



Juglans: flowering branch;
cross-section of fruit.

Juglans cinerea, *Juglans*, *Butternut Bark*, *N.F.*—Juglandaceæ. The dried inner bark of the root, with not more than 2 p. c. of adhering wood or other foreign organic matter; United States, Canada. Handsome spreading tree, 9–15 M. (30–50°) high, light gray bark, durable brown wood; leaves imparipinnate; flowers—staminate and pistillate; fruit large, oblong drupe, 6 Cm. (2½') long, hairy, viscid, green then brown; seed thick, oily, edible. Root-bark (liber) in quills, curved strips, chips, 3–10 Mm. (⅓–⅔') thick, deep brown throughout, outer surface smooth, warty, inner surface smooth, striate; fracture short, weak; odor faintly aromatic; taste bitter, astringent, acrid. Powder, dark brown—calcium oxalate rosette crystals, starch grains, stone cells, sometimes with reddish content, crystal-fibers, tannin, oily drops;

contains juglandic acid (juglone, nucin—oxynaphtoquinone), fixed oil 14 p. c., volatile oil, resin, tannin, ash 8 p. c. Cathartic (resembling rhubarb), mild hepatic stimulant; malaria, chronic constipation, dysentery. Dose, ʒj–2 (4–8 Gm.); 1. *Fluidextractum Juglandis* (1st menstruum: glycerin 10, alcohol 50, water 40; 2d diluted alcohol): Prep.: 1. *Elixir Cascarae Sagradae Compositum*, 6.5 p. c. Juglandin ("Eclectic" resinoid), gr. 3–10 (.2–.6 Gm.).

J. regia, *English Walnut*.—Persia, Himalayas, China, cultivated, Europe. Decoction of leaves used in leucorrhea, meningitis; decoction of leaves, rind, or bark in checking mammary secretion, ulcers, diarrhea, sore mouth, tonsils, uterine hemorrhages, carbuncles. *J. nigra*, *Black Walnut*.—Bark styptic, acrid; used mostly in dyeing. The rind of green fruit removes ringworms, tetter, diphtheria. Decoction used as a vermifuge; spirit made by distilling fresh walnuts with alcohol; used in hysteric, cerebral, and pregnant vomiting. All of these fruits contain much fixed oil, which turns red with nitric acid, but brown with nitric and sulphuric acids.

Juniperus communis

JUNIPERUS. JUNIPER BERRY, *N.F.*

Oleum Juniperi. Oil of Juniper, *U.S.P.*

Juniperus communis, { A volatile oil distilled from the dried ripe fruit.
Linné.

Habitat. N. America (Canada, N. United States), Asia, Europe, N. Africa; dry woods, hills.

Syn. Juniper Bush, Juniper Berries, Fructus (Baccæ) Juniperi; Fr. Genièvre, Baies de Genièvre; Ger. (Gemeiner) Wachholderbeeren; Ol. Junip., Juniper Oil, Oil of Juniper Berries, Oleum Fructus (Baccæ) Juniperi; Fr. Essence de Genièvre; Ger. Wachholder(beer)öl.

Ju-nip'e-rus. L. fr. Celtic *juniperus*, rough—*i.e.*, its foliage; or fr. L. *juvenis*, young, + *parere*, to produce—*i.e.*, young fruit, leaves, etc., are continually replacing the old.

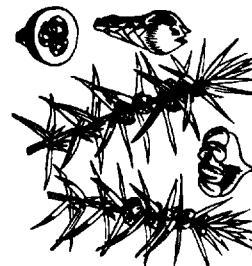
Com-mu'nis. L. common, general—*i. e.*, the usual or ordinary kind.

PLANT.—Evergreen shrub 2–5 M. (6–15°) high, with many close branches, some often prostrate; leaves narrow, longer than fruit, 12 Mm. (½') long, in whorls of 3's, sharp-pointed, channeled, deep green; flowers dicecious—staminate catkins, pistillate cones. Fruit (galbulus)—Juniperus, Juniper Berry, *N.F.* The carefully dried ripe fruit with not more than 10 p. c. of immature or discolored berries and 3 p. c. of foreign organic matter. It is nearly globular, 8 Mm. (⅓') thick, blackish-purple, blue-gray bloom, apex 3-furrowed—cohesion of 3 fleshy bracts; internally loosely fleshy, many schizogenous cavities, 3 ovate seed, oil-glands on surface, ripens second year; odor aromatic; taste sweet, pleasant, terebinthinate, bitter. Powder, dark brown—stone cells, calcium oxalate prisms, polygonal cells, aleurone grains, oil globules, resin masses.

CONSTITUENTS.—Volatile oil .5–2.5 p. c., sugar 15–30 p. c., resin 10 p. c., juniperin, proteins 4 p. c., fat, wax, malates, formic and acetic acids.

Oleum Juniperi. Oil of Juniper.—Obtained from the dried ripe fruit by distillation with salt and water, or steam; it is a colorless, faintly green or yellow liquid, characteristic odor and taste of juniper berries, soluble in 4 vols. of alcohol with not more than slight cloudiness, neutral, slightly acid, sp. gr. 0.870, levorotatory; contains chiefly pinene, C₁₀H₁₆, with some cadinene, C₁₅H₂₄, juniper camphor, and an ester to which odor and taste are due. Should be kept cool, dark, in well-stoppered, amber-colored bottles. Dose, m̄v–15 (.3–1 cc.).

PREPARATIONS.—**BERRY:** 1. *Fluidextractum Juniperi*, *N.F.* (80 p. c. alcohol), dose, ʒj–2 (4–8 cc.): Prep.: 1. *Elixir Buchu, Juniperi et Potassi Acetatis*, *N.F.*, 7.5 p. c. 2. *Fluidextractum Buchu Compositum*, *N.F.*, 12.5 p. c.: Prep.: 1. *Elixir Buchu Compositum*, *N.F.*, 25 p. c. *Extract; Infusion; Succus Juniperi Inspissatus* (Ger.), 20 p. c. **OIL:** 1. *Acetum Aromaticum*, *N.F.*; ⅓ p. c. *Spirit*, 5 p. c. + alcohol, ʒj–4

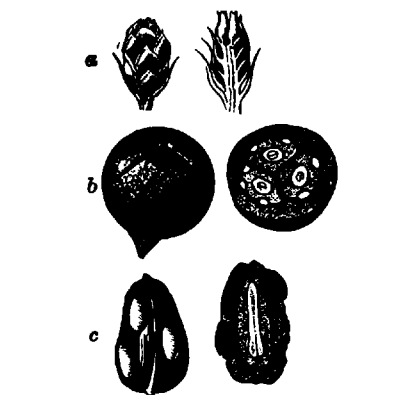


Juniperus communis.

(4–15 cc.). *Compound Spirit*, ʒ p. c. —oil of juniper ⅔ p. c., oil of caraway ⅓, oil of fennel ⅓, 70 p. c. alcohol q. s. 100 cc., ʒj–4 (4–15 cc.—substitute for gin.)

PROPERTIES.—Similar to turpentine; stimulant, diuretic, anodyne, emmenagogue, carminative, stomachic, antiseptic.

USES.—Renal dropsy, vesical catarrh, rheumatic pains, swellings.



Juniperus: a, fertile catkin and longitudinal section; b, galbulus and transverse section; c, seed and longitudinal section magnified.

Oleum Cadinum. Oil of Cade, U.S.P.

Juniperus Oxycedrus, { An empyreumatic volatile oil obtained from
Linné. the wood.

Habitat. S. Europe, Spain.

Syn. Prickly (Spanish, Berry-bearing) Cedar, Large Brown-fruited Juniper; Ol. Cadin., Cade Oil, Oil of Juniper Tar, Oleum Juniperi Empyreumaticum (Nigrum); Fr. Huile de Cade; Ger. Kadeöl, Takinöl, Spanisch-Cederöl.

Ox-y-ce'drus. L. fr. Gr. *ὄξυς*, sharp, pointed, + *κέδρος*, cedar—*i. e.*, cedar with pointed leaves.

Ca-di'num. L. fr. Fr. *cade*, juniper; Bohem. *kadik*, juniper—*i. e.*, European cedar.

PLANT.—Shrub 2.4–3.7 M. (8–12°) high, resembling *J. commu'nis*, branches spreading, drooping; leaves medium size, awl-shaped, pointed, 2 furrows on upper edge; fruit 12 Mm. (½') thick, reddish, shining, 2 white lines on apex.

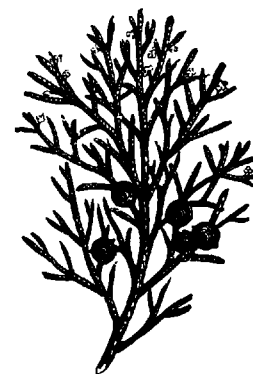
CONSTITUENTS.—Volatile oil, resin, tannin, extractive (acetic acid, pyroligneous acid, acetone, methyl alcohol, etc.).

Oleum Cadinum. Oil of Cade.—Should be dry (downward) distilled from the heartwood, similar to obtaining tar, pieces of wood being laid carefully upon one another and covered with earth except an opening at the top, thus permitting slow combustion; inverted iron pots also are filled with billets, surrounded with worthless wood and set on fire, producing sufficient heat for distillation; product is caught in receptacles, set aside 15–20 days for separation of tarry and aqueous layers, the upper oily one constituting the commercial product. It is a dark brown, clear, thick liquid, tarry odor, warm, faintly aromatic, bitter taste, slightly soluble in water, imparting to it acid reaction, partially soluble in alcohol, petroleum benzin, completely soluble in ether (3), amyl alcohol, chloroform, glacial acetic acid, oil of turpentine, sp. gr. 0.980–1.055; contains phenols and sesquiterpene—cadinene, C₁₅H₂₄. *Test:* 1. Shake 1 part with warm distilled water (20); filtrate, + 3 drops of ferric chloride solution (1 in 1000)—red; or + silver ammonium nitrate T. S.—blackens (cold); or + alkaline cupric tartrate T. S. (hot)—red precipitate. *Impurities:* Rosin, rosin oil. The oil from wood of *J. communis* often substituted. Dose, mij –5 (.2–3 cc.).

PREPARATIONS.—1. *Petroxolinum Cadinum*, N.F., 25 cc. in 100 cc. of product. 2. *Linimentum Saponis Mollis Compositum*, N.F., 2 p. c. 3. *Petroxolinum Sulphuratum Compositum*, N.F., 10 cc. in 100 cc. of product. 4. *Unguentum Sulphuris Compositum*, N.F., 15 p. c.

PROPERTIES.—Anthelmintic, externally parasiticide.

USES.—Psoriasis, pityriasis rubra, chronic eczema, prurigo, psora, favus. This oil may replace the U.S.P. *Oleum Picis Rectificatum*, both having about the same effect.



Juniperus Sabina.

