1}{2}$′) thick, dark brown, longitudinally wrinkled or nearly smooth with irregular, somewhat V-shaped scars of scale leaves, upper surface of nodes marked with large, circular, depressed stem-scars, sometimes with buds or stem-bases, lower surface of nodes with numerous root-scars or roots, 2–7 Cm. ($\frac{4}{5}$–3′) long, 2 Mm. ($\frac{1}{12}$′) thick, fracture short; internally, cork light brown, wood with yellowish vascular bundles, pith large, white; odor slight; taste disagreeably bitter, acrid. POWDER,

Podophyllum peltatum.



Podophyllum: *u*, under side; *o*, upper side.

yellowish-brown—numerous starch grains, .003–.02 Mm. ($\frac{1}{8825}$–$\frac{1}{1250}$') broad, few rosette aggregates of calcium oxalate, tracheæ, parenchyma, cork cells; odor pronounced, characteristic. *Solvents:* alcohol; boiling water partially. Dose, gr. 5–15 (.3–1 Gm.).

ADULTERATIONS.—Sanguinaria (due to similarity of leaves despite greater value) 2–3 p. c., geranium 2–3 p. c., comfrey 1 p. c.

Commercial.—Plants of 100 or more grow in rounded or irregular-shaped clusters (patches), 3–6 M. (10–20°) broad, near wood-borders, fence-panels, or in the open, preferably on heavy soil; rhizome and roots should be collected soon after the leaves fall off, Aug.-Sept., those containing much resin being surprisingly heavy considering their appearance, breaking with an elastic, short, noisy fracture; drug often recognized in the trade as *thick, thin, heavy, light,* referring chiefly to physical characteristics. That collected in autumn, after flowering and fruiting, is preferred, being heavier from abundant resin content (podophyllotoxin) and breaking with a cleaner fracture.

CONSTITUENTS.—Resin 4–5 p. c. (varying little in quantity but greatly in content (podophyllotoxin) according to season and time of collection), starch, gum, fixed oil, gallic acid, ash 2–3 p. c.

Resin (Resina Podophylli, Podophyllin), *U.S.P.*—This is a complex substance consisting of: (1) *podophyllotoxin,* $C_{15}H_{14}O_8$. 20–26 p. c. which is obtained after removing the fat with benzin, by precipitating the podophyllinic acid from a chloroformic solution of the resin or rhizome, by the addition of ether and then simply evaporating the ethereal solution; this is the cathartic principle, being whitish, bitter, resinous, crystallizable, soluble in chloroform, ether, acetone, alcohol; cherry-red, then greenish-blue and violet by sulphuric acid, when heated with alkalies is converted by hydration into podophyllic acid, $C_{15}H_{16}O_7$, which readily loses water, forming crystalline picropodophyllin (inactive, isomeric with podophyllotoxin); (2) *podophyllinic acid,* which is an inactive resin-acid, insoluble in ether, but soluble in chloroform or alcohol, and obtained by the above process for podophyllotoxin (being precipitated and left behind upon the addition of ether). The color is due to *podophylloquercetin,* which occurs in yellow needles, insoluble in water, slightly in chloroform, more so in ether, freely in alcohol. The small amount of uncrystallizable resin, *podophylloresin,* is also purgative.

PREPARATIONS.—1. *Resina Podophylli.* Resin of Podophyllum. (Syn., Res. Podoph., Podophyllin; Fr. Résine de Podophylle; Ger. Podophyllinum, Podophyllin, Podophyllumharz.)

Manufacture: Macerate, percolate 100 Gm. with alcohol until percolate when dropped into water produces only slight turbidity, reclaim alcohol until percolate the consistence of thin syrup, and pour this slowly, stirring constantly, into 100 cc. of water mixed with hydrochloric acid 1 cc., cool, let precipitate subside, decant supernatant liquid, wash precipitate twice by decantation, each time with cold water 100 cc., dry on strainer in a cool place exposed to air and protected from light, and if it should coalesce into lumps with a glossy surface reduce to powder in a mortar. It is an amorphous powder, light brown, greenish-yellow, darker on exposure to heat or light, slight peculiar odor, faintly bitter taste; very irritating to mucous membrane, especially that of the eye; soluble in alcohol with only slight opalescence; alcoholic solution faintly acid; 75 p. c. soluble in ether; 65 p. c. soluble in chloroform. *Tests:* 1. Hot aqueous solution on cooling—deposits most of its contents; filtrate bitter, with a few drops of ferric chloride T. S.—brown. 2. Dissolve in potassium or sodium hydroxide T. S.—deep yellow liquid, becoming darker on standing, from which resin is reprecipitated by acids. 3. Add .4 Gm. to 3 cc. of 60 p. c. alcohol, + .5 cc. potassium hydroxide T. S., shake—does not gelatinize (dif. from resin in *P. Emodi*); ash 1.5 p. c. Should be kept dark, in well-closed containers. Dose, gr. $\frac{1}{8}$–1 (.008–.06 Gm.).

Preps.: 1. *Pilulæ Aloes et Podophylli Compositæ, N.F.,* $\frac{1}{2}$ gr. 2. *Pilulæ Aloes, Hydrargyri et Podophylli, N.F.,* $\frac{1}{4}$ gr. 3. *Pilulæ*

Aloini Compositæ, N.F., ⅛ gr. 4. *Pilulæ Catharticæ Vegetabiles, N.F.*, ¼ gr.