Juniperus sabina

Juniperus Sabi'na, *Savin*, *Shrubby Red Cedar*.—The tops, U.S.P. 1820–1900; Europe, Siberia, N. America, rocky banks, mountains. Evergreen shrub, procumbent or erect, 1–4.5 M. (3–15°) high, branched, bark greenish (young), brownish (old); flowers dioecious; fruit galbulus, bluish, size of a pea, 1–3-seeded. Tops yellowish-green, subquadrangular branchlets; leaves 4 rows, dark green, scale-like, ovate-lanceolate, acute, imbricated, shallow groove on back, roundish gland in middle; odor peculiar, terebinthinate; taste disagreeable, resinous, bitter; solvents: boiling water, alcohol; contains volatile oil 2–5–10 p. c., resin, tannin, salts (K, Ca). Diuretic, emmenagogue, ecboic, irritant, hemagogue; amenorrhea, dysmenorrhea, menorrhagia, rheumatism, gout; warts, ulcers, dental caries, tinea capitis, polypi. *Poisoning:* Abdominal pain, vomiting, strangury, convulsions, coma—magnesium sulphate (full dose), demulcents, anodynes, stimulants. Dose, gr. 5–15 (.3–1 Gm.), in syrup, honey; fluidextract (alcohol), $\text{m}\nu$ –15 (.3–1 cc.); cerate (25 p. c.), to prolong secretion from blisters, etc.; Infusion, Tincture.

Kalmia

Kal'mia latifo'lia, *Mountain Laurel*, *Calico-bush*.—About 1.8–9 M. (6–30°) high; flowers inodorous, May–June; leaves evergreen, elliptical; contains tannin, arbutin, resin, andromedotoxin, C₃₁H₅₁O₁₀. Astringent; large doses poisonous.

Krameria

KRAMERIA. KRAMERIA, U.S.P.

Krameria { *triandra*, *Ruiz et Pavon*, } The dried root.
 { *argentea*, *Martius*. }

Habitat. 1. Peru, Bolivia. 2. Brazil (in sandy localities of the mountains, elevation 925–2465 M. (3,000–8,000°)).

Syn. Rhatany; Br. *Krameria Radix*; Fr. *Ratanhia*; Ger. *Radix Ratanhia*, *Ratanhia-wurzel*.

Kra-me'ri-a. L. see etymology, above, of *Krameriaceae*.

Tri-an'dra. L. fr. Gr. *τρι*, three, + *ἀνδρῶς* man, stamen—*i. e.*, flowers have 3 stamens.

Ar-gon'te-a. L. fr. *argenteus*, silvery, silvered—*i. e.*, leaves, whitish from adpressed silvery hairs.

Rhat'a-ny. Fr. *Peruv. ratana*, native name; Sp. *ratania*, *ratana*, creeping—*i. e.*, the plant's habit.

PLANTS.—Low shrubs with spreading, decumbent branches; bark grayish-brown, when young hoary with erect silky hairs; leaves sessile, densely covered on both sides with adpressed silvery hairs, 12 Mm. ($\frac{1}{2}$ ') long, obovate, entire; flowers Oct.–Nov., 18 Mm. ($\frac{3}{4}$ ') broad, red; sepals 4, scarlet, in form of a cross; petals 4, dissimilar, red; fruit, size of a pea, 6 Mm. ($\frac{1}{4}$ ') thick, covered with stiff reddish-brown prickles, 1–2-seeded. **ROOT** (*K. triandra*): *Peruvian*, crown knotty, several-headed, branching roots, latter up to 50 Cm. (20') in length, 1 Cm. ($\frac{2}{5}$ ') thick, cylindrical, flexuous, reddish-brown, with darker scaly cork, wrinkled, devoid of transverse fissures; bark one-third of radius, fracture slightly fibrous, of wood tough, splintery; wood yellowish, finely radiate; inodorous; bark astringent, wood nearly tasteless; (*K. argentea*): *Para*, usually separate from the crown, less flexuous, tapering, tough, internally darker, usually not exceeding 12 Mm. ($\frac{1}{2}$ ') in thickness;



Krameria triandra.

Krameria: transverse sections: root; a, *Peruvian*; b, *Savanilla*.

purplish-brown with numerous fissures, bark one-half the radius. **POWDER**, reddish-brown—starch grains, central cleft, .003–.035 Mm. ($\frac{1}{8333}$ – $\frac{1}{15}$ ') thick, bast-fibers wavy with attenuated ends, tracheæ, wood-fibers fusiform, calcium oxalate prisms, few microcrystals. **Solvents:** cold water; boiling water; alcohol. Dose, gr. 5–30 (.3–2 Gm.).

Commercial.—We have two important varieties: 1. *Peruvian*, *Payta*, *Red Rhatany* (*K. triandra*).—Abundant around Huanuco and Lima, mainly shipped from Payta. 2. *Para*, *Brazilian*, *Ceara*, *Brown Rhatany* (*K. argentea*). Although darker and less purple, it resembles *K. Ixina*, for which during the past few years it has largely been sold; shipped chiefly from Para. Constituents are mostly in the bark, hence the thick-barked root, with little wood, is preferred. Roots are dug after rains mostly in S. Peru, especially in Arica and Islay provinces.

CONSTITUENTS.—Kramero-tannic acid 20 p. c., Rhatanic-red, rhatanine, starch, sugar, gum, wax, calcium oxalate, ash 5 p. c., aqueous extractive 9 p. c.

Kramero-tannic Acid (*krameria-* or *ratanhia-tannic acid*).—Obtained by treating ethereal extract of bark with alcohol and evaporating this latter solution. It is a red, amorphous powder, precipitated dark green by ferric salts and flesh-colored by galatin; no precipitate from tartar emetic, but fused with potassium hydroxide yields protocatechuic acid and phloroglucin; alcoholic tincture of Peruvian is reddish, Para and Savanilla yellowish, lead acetate with former gives reddish-brown, with two latter bluish-gray precipitate.

Rhatanic-red (*ratanhia-red*). $C_{26}H_{22}O_{11}$.—Obtained by boiling kramero-tannic acid with diluted sulphuric acid, when it splits into glucose and this coloring principle, which is similar to that found in horse-chestnut and tormentilla.

PREPARATIONS.—1. *Tinctura Krameriaë*. Tincture of Krameria. (Syn., Tr. Kramer.; Fr. Teinture de Ratanhia; Ger. Tinctura Ratanhiæ, Ratanhiatinktur.)

Manufacture: 20 p. c. Macerate, percolate similar to Tinctura Veratri Viridis, page 104; menstruum: diluted alcohol. Dose, ℥xv–60 (1–4 cc.).

2. *Extractum Krameriaë*, *N.F.* (water). Dose, gr. 5–10 (.3–.6 Gm.).

3. *Fluidextractum Krameriaë*, *N.F.* (1st menstruum: glycerin 10, alcohol 50, water 40, 2d: diluted alcohol). Dose, ℥v–30 (.3–2 cc.).

Prep.: 1. *Syrupus Krameriaë*, *N.F.*, 45 p. c. Dose, ʒss–4 (2–15 cc.).

4. *Fluidglyceratum Krameriaë*, *N.F.*, 100 p. c. Dose, ℥v–30 (.3–2 cc.). **Unoff. Preps.:** *Infusion* (Br.), 5 p. c., ʒj–2 (30–60 cc.). *Lozenge* (Br.), ext. 1 gr. (.06 Gm.). *Lozenge Krameria and Cocaine* (Br.), ext. 1 gr. (.06 Gm.) + cocaine hydrochloride $\frac{1}{20}$ gr. (.003 Gm.).

PROPERTIES.—Similar to tannic acid, astringent, tonic.

USES.—Chronic diarrhea, stomach and intestinal hemorrhage, leucorrhœa, dysentery, gleet, gonorrhœa, ozena, menorrhagia, fissure of anus or nipple, incontinence of urine. Externally—gargle for sore throat, mucous membranes of eyes, nose, gums, epistaxis, rectal bleeding, relaxed uvula, tooth powder and wash. Generally used locally by injection, gargle, wash, enema (extract 2 p. c. in water).

Allied Plants:

1. *Krameria Ixi'na*. *Savanilla*, *New Granada*, *Antilles*, *Violet Rhatany*.—This abounds in Colombia, Venezuela, Guiana, Brazil, Haiti, Antigua, Mexico. Similar to Para Rhatany. Of this species we have several varieties collected indiscriminately and so used: 1. Var. *granaten'sis*, which is distinguished solely by its broader leaves. 2. Var. *tomento'sa*; this is an extremely woolly form, and by some deemed deserving of specific rank (*K. tomentosa*), being shipped not only from Savanilla, but also from Carthagena, Santa Marta, etc.—for some years out of market, but now returning; constituents and uses same as the official.

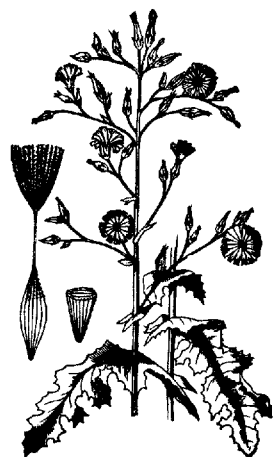
2. *K. cistroi'des*. Chile.—Roots resemble Peruvian very closely, wood of tap-root pale reddish in outer layer, brownish-red in the center. *Guayaquil Rhatany* (origin unknown), root large, contorted, bark thin, fibrous, rich in tannin, reddish-brown, striated, warty. *K. secundiflora* (*lanceolata*), *Texas Rhatany*; roots valuable, thin, dark brown, bark thick, rich in tannin; *Florida Rhatany*—same source, and similar to Texas; neither on the market.

Lactuca

Lactu'ca viro'sa, *Lactucarium*, *Wild Lettuce*.—The dried milk-juice, U.S.P. 1820-1910; C. and S. Europe. Biennial herb .6-2 M. (2-6°) high, glabrous, green, often purple spotted; leaves runcinate, radical and cauline, spinous apex and margin, auriculate, glaucous-green, flowers yellowish, milk-juice (*lactucarium*) usually in quarter sections, angular pieces, brownish, fracture tough, waxy; internally light brown, porous; odor distinctive, opium-like; taste bitter. Powder, brownish—irregular fragments without cellular structure. It is obtained by cutting off the head of each stalk and scraping the exuding juice into small vessels, repeating the process 6-7 times daily for several weeks, each cut being made a little lower down the stalk; by night, having become a viscid mass, it is divided into suitable pieces and dried by gentle artificial heat for 5 days, losing 75 p. c. in weight; solvents: water (51 p. c.), diluted alcohol (36-44 p. c.), spirit of chloroform (55-60 p. c.), being mostly lactucerin; contains lactucerin (*lactucan*) 50-60 p. c., lactucin, lactucic acid, lactucopicrin, caoutchouc, resin, volatile oil, ash 10 p. c. With water—turbid mixture; + iodine T. S.—not colored blue (abs. of starch); + ferric chloride T. S.—only faint green (abs. of tannin). There are three varieties: 1, English; 2, German; 3, French (*Aubergier's*). The juice of *L. sati'va*, obtained like *lactucarium*, yields *Lactucarium Gallicum*, and when expressed from the stalks, clarified by coagulation, expressed and inspissated—

Thridace. Anodyne, sedative, hypnotic, diuretic, expectorant, very unreliable; milder than opium, and, unlike it, does not derange the digestive organs; where opium is objectionable—to procure sleep, allay cough, dropsy, palpitation of heart, nervousness. Dose, gr. 1-8-15 (.06-.5-1 Gm.); *Tincture*, 50 p. c., dose, ʒss-1 (2-4 cc.); *Syrup*, 5 p. c., dose, ʒj-4 (4-15 cc.); *Fluidextract*, dose, mj-30 (.06-2 cc.); *Lozenge*. *L. canadensis (elongata)*, *Wild Lettuce*, U.S.P. 1820-1840. The herb; N. America, rich damp soil, fields, thickets; herb 1.3-3 M. (4-10°) high, hollow, purple, leafy, glaucous; leaves 15-30 Cm. (6-12') long, pinatifid; flowers yellow to purple, heads 20-flowered, panicles. Juice from plants in flower make good *lactucarium*, that collected in early season being without bitterness.

L. sati'va, *Garden Lettuce*, yields a juice that is medicinal and more abundant in wild than cultivated plants; highly valued as salad and as such is a feeble hypnotic. *L. sagitta'ta (altis'sima)*, large Caucasian plant 2.5-3 M. (8-10°) high, chiefly cultivated in France.



Lactuca virosa.

Laurus

Lau'rus no'bilis, *Laurel*, *Sweet Bay*.—The leaves and fruit; Mediterranean Basin. Leaves 5-10 Cm. (2-4') long, pellucid-punctate, smooth, aromatic, astringent; fruit (bayberries) oval drupes 12 Mm. (½') long; contain volatile oil, fixed oil (*Oleum Lauri*) 30 p. c.; stimulant, astringent, stomachic.

Lavandula

LAVANDULA. LAVENDER.

Oleum Lavandulæ. Oil of Lavender, U.S.P.

Lavandula spica, *Linné.*

{ A volatile oil distilled from the fresh flowering tops, yielding not less than 30 p. c. esters, calculated as linalyl acetate.

Habitat. S. Europe (France, Italy, Spain), N. W. Africa—sunny hills and mountains; cultivated.

Syn. True (Garden, Spike, Common) Lavender, Flores Lavandulæ; Fr. Lavande Vraie,—officinale; Ger. Lavendelblüten; Ol. Lavand., *Oleum Lavandulæ* Florum, U.S.P. 1900; Fr. Essence de Lavande; Ger. Lavendelöl.

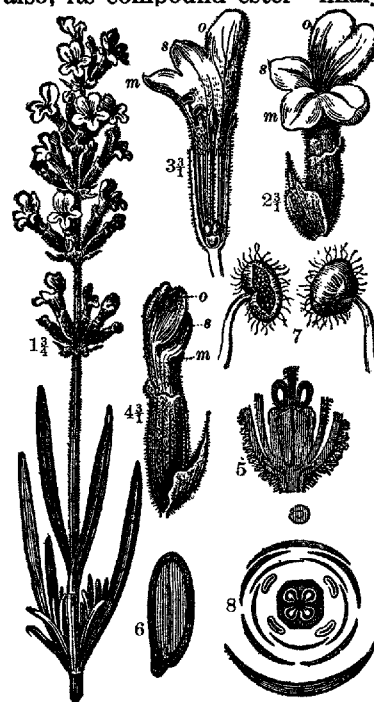
La-van'du-la. L. fr. *lavo, lavare*, to wash—*i. e.*, medieval name, in allusion to the use made of its distilled water for bathing.

Sp'i-ca. L. *spica*, a point, spike—*i. e.*, flowers arranged in a spike: terminal cluster.

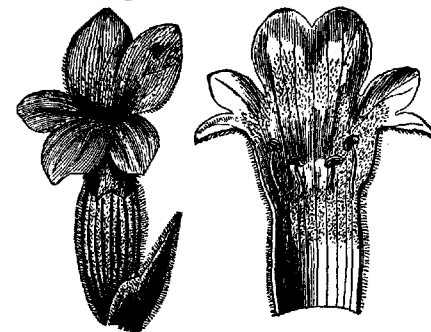
PLANT.—Shrub .3-1 M. (1-3°) high; stem crooked, branched, bark brownish-gray, much cleft when old; leaves linear, sessile, entire, revolute margins, with whitish down, crowded at bases of the quadrangular branches; flowers June-July, lilac-color, terminal spikes, 2-lipped, hairy, glandular; entire plant delightfully fragrant.

CONSTITUENTS.—Volatile oil 1-3 p. c., resin, tannin.

***Oleum Lavandulæ*. Oil of Lavender.**—A colorless, yellow liquid, characteristic odor and taste of lavender flowers, soluble in 3 vols. of 70 p. c. alcohol, sp. gr. 0.881, levorotatory; contains a terpene, C₁₀H₁₆, 2 alcohols—geraniol, C₁₀H₁₈O, and (chiefly) linalool, C₁₀H₁₈O, also, its compound ester—linalyl acetate, C₁₀H₁₇C₂H₃O₂, 30-36 p. c., upon which the value depends, and a little cineol—a large quantity of this latter proving the presence of oil of spike (wild broad-leaved variety). When cold deposits stearoptene, and if distilled from leaves and stalks the odor is more rank. *Tests:* 1. Shake in a narrow glass cylinder with equal volume of distilled water—volume not diminished (abs. of alcohol). The *French* oil is from flowers, sometimes including leaves, of wild plants collected July-Sept., the late and high altitude products being best—chief



Lavandula spica: 1, flowering twig; 2, flower with sepal; 3, longitudinal section of flower; 4, flower bud; 5, vertical section of flower bud with ovary; 6, vertical section of little nut; 7, stamens; 8, diagram of flower.



Lavender flower and corolla: magnified 4 diam.

commercial article; the *English* oil (oil of garden lavender) is solely from flowers of cultivated plants, the yield being small and price high. Should be kept cool, dark, in well-stoppered amber-colored bottles. Dose, m̄j-5 (.06-3 cc.).

ADULTERATIONS.—Oil of turpentine—less soluble in alcohol; oil of sweet basil (*Ocimum Basilicum*), Asia, Africa—plant cultivated in gardens for seasoning food and for its white or reddish flowers; oil balsamic, aromatic, possessing a cooling taste.

PREPARATIONS.—1. *Spiritus Lavandulae*. Spirit of Lavender. (Syn., Sp. Lavand.; Fr. Alcoolat (Esprit, Eau) de Lavande; Ger. Lavendelspiritus.)

Manufacture: 5 p. c. Dissolve oil 5 cc. in alcohol q. s. 100 cc. Dose, ʒss-1 (2-4 cc.).

2. *Tinctura Lavandulae Composita*. Compound Tincture of Lavender. (Syn., Tr. Lavand. Co., Compound Spirit of Lavender, Lavender Drops; Fr. Teinture de Lavande composée; Ger. Zusammengesetzte Lavendeltinktur.)

Manufacture: $\frac{4}{5}$ p. c. Similar to *Tinctura Cardamomi Composita*, page 137—using oil of lavender .8 cc., oil of rosemary .2, cinnamon 2 Gm., clove .5, myristica 1, red saunders 1, macerating powders in alcohol 75 cc., in which the oils have been dissolved, and water 25 cc., finishing with 75 p. c. alcohol. Dose, ʒss-1 (2-4 cc.).

Prep.: 1. *Liquor Potassii Arsenitis*, 3 p. c. (arsenic trioxide 1 p. c., potassium bicarbonate 2 p. c.).

3. *Linimentum Saponis Mollis*, 2 p. c. 4. *Spiritus Ammoniae Aromaticus*, $\frac{1}{10}$ p. c. 5. *Unguentum Plumbi Oleatis*, 1 p. c. 6. *Acetum Aromaticum*, N.F., $\frac{1}{10}$ p. c. 7. *Mistura Oleo-Balsamica*, N.F., $\frac{2}{3}$ p. c. 8. *Oleum Hyoscyami Compositum*, N.F., $\frac{1}{2}$ p. c. 9. *Petroxolinum Liquidum*, N.F., $\frac{1}{2}$ p. c. 10. *Petroxolinum Spissum*, N.F., 3 p. c. 11. *Spiritus Odoratus*, N.F., $\frac{2}{3}$ p. c.

Unoff. Preps.: Water, $\frac{1}{2}$ p. c. Infusion and Fomentation (flowers).

PROPERTIES.—Stimulant, carminative, nervine, errhine.

USES.—Gastralgia, nausea, flatulence, to correct nauseating medicines, nervous headache; mostly in perfumery.

Flowers, U.S.P. 1840-1880. *Oil of Lavender Flowers*, U.S.P. 1880-1900, distilled from the fresh flowers. *L. Ste'chas*. *Arabian* (French) *Lavender*, has dark purple flowers, aromatic camphoraceous odor, and is used, with other varieties, for obtaining the oil.

Limonium

Limo'nium carolinia'num (*Stat'ice Limo'nium* var. *carolinia'na*), *Marsh Rosemary*.—Plumbaginaceæ. The root, U.S.P. 1830-1870; N. America. Plant a maritime perennial, acaulescent; leaves 2.5-4 Cm. (1-1 $\frac{3}{4}$ ') long, obovate, cuneiform, entire, mucronate, scape .3-.6 M. (1-2°) high, terete, corymbose panicles; flowers lavender color; root .3-.6 M. (1-2°) long, 2.5 Cm. (1') thick, annulate, wrinkled, purplish-brown, astringent, bitter; contains tannin 14-18 p. c., volatile oil, resin. Astringent like catechu or kino; aphthous and ulcerative affections of the mouth, fauces, hemorrhages, dysentery; in decoction, infusion, tincture. Dose, gr. 5-30 (.3-2 Gm.).

Lindera

Ben'zoin (*Lin'dera*) *Benzoin*, *Spice* or *Benjamin Bush*.—N. America, damp woods. Shrub 2-4.5 M. (6-15°) high, smooth; bark mostly used, berries and leaves to some extent; tonic, aromatic stimulant, diaphoretic; berries for allspice. Dose, gr. 15-60 (1-4 Gm.).

Linum

LINUM. LINSEED, U.S.P.

Linum usitatissimum,
Linné.

The dried ripe seed with not more than 2 p. c. other seeds or foreign organic matter, yielding not less than 30 p. c. non-volatile, ether-soluble extractive—98 p. c. being saponifiable.

Habitat. C. Asia, Egypt, S. Europe, spontaneous in most temperate countries; cultivated in Russia, Egypt, India, United States, S. Europe, England, Holland.