Unoff. Preps.: Fluidextract (alcohol), dose, ♏v–30 (.3–2 cc.). *Abstract* (alcohol), dose, gr. ¼–2 (.016–.13 Gm.). *Extract* (80 p. c. alcohol), dose, gr. 5–10 (.3–.6 Gm.). *Tincture* (Br.), 3.65 p. c. of resin in alcohol, dose, ♏v–15 (.3–1 cc.). *Podophyllotoxin* (pure), dose, gr. $\frac{1}{12}$–$\frac{1}{8}$ (.005–.008 Gm.).

PROPERTIES.—Hydragogue cathartic, cholagogue, alterative, irritant, tonic—slowest acting official purgative. Increases intestinal secretion, bile-flow, causes copious watery stools, griping, nausea in from 10–20 hours, acts mainly on the duodenum, but is a powerful intestinal irritant, resembling jalap and calomel, only slower; large doses are distinctly poisonous, producing in the young vomiting, purging, collapse, coma, finally epileptiform convulsions. Those employed in powdering the drug have irritation of the eyes, nose, mouth, respiratory passages, and skin. The resin applied to ulcers produces purgation and is also a powerful irritant to the skin. Its action upon the liver, being somewhat similar to that of mercury, led some early to claim for it alterative properties equal to those of that metal, and for a time it was employed under the name of "vegetable calomel" in those diseases for which mercury is a recognized specific, but now it is believed to have incidentally only very slight alterative power, and to possess no property in common with mercury save that of catharsis.

USES.—Constipation, torpid liver, lead costiveness, diarrhea, catarrhal or malarial jaundice, remittent fevers, dyspepsia, bilious vomiting, and headache. With cream of tartar useful in dropsies, rheumatic, scrofulous, and syphilitic affections; should be associated with hyoscyamus or belladonna to overcome griping, and, owing to extremely slow action, should not be given in combination with brisk cathartics, but preferably with such as act in approximately the same time, as calomel, jalap, aloe, leptandra, etc.—gr. 5 (.3 Gm.) of podophyllin (resin) have killed, so have ʒiss (6 Gm.), but in one case gr. 10 (.6 Gm.) failed to produce more than abdominal pains.

Allied Plants:

1. *Podophyllum Emo'di, Podophylli Indici Rhizoma* (Br.)—India, Hazara, Kashmir; Himalaya Mountains; rhizome, collected after flowering, cylindrical, stem-scars crowded on upper surface, many roots beneath; yields resin (Podophylli Indici Resina—Br.) 10–14 p. c., which contains podophyllotoxin 38–63 p. c., thereby making it similar to but stronger than our official drug. Dose of resin, gr. ⅛–1 (.008–.06 Gm.).

Polygala senega

SENEGA. SENEGA, *U.S.P.*

Polygala Senega, *Linné.* { The dried root, with not more than 5 p. c. of stems, and other foreign organic matter.

Habitat. United States, in woods and rocky soil; Canada to S. Carolina, west to Wisconsin.

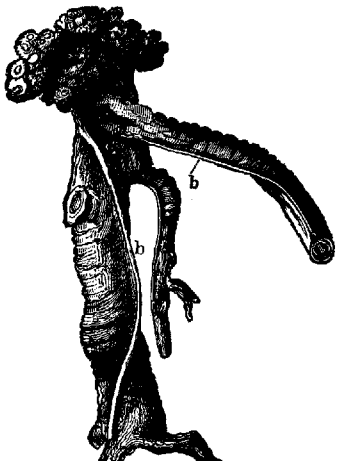
Syn. Seneg., Senega Snakeroot, Seneca Snakeroot, Seneka, or Snake Root, Rattlesnake Root, Milkwort, Mountain Flax; Br. Senegæ Radix; Fr. Polygala de Virginie; Ger. Senegawurzel.

Po-lyg'a-la. L., see etymology, above, of Polygalaceæ.

Sen'e-ga. L. fr. the Seneca (Senega) tribe, one of the five N. American Indian tribes; they inhabited W. New York and used this plant as a remedy for snake-bites.

PLANT.—Perennial herb; stems several, erect, 22.5–37.5 Cm. (9–15′) high, smooth, round, leafy, occasionally reddish or purplish below, green above; leaves 2.5–5 Cm. (1–2′) long, 12 Mm. (½′) wide, lanceolate, sessile, margins rough, bright green; flowers May–June, small, diadelphous, white, spike 2.5–5 Cm. (1–2′) long, calyx showy; sepals 5 (3 small, green; 2 larger, petaloid, called wings); corolla small, closed; fruit capsule, 2-celled, compressed, 2-seeded, black. ROOT, usually in pieces; when entire, slenderly conical, with an enlarged crown, 3–15 Cm. (1⅕–6′) long, 2–10 Mm. ($\frac{1}{12}$–$\frac{2}{5}$′) thick, tortuous, somewhat branched, few rootlets, crown knotty with numerous buds and short stem-bases, brownish-yellow, crown darker and rose-tinted, longitudinally wrinkled, frequently with a distinct ridge (keel); fracture short, wood pale yellow; usually eccentrically developed and in pieces; odor suggesting methyl salicylate; taste sweetish, afterward strongly acrid. POWDER, grayish-yellow, sternutatory—fragments of cork, parenchyma and sieve tissue developing oily globules, tracheæ, tracheids, numerous pores, wood-fibers, lignified medullary ray cells. *Solvents:* boiling water; alcohol; diluted alcohol. Dose, gr. 5–30 (.3–2 Gm.).

Polygala Senega.



Polygala Senega: root, natural size; *b*, *b*, the keel.