Syn. Flaxseed, Flax, Lint-bells, Winter lien; Br. Lini Semina, Lini Semina Contusa (Crushed); Fr. Lin, Semence (Graine) de Lin; Ger. Semen Lini, Leinsamen, Flachssamen.

Linum. L. see etymology, page 330, of Linaceæ.

U-si-ta-tis-si-mum. L. sup. adj. fr. *usitatus*, most useful, common, familiar.

Flax' seed. AS. *fleax*, *flechten*, to braid, plait, twist—i. e., its fibers, + *seed*.

PLANT.—An annual; stem .6 M. (2°) high, stiff, erect, solitary, round, smooth, green; leaves small, lanceolate, acute, entire, sessile, pale green, 2-4 Cm. ($\frac{1}{2}$ -1 $\frac{3}{4}$ ') long; flowers June-July; terminal, bluish; fruit August, globular capsule, size of pea, with persistent calyx at base, crowned with sharp spine, 10-seeded in distinct cells. **SEED**, ovate, oblong-lanceolate, flattened, obliquely pointed at one end, 4-6 Mm. ($\frac{1}{8}$ - $\frac{1}{4}$ ') long, brown, smooth, shiny, raphe a distinct yellow ridge along one edge, hilum and micropyle in depression below pointed end; internally light yellow, brownish; odor slight; taste mucilaginous, oily. **POWDER**, yellowish-brown—large oil globules, irregular fragments of endosperm and seed-coat, the latter with pigment cells filled with brownish insoluble contents, stone cells with porous walls, aleurone grains. **MEAL** (ground, lini farina, crushed linseed), yellow with numerous brown coarse fragments—seed-coat and kernel. *Test:* 1. Boil 1 Gm. fat-free powder or meal with water 50 cc., cool—filtrate + iodine T.S. not more than faint blue (abs. of starch or starch-bearing seeds). *Solvent:* boiling water. Dose, ʒj-2 (4-8 Gm.).

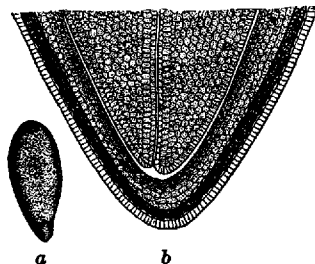


Linum usitatissimum.

ADULTERATIONS.—**SEED:** Foreign seeds and earthy matter 1-25 p. c.—mustard, rape and other cruciferous seeds, sand, small stones; **POWDER:** Damaged flour, cornmeal, other starchy substances, recognized by microscope or iodine test; expressed cake and that to which mineral oil has been added.

Commercial.—The flax is of ancient origin, being prized for its fabric and medicinal properties; most of our seed now come from Russia and Germany, but the United States furnishes considerable. When exposed to heat, light, damp atmosphere, or otherwise carelessly preserved, especially the ground, it is subject to insect attack, and should not be used after 1 year old.

CONSTITUENTS.—Fixed oil 35–40 p. c. (in nucleus), Mucilage, $C_{12}H_{20}O_{10}$, 15 p. c. (in integuments—viscid, odorless, nearly tasteless, precipitated by alcohol, lead subacetate, but not by tannin), proteins 25 p. c., tannin, amygdalin (resin, wax, sugar, no starch (except in young seed), ash 4–6 p. c.—phosphates sulphates, chlorides of potassium, calcium, magnesium).



Flaxseed: a, entire magnified 3 diam.; b, transverse section near the edge, magnified 65 diam.

Oleum Lini. Linseed Oil, U.S.P.—(Syn., Ol. Lini, Oil of Flaxseed, Raw Linseed Oil; Fr. Huile de Lin; Ger. Leinöl, Leinsamenöl.) This fixed oil, usually obtained by drying the seed with heat, crushing, and expressing, is a yellowish, oily liquid, peculiar odor, bland taste; gradually thickens and darkens on exposure, acquiring a pronounced odor and taste; slightly soluble in alcohol, miscible with ether, chloroform, petroleum benzin, carbon disulphide, oil of turpentine; slightly acid; sp. gr. 0.930, congeals at $-20^{\circ}C.$ ($-4^{\circ}F.$);

consists of liquid glycerides of oleic acid, $C_{18}H_{34}O_2$ (5), linoleic acid, $C_{18}H_{32}O_2$ (15), linolenic acid, $C_{18}H_{30}O_2$ (15), and isolinoleic acid, $C_{18}H_{32}O_2$ (65) 85–90 p. c., also a mixture of palmitin, myristin, and stearin 10–15 p. c.; also claimed to consist chiefly of linoleic acid, 22–25 p. c. of linolenic acid, and 5 p. c. of solid fatty acids; 1 p. c. of non-saponifiable matter. Linolein, the glyceride of linoleic acid, is considered the drying constituent, which on exposure is converted intooxylinoleic acid hydrate, and finally into linoxyn, $C_{32}H_{54}O_{11}$ (insoluble in ether, and soon forms in the boiled oil). Yield by cold process 16–20 p. c., by heat 25–28 p. c., the latter being darker, with stronger odor and more acid taste. **Tests:** 1. Linseed oil spread in thin layer on glass plate forms a hard, transparent film (abs. of non-drying oils). 2. Add 3 Gm. potassium hydroxide to oil 10 cc. + alcohol 10 cc. + distilled water 10 cc., heat on water-bath until clear; the addition of distilled water 100 cc.—clear solution, free from oily drops (abs. of mineral or rosin oils). 3. Oil 2 cc. + glacial acetic acid 2, agitate, cool, add sulphuric acid 1 drop—greenish color (abs. of rosin or rosin oils, which produce a violet color). **Impurities:** Free acid, non-drying oils, mineral or rosin oils, rosin. Should be kept in well-stoppered containers, and that which has been “boiled” must not be used or dispensed. Dose, \mathfrak{ss} –2 (15–60 cc.).

PREPARATIONS.—SEED: 1. *Species Emollientes, Emollient Cataplasm, N.F.*, 20 p. c. OIL: 1. *Sapo Mollis*. Soft Soap. (Syn., Sapo Moll., Sapo Viridis, Green Soap; Fr. Savon (mou) vert; Ger. Sapo kalinus, Kaliseife, Grune seife.)

Manufacture: Boil, stirring frequently, dekanormal solution of potassium hydroxide 29 cc. and sodium hydroxide 110 with linseed oil 400 and water q. s. 925, add glycerin 50 cc., boil until clear, add hot water q. s. 1000 Gm., let stand, stir until water absorbed. It is a soft, unctuous, yellowish-white mass, slight characteristic odor, alkaline taste; aqueous solution alkaline; solution in hot distilled water (1 in 20) nearly clear.

Preps.: 1. *Linimentum Saponis Mollis*. Liniment of Soft Soap. (Syn., Lin. Sapon. Moll., Tincture of Green Soap, Spiritus Saponis Kalinus Hebra; Fr. Teinture de Savon vert; Ger. Hebra's Seifenspiritus.)

Manufacture: 65 p. c. Mix oil of lavender 2 cc. with alcohol 30, add soft soap 65 Gm., stir or agitate until dissolved, set aside 24 hours, filter, add alcohol q. s. 100 cc.; used externally.

2. *Linimentum Saponis Mollis Compositum, Tinctura Saponis Viridis Composita, N.F.*, 15 p. c.—soft soap 15 Gm., oil of cade 2 cc., alcohol q. s. 100 cc.

2. *Linimentum Calcis*, 50 p. c. 3. *Liquor Cresolis Compositus*, 35 p. c. 4. *Ceratum Resinae Compositum, Deshler's Salve, N.F.*, 13.5 p. c. 5. *Pasta Zinci Mollis, N.F.*, 25 p. c. 6. *Petroxolinum Sulphuratum, N.F.*, 37 p. c.

Unoff. Preps.: SEED. *Infusion*, 5 p. c. *Compound Infusion*, 5 p. c., + glycyrrhiza root 2 p. c. These were once official and are effective from the dissolved mucilage of the epithelium (testa), which is altered starch. Dose, *ad libitum*. *Decoction*, 5 p. c. *Poultice*.

PROPERTIES.—Demulcent, emollient, diluent, diuretic.

USES.—*Infusion* or tea for inflammation of mucous membranes of respiratory, digestive, and urinary organs, renal and vesical irritation, catarrh, dysentery, calculi, strangury. *Decoction*, owing to the oil it contains, is less acceptable to the mouth, but all the better for enema. *Poultice* of ground meal to enlarged glands, swellings, boils, pneumonia, etc., made by adding boiling water to meal for proper consistency and bringing to a boil. Should coat skin with glycerin, olive or other oil before applying, and place as near to affected spot as possible; may cover with oiled silk to retain heat and moisture, and may add olive oil, lard, laudanum or any anodyne, stimulating, or astringent solution to poultice. The oil is laxative (\mathfrak{ss} ; 30 cc.), excellent in piles (\mathfrak{ss} –2; 30–60 cc. night and morning); sometimes it is added to purgative enemata, also to cover erysipelatous and irritated skin surfaces, but with the disadvantages of soon drying (thus rendering skin stiff) and becoming sour and irritating. The *linimentum calcis* is applied to recent burns to allay irritation.

Allied Products:

1. *Flaxseed Cake, Oil-cake.*—Flaxseed when ground yields cake-meal, and this, after being deprived of oil, becomes oil-cake; it still contains all of the nitrogen, 4–5 p. c., and, moreover, a little oil, thus serving well as a cattle food; yields ash 5–8 p. c.

2. *Boiled Linseed Oil.*—Obtained by heating oleum lini to $130^{\circ}C.$ ($266^{\circ}F.$), while passing a current of air through it, when it boils, losing 6–8 p. c. by weight; or may heat and add litharge, red lead,

manganese dioxide, lead acetate or manganous borate, thereby increasing the oil's weight and drying properties. It is darker in color, thicker, sp. gr. 0.939–0.950, and dries faster, hence useful in painting, varnishing, etc., but must never be used in liniments as a substitute for the official ("raw") oil, since irreparable injury (from forming crusts) might be occasioned to burns, etc., in removing dressings.

3. *Flax Liber-fibers*.—These furnish linen, which, when scraped, gives lint, while the primitive short fiber is useful as tow.

Liquidambar

STYRAX. STORAX, U.S.P.

Liquidambar { *orientalis*, Miller, } A balsam obtained from the trunk.
 { *Styraciflua*, Linné. }

Habitat. 1. Asia Minor—Southwestern portion near coast, forming entire forests; 2. United States—Atlantic coast southward.

Syn. Liquid Storax; 1. Levant Storax; 2. American Storax, Copalm Balsam; Oriental Sweet Gum, Storax Tree; Gum Tree, Sweet Gum, Alligator Tree, Lordwood; Br. *Styrax Præparatus*, Prepared Storax, Balsamum *Styracis*; Fr. *Styrax liquide* (purifié, dépuratus); Ger. *Styrax depuratus*, Gereinigter Storax.

Liq-uid-am-bar. L. *liquidus*, liquid, fluid, + Ar. *ambar*, amber—*i. e.*, the color or fragrant, terebinthinate juice or resin (balsam) resembles liquid amber.

O-ri-en-ta-lis. L. oriental, pertaining to the Orient, or East—*i. e.*, its habitat.

Sty-ra-cif-lu-a. L. *styrax*, storax, + *fluo, fluere*, to flow—*i. e.*, storax sufficiently fluid at times to flow or exudate.

Sty-rax. L. for storax, Gr. *στυραξ*, altr. of Ar. *assthirak*, sweet-smelling exudation—*i. e.*, a tree producing it.

PLANTS.—Trees 6–15 M. (20–50°) high, resembling maples; bark purplish-gray; leaves palmately 5–7-lobed, each division obscurely 3-lobed, 5–7.5 Cm. (2–3') long, 10–12.5 Cm. (4–5') wide, margin serrate, bright green, smooth; flowers monœcious, in yellowish solitary heads; fruit, globular capsule, 2.5 Cm. (1') broad, woody. **BALSAM** (storax), a semi-liquid, grayish, grayish-brown, sticky, opaque mass, depositing on standing a heavy dark brown layer (Levant); or a semi-solid, sometimes a solid mass, softened by gently warming (American); thin layers transparent; odor and taste characteristic; heavier than water and insoluble in it; soluble (usually incompletely) in warm alcohol (1), also in acetone, carbon disulphide, ether (some insoluble residue usually remaining). *Tests*: 1. 2 Gm. dried 2 hours at 100° C. (212° F.)—loses 20 p. c. moisture. 2. Dissolve 10 Gm. in hot alcohol 40 cc.—undissolved residue 5 p. c.; evaporate filtrate—yellow to brown residue 70 p. c. (purified storax). *Solvents*: alcohol; ether. Dose, gr. 10–30 (6–2 Gm.).

ADULTERATIONS.—Turpentine, sand, ashes, bark, mineral matter 13–18 p. c., water 10–40 p. c.

Commercial.—The balsam is not a physiological, but a pathological, secretion of the sapwood, existing only in injured trees as a result of wound stimulation—Nature's method of securing antisepsis and healing. To obtain 1, *Levant* storax in quantity—the outer bark on one side of the tree is bruised, resulting shortly thereafter in filling the cambium with rows of balsam glands and the inner bark with their exudation. The dead outer bark is taken off and rejected, while the inner is removed and boiled in sea-water—the balsam being skimmed from the surface with final expression of the boiled bark. It was once

believed to be produced in the inner bark, which was collected and thrown into pits, to allow partial exudation, and ultimately subjected to pressure in strong horse-hair bags. Liquid storax is then put into barrels, goat skins, etc., and forwarded to Constantinople, Smyrna, Syria, Alexandria, Bombay, and Trieste. To obtain 2, *American* storax—incisions are made through the bark, or, in the absence of these, during spring and summer, it exudates through natural fissures, from which it may readily be scraped. The greatest demand comes from India and China, the English-speaking people using little of it. The residual bark when dried (*Cortex Thymiamatis*) is employed for fumigation.

CONSTITUENTS.—A variable mixture chiefly of volatile oil, resins, cinnamic acid esters, and water—Styrol, Styracin, Phenylpropyl Cinnamate, Storesin, Cinnamic Acid, 5–15 p. c., benzoic acid, ethyl cinnamate, C₉H₇(C₂H₅)O₂, ethyl vanillin, water 10–40 p. c., other impurities, ash 1 p. c.

Styrol, Styrene, Styrolene (*cinnamene, phenyl-ethylene*), C₈H₈.—Hydrocarbon (volatile oil) obtained by distilling with water; it is a colorless fragrant oily liquid, sp. gr. 0.906, boils at 145° C. (293° F.), and when heated to 200° C. (392° F.) is converted into solid meta-cinnamene.



Liquidambar orientalis.

Styracin, Cinnamyl Cinnamate, C₉H₇(C₉H₉)O₂.—This is obtained in faint yellow crystals by alcohol, ether, or hot benzene from the resin after removal of cinnamic acid; with concentrated potassium hydroxide solution yields *styrone* (cinnamic alcohol), C₉H₁₀O, yellowish oily refractive aromatic liquid.

Phenylpropyl Cinnamate, C₉H₇(C₉H₁₇)O₂.—This is a thick inodorous liquid.

Storesin, C₃₆H₅₈O₃.—This, the most abundant constituent, is amorphous, readily soluble in benzine, melts near 145° C. (293° F.), or near 165° C. (329° F.); the latter variety gives with potassium hydroxide a compound crystallizing in needles.

Cinnamic Acid, C₉H₈O₂.—Chiefly in free state, obtained by treating with solution of sodium carbonate, precipitating with hydrochloric acid.

PREPARATIONS.—1. *Tinctura Benzoini Composita*, 8 p. c.

Unoff. Prep.: Ointment (salve), 50 p. c., with lard or olive oil.

PROPERTIES.—Stimulant, expectorant, diuretic, antiseptic, disinfectant. Acts locally and remotely like benzoin, copaiba, balsams of Peru and tolu. Styraclin is antiseptic, and should be dissolved in 6–12 parts of oil or water to render it non-irritating as a dressing.

USES.—Chronic bronchitis and catarrhs of genito-urinary passages, gonorrhœa, gleet, amenorrhœa, leucorrhœa, phthisis, asthma. Externally in ointment as a detergent for indolent ulcers, frost-bites, as a parasiticide for scabies, phthiriasis (pediculi), etc.

Allied Product:

1. *Styrax Calamita*.—Resinous exudation from *Styrax officinalis*, in agglutinated tears resembling benzoin, wrapped in leaves; a factitious variety consists of the ground, exhausted bark or sawdust mixed with liquid storax, formed into reddish-brown cylindrical cakes, brittle, friable, soft and unctuous to the touch; contains many crystals of styracin, and has storax odor.

Liriodendron

Liriodendron Tulipifera, *Tulip-tree*.—The bark, U.S.P. 1820–1870; United States, China; tree 18–45 M. (60–150°) high; flowers yellowish; fruit cone, 7.5 Cm. (3') long. Bark in quills or curved pieces 2 Mm. ($\frac{1}{12}$ ') thick, purplish-brown, thin ridges, inside whitish, smooth, astringent; contains volatile oil, resins, liriodendrin, tulipiferine, tannin; injured by boiling. Used for chronic rheumatism, dyspepsia, intermittent fever; in infusion or fluidextract. Dose, ʒss–1 (2–4 Gm.).

Lobelia inflata

LOBELIA. LOBELIA, U.S.P.

Lobelia inflata, Linné. { The dried leaves and tops with not more than 10 p. c. stems, nor 2 p. c. other foreign organic matter, yielding not more than 5 p. c. acid-insoluble ash.

Habitat. N. America (Canada, United States), in fields and open places.

Syn. Lobel, Indian Tobacco, Green, Brown, Bladder-podded Lobelia, Emetic Herb (Weed), Asthma (Puke) Weed, Gag Root, Vomit Wort, Low Belia, Eyebright; Fr. Lobélie enflée; Ger. Herba Lobeliae, Lobelienkraut.

Lo-be-li-a. L. after Matthias de Lobel, Flemish botanist, physician, and author of several botanical works, 1538–1616, native of Lille, became physician and botanist to James I., died in London.

In-fla'ta. L. *inflatus*, inflated, swollen—*i. e.*, seed are borne in egg-shaped inflated pod.

PLANT.—Annual herb, .3–.6 M. (1–2°) high, erect, paniculately branched; stem cylindrical, coarsely and irregularly furrowed, yellowish green, occasionally purplish, pubescent with numerous spreading hairs; root fibrous. LEAVES, alternate, ovate, oblong, 2–9 Cm. ($\frac{1}{2}$ – $3\frac{1}{2}$ ') long, sessile or narrowing into a short petiole, obtusely toothed, irregularly serrate-denticulate, each tooth with a yellowish-brown, gland-like apex; pale green with scattered, bristly hairs; flowers blue, long, loose racemes with short pedicels, calyx tube ovoid with 5 subulate teeth, corolla tubular, 3–4 Mm. ($\frac{1}{8}$ – $\frac{1}{6}$ ') long, 5-parted, the upper 2-lobed portion cleft nearly to the base; stamens with anthers united above into a curved tube enclosing the bifid stigma; capsules inflated, ovoid, ellipsoidal, 5–8 Mm. ($\frac{1}{5}$ – $\frac{1}{3}$ ') long, light brown, inferior, enclosing

numerous coarsely reticulate seed; odor slight, irritating; taste strongly acrid. POWDER, dark green, odor irritating—fragments of seed-coat composed of polygonal cells with thick yellowish walls; occasional elongated-conical, non-glandular hairs; fragments of stem with tracheæ having thickenings, pores, narrow wood-fibers with thin, lignified porous walls; fragments of leaf epidermis with elliptical stomata, pollen grains nearly spherical. Loses on drying 75 p. c. *Solvents*: diluted alcohol; boiling water. Dose, expectorant, gr. 1–5 (.06–.3 Gm.); emetic, gr. 10–20 (.6–1.3 Gm.).

ADULTERATIONS.—Rare—except its own stems and roots.

Commercial.—Lobelia was popular with the North American Indians, but Dr. Cutler, of Massachusetts, introduced it into our medical practice. It should be collected Aug.-Sept., carefully dried, and sold loosely or in various-sized compressed packages; powder keeps well.

CONSTITUENTS.—Lobeline, Lobelacrin, Lobelic acid, Inflatin, a second alkaloid (?), resin, wax, volatile oil (lobelianin), fixed oil (seed) 30 p. c., gum, ash 8 p. c.

Lobeline.—Obtained by evaporating to syrup the acetic-alcoholic tincture (preferably of seed), triturating this with magnesium oxide in excess, agitating filtrate with ether, evaporating, getting impure alkaloid. It is a yellow, aromatic liquid, acrid taste, convertible into amorphous powder and non-crystalline salts (hydrobromide, sulphate, etc.) soluble in water. Dose (sulphate), gr. $\frac{1}{2}$ –1 (.01–.06 Gm.).

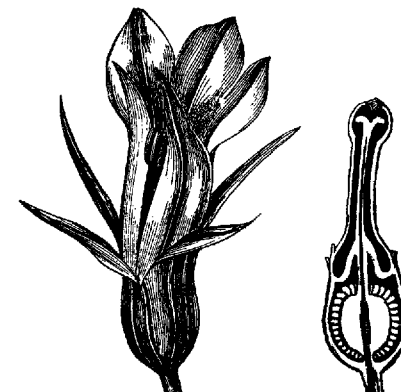
Lobelacrin.—Obtained by concentrating tincture in the presence of charcoal, washing with water, exhausting with boiling alcohol; it is the acrid principle—possibly lobelate of lobeline, brown, soluble in ether or chloroform, splitting with dilute acids or alkalis into sugar and lobelic acid.

Lobelic Acid.—Obtained by precipitating decoction of leaves with copper sulphate, and decomposing with hydrogen sulphide; it is colored olive-brown by ferric salts.

Inflatin.—Neutral principle (wax), tasteless crystals, no medicinal value.



Lobelia inflata.



Lobelia flower and section: magnified 5 diam.

PREPARATIONS.—1. *Tinctura Lobeliae*. Tincture of Lobelia. (Syn., Tr. Lobel.; P. I. Lobeliae tinctura; Fr. Teinture de Lobélie; Ger. Lobelientinktur.)

Manufacture: 10 p. c. Similar to *Tinctura Veratri Viridis*, page 104; menstruum: diluted alcohol. Dose, $\text{m}\nu$ -30-60 (.3-2-4 cc.).

2. *Fluidextractum Lobeliae*, N.F. (1st menstruum:—acetic acid 5 cc., alcohol 50, water 45; 2d—diluted alcohol), Dose, mj -5-20 (.06-.3-1.3 cc.).

Unoff. Preps.: *Acetum*, 10 p. c., $\text{m}\nu$ -60 (.3-4 cc.). *Extract*, gr. $\frac{1}{2}$ -2 (.03-.13 Gm.). *Infusion*, 5 p. c., fss -1 (15-30 cc.). *Tinctura Lobeliae Aetherea* (Br.), 20 p. c. (spirit of ether), $\text{m}\nu$ -15 (.3-1 cc.). The "Eclectic" *lobelin*, made in the usual way, is an impure resinoid, gr. $\frac{1}{2}$ -1 (.03-.06 Gm.).

PROPERTIES.—Expectorant, emetic, nervine, purgative, narcotic, diuretic, diaphoretic; similar to ipecac, but causes more distressing nausea and intense prostration; it paralyzes the motor nerves, vaso-motor center, and peripheral vagi. Leaves chewed a short time cause giddiness, headache, tremors, nausea, vomiting; full doses give speedy and severe vomiting, general relaxation, cold skin with sweating; resembles tobacco, is dangerous, having caused many deaths.

USES.—Spasmodic asthma, catarrh, croup, bronchial spasms, whooping-cough, in enema for intussusception, strangulated hernia, constipation—when feces hard and dry; externally for poison-ivy (oak) eczema. Should not be given as an emetic, and is too depressing for children.

Poisoning: Have burning pain in fauces, esophagus, motor weakness, great depression, feeble pulse, low temperature, anxious, livid countenance, contracted pupils, vertigo, tremors, cold sweat, pale skin, sometimes violent purging, collapse, stupor, coma, death from respiratory failure. Place in recumbent position, empty stomach if vomiting has not been free, give tannin, cardiac and respiratory stimulants, strychnine, picrotoxin, thebaine, alcohol, digitalis, atropine or belladonna, digitalis, morphine, artificial heat, ergot, castor oil.

Incompatibles: Strychnine, picrotoxin; caustic alkalies decompose lobeline, making preparations inert.

Synergists: Emetics, motor depressants.

1. *Lobelia syphilitica*, *Great Lobelia*.—Stem .6-1 M. (2-3°) high; flowers large, 2.5 Cm. (1') long, beautiful blue; diaphoretic. Used by the aborigines for syphilis.

2. *L. cardinalis*, *Cardinal-flower*.—Stem .6-1.3 M. (2-4°) high; flowers large, showy, intense cardinal or scarlet-red. Used by Indians as anthelmintic; similar to *L. syphilitica*, but milder.

Lophophora

Lophophora (Anhalonium) William'sii (Lewinii), *Mescal(e) Buttons*; Mexico.—This small succulent cactus yields the mescal buttons (upper layer of turnip-shaped stem, consisting of ovoid tubercles, dried) which are used by the Rio Grande Indians to produce intoxication—similar to cannabis, during religious ceremonies; contain anhalonine (similar to pellotine), mescaline, anhalonidine, lophophorine. Heart and respiratory stimulant, tonic, adjuvant to digitalis, narcotic; slightly slows pulse, produces mental and physical weariness, sleep without untoward symptoms; excessive quantities produce spasms resembling

strychnine poisoning; pneumothorax, tuberculosis, angina pectoris, asthmatic dyspnea, hysteria. Dose, (pellotine), gr. $\frac{1}{2}$ -2 (.03-.13 Gm.); Fluidextract, $\text{m}\nu$ -10 (.3-6 cc.).

Luffa *Luffa Luffa (aegyptiaca)*, Egypt, and *L. operculata*, Brazil, *Vegetable Sponge*, *Wash-rag Sponge*, *Gourd Towel*. *Cucumis myriocarpus*; S. Africa.—These produce analogous fruits, which have similar action to colocynth, while the derma of *Luffa* serves as sponge.

Lycium *Lycium vulgare*.—United States, Europe; *L. afrum*, N. Africa, and *L. umbratum*, S. America; leaves of all in infusion good for erysipelas and skin diseases.

Lycopodium LYCOPODIUM. LYCOPODIUM, U.S.P.

Lycopodium clavatum, Linné. } The spores.

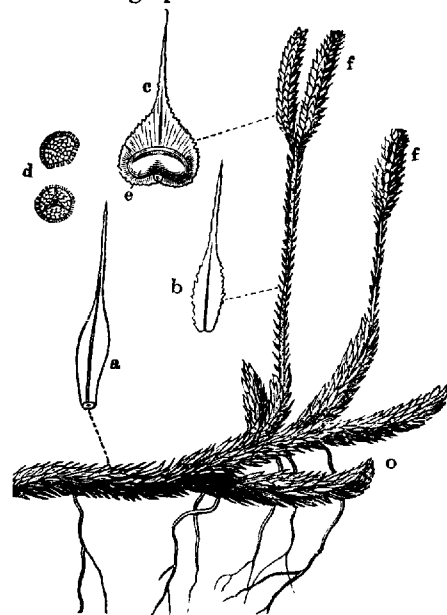
Habitat. Europe, Asia, N. America, in dry woods.

Syn. Lycopod., Club Moss, Clubfoot Moss, Running Moss, Snake (Staghorn) Moss, Ground (Running) Pine, Wolf's Claw, Fox Tail; Vegetable Sulphur (Brimstone), Semen Lycopodii; Fr. Lycopode, Soufre végétal, Pied de Loup; Ger. Bärlappsporen, Hexenmehl, Streupulver, Blitzpulver.

Ly-co-po-di-um. L. see etymology, above, of Lycopodiaceae.

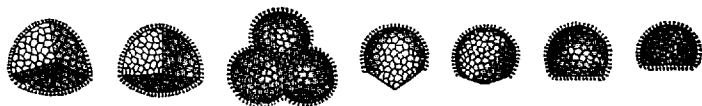
Clavatum. *L. clavatum*, club-like—i. e., alluding to club-like appearance of the fertile spikes.

PLANT.—Low creeping perennial; stem .6-3 M. (2-10°) long, slender, tough, flexible, woody; branches ascending, leafy, the fertile terminated by a slender peduncle 10-15 Cm. (4-6') long, with 1-2 linear, cylindrical spikes—thecae, cones, capsules, 2.5-5 Cm. (1-2') long; leaves linear, awl-shaped, 6 Mm. ($\frac{1}{4}$ ') long, dense, light green, tipped, as are also the numerous bracts, on the flowering spikes with a fine bristle; in axils of bracts have the kidney-shaped sporangia containing the spores. SPORES, a light yellow, very mobile powder, odorless, tasteless; spores shaped like 3-sided pyramid with convex base, .025-.04 Mm. ($\frac{1}{1000}$ - $\frac{1}{25}$ ') broad; outer surface reticulate—reticulations polygonal and formed by straight-sided delicate ridges, which form a delicate fringe at edges of spore; viewed with the rounded surface of spore on the under side, a distinct triangular marking is seen, formed by edges of flat surfaces of the spore. **Tests:** 1. Not wetted by water—floats upon it; when boiled with water—sinks, when thrown into a flame—burns with a quick flash. 2. Shows very few, if any, pollen grains, .04-.07 Mm. ($\frac{1}{25}$ - $\frac{1}{60}$ ')



Lycopodium clavatum: o, a fragment of stem with spore-bearing spikes, f, f; a, leaf of stem; b, leaf of fertile branch; c, cone scale (bract) showing sporangium e; d, spores.

broad, and consisting of a central convex, generative cell separating two spherical cells or wings containing air (abs. of pine pollen). 3. Boiled with water and cooled, + iodine T. S.—no bluish color (abs. of starch), or reddish color (abs. of dextrin).



Lycopodium.

ADULTERATIONS.—Pine pollen (coarser, less mobile, mixes more easily with water), starch, flour (sometimes 25 p. c., sinks in carbon disulphide), dextrin (soluble in water, when concentrated—precipitated by alcohol), sulphur (dissolves in carbon disulphide, remaining upon evaporation), rosin (treat with alcohol, evaporate), turmeric (reddish-brown with alkalis), talc, gypsum, ferruginous earth, sand (increasing ash beyond 3–5 p. c., and quickly subsiding when shaken with carbon disulphide, chloroform, or water).

Commercial.—Collected, July–August, in Scandinavia, Baltic lands, Northeastern Poland, Russia, etc., chiefly from *L. clavatum*, rarely *L. complanatum* (spikes (cones) or sporangia, and spores of each very similar), by villagers in wooded areas, who sell their product to local agents, who, after drying it 1–2 weeks, avoiding artificial heat, shake the spores out through ordinary flour sieves, when it contains 5–10 p. c. of impurities (leaves, scaly fragments, sand, wheat



Pollen of pine.

and rye flour, etc.). Spikes when ripe yield pure spores 23 p. c., when green 10–15 p. c.

CONSTITUENTS.—Fixed oil 47–49 p. c., cane-sugar (sucrose) 2 p. c., volatile base (methylamine), ash 3–5 p. c. (sand + 1 p. c. P_2O_5). The substance of the cell-wall is called pollenin; when treated with potassium hydroxide gives yellow color, becoming blue upon the addition of sulphuric acid and iodine. The oil, similar to expressed oil of almonds, contains palmitic, stearic, myristic, and oleic acids—the latter 80 p. c. being slightly abnormal.

PROPERTIES.—Once considered diuretic, antispasmodic for rheumatism, epilepsy, pulmonary and renal disorders, dysentery.

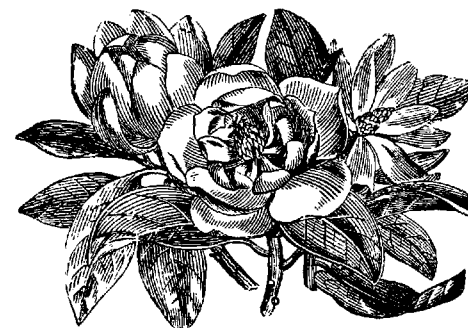
USES.—Externally to protect tender and raw surfaces, erysipelas, eczema, herpes, ulcers, chafing in infants; in pharmacy as a basis for insufflations, also to prevent adhering of pills, suppositories, etc. Popular “homeopathic medicine” (1 to 100 lactose triturated till oil liberated); internally gives excited circulation, urinary irritation, often cures dyspepsia, flatulence, constipation, aneurism, diphtheria, mucous membrane affections of lungs and bronchi.

Lycopus

Lycopus virginicus, *Bugle Weed*.—The herb, U.S.P. 1830–1870; N. America. Plant has smooth, obtusely quadrangular stem, 15–60 Cm. (6–24') high; leaves 5 Cm. (2') long, elliptic, glandular; flowers purple, 4-lobed, stamens 2, mint odor and bitter taste, root perennial, creeping; contains volatile oil, resin, bitter principle, tannin. Astringent, tonic, sedative, narcotic; hemorrhage, diarrhea, dysentery; infusion, decoction. Dose, gr. 5–30 (.3–2 Gm.).

Magnolia

Magnolia virginiana (*glauca*), *M. acuminata*, and *M. tripetala*.—Magnoliaceæ. The bark, U.S.P. 1820–1880; United States; trees 6–28 M. (20–90°) high; flowers white, fragrant; fruit cones; bark in thin quills or curved pieces, orange-brown, glossy, warty, fissured, astringent,

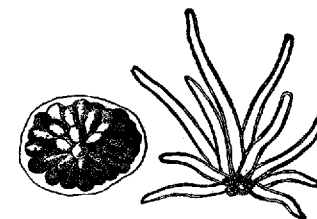


Magnolia acuminata.

bitter; contains volatile oil, resin, magnolin, tannin. Used for malaria, rheumatism, gout, intermittents, catarrhs; in decoction, infusion, tincture. Dose, ʒss–1 (2–4 Gm.).

Mallotus philippinensis

Mallotus philippinensis, *Kamala*, *Rottlera*.—The glands and hairs from the capsules, U.S.P. 1860–1890; Philippine Islands, India, China. Small tree, 6 M. (20°) high; bark pale, branches with ferruginous tomentum; leaves 7.5–15 Cm. (3–6') long, petiolate, ovate, entire, coriaceous, glabrous, under side rusty; flowers dioecious, tomentous; fruit tricocous, globular capsule, size of small cherry, externally 3-furrowed, covered with red powder. Glands and hairs (kamala) glandular, mobile, brick-red powder, inodorous, nearly tasteless; under microscope as stellately arranged colorless hairs mixed with depressed globular glands, containing numerous red club-shaped vesicles; burns like lycopodium, and ash should not be more than 4–8 p. c. Capsules when collected are rolled about in baskets, and



Kamala: magnified 190 diam.



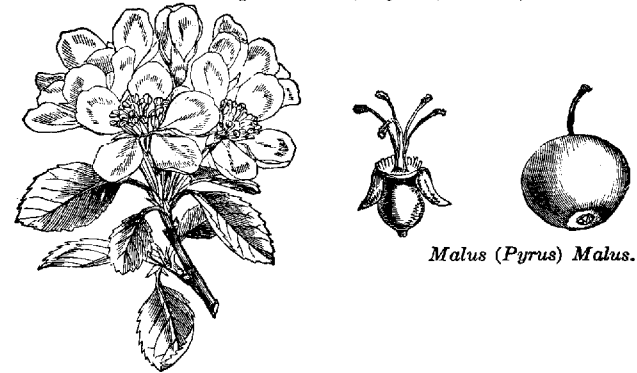
Mallotus philippinensis: a, twig of staminate plant; b, twig of pistillate plant.

rubbed with hands to remove glands and hairs, which in turn, passing through the meshes, are caught upon cloths; contain resins (2—rotlerin, isorotlerin) 80 p. c., wax, coloring matter, albuminous matter 7 p. c., cellulose 7 p. c., ash 4 p. c. Tenifuge (anthelmintic, purgative); tape-worm, sometimes for the round- and seat-worms; also externally in scabies, skin affections, herpetic ringworm. Next to male-fern for tenia, being better than koussou or turpentine. *Adulterations*: Wurrus, resins, etc., used not only as vermifuge, but in skin affections and as dyes; also many fruits—Soria, Satze (Tatze), Embelia, and the bark of *Albizzia* (*Acacia*) *anthelmin'tica* (Mesenna, Mussena, Busenna—Abyssinian names for acacia bark) is employed as tenifuges in India and Abyssinia; also powdered leaves, fruit-stalks, colored starch, earth, sand, in all sometimes 60 p. c.—increasing ash 65–75 p. c. Dose, ʒj–2 (4–8 Gm.); fluidextract, ʒj–2 (4–8 cc.); tincture, 30 p. c. (alcoholic), ʒj–4 (4–15 cc.); electuary; syrup; mucilage.

Malus

Malus (*Pyrus*) *Malus*, Apple; *Succus Pomorum*, Fresh Apple Juice, N. F.—The freshly expressed juice of sound, ripe, sour apples, the fruit of cultivated varieties. Plant resembles quince; fruit edible,

laxative; bark tonic, febrifuge. Dose, gr. 15–60 (1–4 Gm.); 1. *Extractum Ferri Pomatum*, 100 p. c., dose, gr. 10–30 (.6–2 Gm.): Prep.: 1. *Tinctura Ferri Pomata*. 10 p. c., dose, ʒj–2 (4–8 cc.).



Malus (*Pyrus*) *Malus*.



Malva sylvestris: showing flowers, leaves, and fruit.

Malva

Mal'va sylves'tris and *M. rotundifolia*, *Malvæ Folia*, (*High and Low*) *Mallow Leaves*, N. F.—The dried leaves with not more than 10 p. c. of other parts of the plants, nor 5 p. c. of foreign organic matter; Europe, Asia, cultivated in United States. Biennials—former erect, 1 M. (3°) high, latter procumbent, spreading; flowers reddish-purple, bluish; with ammonia—green, with acids—red. Leaves (*M. sylvestris*), orbicular, reniform, cordate, 10–11 Cm. (4–4½') long, 15–20 Cm. (6–8') broad, 3–7-lobed, petioles up to 10 Cm. (4') in length, palmate, crenate-dentate, pubescent; (*M. rotundifolia*), orbicular, up to 8 Cm. (3½') broad, cordate, 5–7-lobed, palmate, teeth blunt, less pubescent, petioles up to 20 Cm. (8') in length; inodorous, taste bland, mucilaginous—on chewing. Powder, light green—non-glandular hairs, stomata, pith and spongy parenchyma, stem fibers, tracheæ, mucilage cells, calcium oxalate rosette crystals; solvent: water; contains mucilage, pectin, tannin, ash 16 p. c. Demulcent, emollient; dysentery, catarrh, kidney troubles. Dose, ʒss–1 (2–4 Gm.); 1. *Species Emollientes*, 20 p. c. *Abu'tilon* and *Hibis'cus* species possess similar medicinal properties and may be used satisfactorily one for the other.

Mandragora

Mandrag'ora officina'lis (*Atropa mandragora*), together with var. *autumna'lis*, having blue flowers, and var. *verna'lis*, white flowers; S. Europe—all are acaulescent plants, having constituents similar to those of belladonna.

Marrubium

Marru'bium vulga're, (*White, Common*) *Horehound*.—The dried leaves and flowering tops, U.S.P. 1820-1900; Europe, C. Asia, N. America, cultivated in waste places, gardens, etc. Perennial herb .3-6 M. (1-2°) high, with short rootstock; stems numerous, annual, branched below, quadrangular, tomentose, woolly; leaves 1.5-5 Cm. ($\frac{3}{8}$ -2') long, opposite, petiolate, roundish-ovate, obtuse, coarsely crenate, strongly rugose-veined, white-hairy; flowers whitish, in dense, axillary whorls, calyx 10-toothed, divisions slightly unequal, erect-spreading, pungent; corolla small, bilabiate, 4 included stamens; fruit of 4 ovoid, obtuse, nearly smooth nutlets, 1.5 Mm. ($\frac{1}{16}$ ') long; odor distinct, agreeable; taste aromatic, bitter; solvents: diluted alcohol, boiling water; contains volatile oil, marrubiin (bitter amaroid),

$C_{21}H_{28}O_4$, .02-4 p. c., resin, tannin, gum, albumin, salts. Stimulant, tonic, bitter stomachic, expectorant, resolvent, anthelmintic (large doses—diuretic, diaphoretic, laxative); dyspepsia, bronchitis, chronic hepatitis, jaundice, amenorrhea, phthisis, cachexia, catarrh, chronic rheumatism, intermittents. Dose, \mathfrak{J} ss-1 (2-4 Gm.); extract, gr. 5-10 (.3-6 Gm.); fluidextract, \mathfrak{J} ss-1 (2-4 cc.); infusion (sweetened and flavored to liking), 5 p. c., \mathfrak{J} j-2 (30-60 cc.); juice (*Succus Marrubii*), \mathfrak{J} j-2 (4-8 cc.), in honey or milk; owing to bitterness, the lozenge (cough drop) is the most popular form for administration.



A, *Marrubium vulgare* (Nat.); a, calyx ($\times 3$).
B, *spurious marrubium* (Nat.); b, calyx ($\times 3$).

Marsdenia

Marsde'nia (*Gonol'obus*) *Conduran'go*, *Condurango*, N.F.—The dried bark with not more than 2 p. c. of wood or other foreign organic matter; Ecuador. Climbing vine, 3-9 M. (10-30°) high. Bark (stem) in quills, curved pieces, 4-13.5 Cm. ($1\frac{3}{8}$ -5 $\frac{1}{2}$ ') long, 1-6 Mm. ($\frac{1}{25}$ - $\frac{1}{4}$ ') thick, grayish-brown, nearly smooth, numerous lenticels, or scaly and rough, occasionally with whitish lichens; inner surface grayish-white, striate; fracture short-fibrous, granular; odor slightly aromatic (fresh); taste bitter, aromatic. Powder, yellowish-brown—stone cells, parenchyma with calcium oxalate crystals, rosettes, prisms and starch grains; bast-fibers non-lignified, latex tubes with a granular substance, grayish-yellow cork; solvent: diluted alcohol; contains condurangin (bitter glucoside), alkaloid (strychnine-like action), conduransterin, resin, starch, sugar, tannin 12.6 p. c., crystalline acid, wax, ash 12 p. c. Alternative, stomachic, tonic; cancer, syphilis, rheumatism; may occasion nausea, vomiting, convulsions, paralysis. Dose, \mathfrak{J} ss-1 (2-4 Gm.); 1. *Fluidextractum Condurango* (diluted alcohol), dose, \mathfrak{J} ss-1 (2-4 cc.). Infusion, Wine.

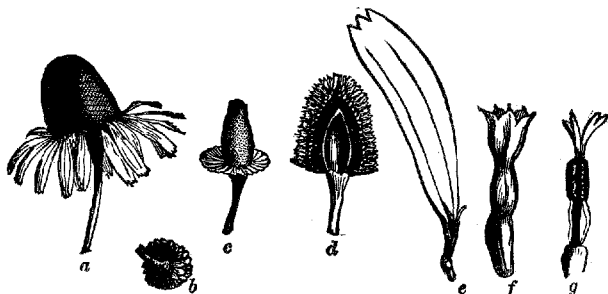
Matricaria

Matrica'ria Chamomil'la, *Matricaria*, *German Chamomile*, N.F.—The dried flower-head with not more than 5 p. c. of stems or other foreign organic matter, yielding not more than 4 p. c. of acid-insoluble ash; Europe, W. Asia, cultivated in United States. Annual herb .3-6 M. (1-2°) high, branched, smooth, solid, striate, greenish; leaves 5 Cm. (2') long, bi-, tri-pinnate, green, smooth; leaflets linear, small. Flower-heads, May-Aug., few white ray-florets and numerous yellow disk-florets on conical hollow receptacles, 3-10 Mm. ($\frac{1}{8}$ - $\frac{2}{3}$ ') broad; disk-florets tubular, perfect, without pappus; ray-florets 10-20, pistillate, corolla white, 3-toothed, 4-veined, usually reflexed, involucre 20-30 pubescent scales; peduncles greenish, furrowed, twisted; achenes 3-5-ribbed; pappus none; odor pleasant, aromatic; taste aromatic, bitter—should be preserved in tightly-closed containers. Powder, yellowish-brown—many spinose pollen grains with 3 pores,



Matricaria Chamomilla.

fragments of ray-florets, glandular hairs, achene tissue with markings, parenchyma with calcium oxalate rosette aggregates, anthers, stigmas, vascular bundle with tracheae, involucreal scales bearing porous fibers, tracheae and elliptical stomata; solvents: boiling water, alcohol; contains volatile oil .25 p. c., anthemidic acid, anthemidin, tannin, ash 13 p. c.



Matricaria: a, flower-head; b, involucre; c, receptacle and involucre; d, longitudinal section of receptacle, with disk-florets; e, ray-floret; f, disk-floret; g, stamens and style of disk-floret.

Stimulant (volatile oil), tonic (anthemic acid), carminative, diaphoretic, nervine, emmenagogue; aid to digestion in convalescence, general debility, intermittents, delirium tremens, flatulent-colic—externally: local pains, colic, toothache, earache, abscesses, sprains, rheumatism. Dose, gr. 15–60 (1–4 Gm.); 1. *Species Emollientes*, 20 p. c. Infusion, 5 p. c.; when cold—tonic, when warm—emetic, dose, *ad libitum*. Oleum Chamomillæ Infusum (flowers 10, olive oil 100, digested 2 hours)—locally. Syrup (flowers 3, water for infusion 10, sucrose 18). Poultice.

Melaleuca

CAJUPUTUM. CAJUPUT.

Oleum Cajuputi. Oil of Cajuput, U.S.P.

Melaleuca Leucadendron, Linné, { The volatile oil distilled from the
var. *Cajuputi*, var. *minor*, +. { fresh leaves and twigs, and recti-
fied by steam distillation.

Habitat. E. India Islands, Celebes, Bouro, Amboyna, Moluccas, Philippines, Cochinchina, Australia.

Syn. Kayu-putu, White Tree (Wood), Pepperbark; Ol. Cajup., Cajuput Oil, Oil of Cajuput, Oleum Cajuputi; Fr. Huile (Essence) de Cajuput; Ger. Cajuputöl.

Mel-a-leu'ca. L. fr. Gr. μέλας, black + λευκός, white,—i. e., bark of the trunk is blackish, that of the branches is whitish.

Leu-ca-den'dron. L. fr. Gr. λευκός, white, + δένδρον, a tree—i. e., general appearance of the tree.

Caj-u-pu'ti (better **Caj-u-pu'ti**). L. fr. Malay, kayu, tree, + putih, white—i. e., appearance of the branches.

Minor. L. *minor*, minus, less, smaller—i. e., plant smaller than other species, also smaller flower-heads and leaves.

PLANTS.—Small trees, 9–12 M. (30–40°) high; bark gray, brittle, splitting into thin layers; leaves 5–10 Cm. (2–4') long, blade twisted, lanceolate; flowers 5–7.5 Cm. (2–3') long, greenish to whitish, silky, pubescent, spikes; fruit woody, hard, sessile, dehiscent into 3 valves.

CONSTITUENTS.—Volatile oil, mucilage, pectin.

Oleum Cajuputi. Oil of Cajuput.—This oil, obtained by water or steam distillation, is a colorless, yellowish (greenish—usually due to copper) liquid, peculiar, agreeable, distinctly camphoraceous (cineol) odor, aromatic, slightly bitter taste, soluble in 1 vol. of 80 p. c. alcohol, sp. gr. 0.918, levorotatory; contains 50–67 p. c. of cineol (cajuputol,

eucalyptol), $C_{10}H_{18}O$, also the alcohol terpineol, $C_{10}H_{17}OH$, several terpenes—*l*-pinene, etc., valeric and benzoic aldehydes, which upon oxidation impart acid reaction. It is imported mostly from Celebes (Macassar), Bouro (islands), some from Singapore, Java, Manila, in emptied beer and wine bottles, 25 packed in a crate, or in copper cans (rare). Should be kept cool, dark, in well-stoppered, amber-colored bottles. Dose, Mij –10 (.13–.6 cc.), emulsion, pill, on sugar; externally in liniments.



Melaleuca Leucadendron var. *Cajuputi*—small branches with leaves, buds, and flowers; 1, vertical section of fruit; 2, transverse section of ovary; 3, vertical section of flower.

ADULTERATIONS.—Copper from shipping cans (rare), many cheaper oils, as camphor, rosemary, turpentine (French turpentine, owing to its *l*-pinene, being difficult to detect), also these sometimes colored with resin of milfoil, all rendering action with iodine more violent.

PREPARATION.—(Unoff.): *Spiritus Cajuputi* (Br.), 10 p. c., dose, Mv –20 (.3–1.3 cc.).

PROPERTIES.—Same as oil of clove; carminative, stimulant, diaphoretic, vermifuge, parasiticide, rubefacient, counter-irritant.

USES.—Rheumatism, myalgia, spasmodic affections of the stomach and bowels, catarrh of bladder, low fevers, gout, colic, cholera morbus, dysmenorrhœa, laryngitis, bronchitis, toothache, chilblains.

Melia

Melia Azedarach, Margosa Bark, Pride of India.—The bark of the root, U.S.P. 1820–1880; China, India, cultivated, S. United States. Beautiful tree 9–12 M. (30–40°) high, leaves imparipinnate; flowers lilac color; fruit drupe, yellow, size of cherries, poisonous pulp; never leafless. Bark curved or quilled, 5–7.5 Cm. (2–3') long, 5 Mm. ($\frac{1}{8}$ ') thick; outer surface reddish with irregular blackish ridges; inner surface whitish or brownish, striate, sweet, bitter, nauseous; contains resin, tannin, sugar. Used for lumbricoid worms, emetic. Dose, gr. 15–60 (1–4 Gm.), in decoction, tincture (diluted alcohol).

Melilotus

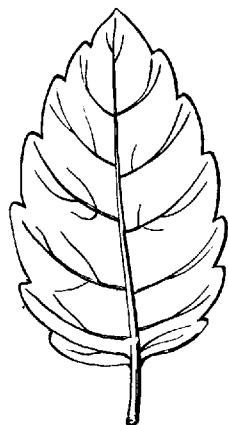
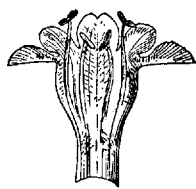
Melilotus officinalis, *Melilotus*, (Yellow) *Melilot*, *Yellow Sweet Clover*, *N.F.*—The dried leaf and flowering top with not more than 3 p. c. of stems over 3 Mm. ($\frac{1}{8}$ ') thick or other foreign organic matter; Europe, United States. Plant 1–1.5 M. (3–5°) high; stems mostly less than 30 Cm. (12') high, slender, leafy below, terminating in yellow racemes, pubescent; leaves trifoliate, leaflets 1–3 Cm. ($\frac{2}{5}$ – $1\frac{1}{5}$ ') long, oval, serrate; corolla papilionaceous; legumes 2.5–3.5 Mm. ($\frac{1}{10}$ – $\frac{1}{7}$ ') long, obovate, 1-seeded; odor aromatic, tonka-like; taste sweetish, slightly pungent, bitter. Powder, light green—non-glandular hairs, epidermal cells of leaf tissue, stomata, chlorenchyma, fibro-vascular tissue, crystal-fibers with calcium oxalate prisms, tracheæ, pollen grains, occasional glandular hairs; solvent: diluted alcohol; contains coumarin, melilotic acid, coumaric acid, melilotol (fragrant volatile oil), ash 10 p. c. Locally—to allay pain in abdomen, joints, diarrhea, dysmenorrhea, rheumatism; 1. *Species Emollientes*, 20 p. c. Decoction, Infusion, Ointment, Plasters.

Melissa

Melissa officinalis, *Melissa*, *Balm.*—The leaves and tops, U.S.P. 1840–1890; Asia Minor, S. Europe. Perennial herb with fragrance of lemons, growing in waste places; stems several, quadrangular, 3–1 M. (1–3°) high, branched at base, pubescent; flowers yellowish-white, purplish, calyx 5-toothed, tubular, bell-shaped; corolla bilabiate, 4 stamens. Leaves, 5 Cm. (2') long, petiolate, ovate, obtuse, crenate, hairy, glandular, branches square; fragrant, aromatic, astringent, bitter; contains volatile oil .25 p. c., bitter principle, tannin, gum; solvents: diluted alcohol, boiling water. Carminative, diaphoretic, stimulant, antispasmodic; used as a refreshing drink; when cold for febrile affections, when hot acts slightly on the skin. Dose, gr. 15–60 (1–4 Gm.); water (*Aqua Melissa*), leaves (1) distilled with water (10); compound spirit (*Spiritus Melissa Compositus*), balm 14 + lemon peel 12, nutmeg 6, cinnamon 3, clove 3, alcohol 150, water 250, distil 200 parts; fluidextract, $\mathfrak{M}\text{xv}$ –60 (1–4 cc.); infusion, $\mathfrak{J}\text{j}$ –2 (30–60 cc.); oil, $\mathfrak{m}\text{j}$ –2 (.06–.13 cc.).



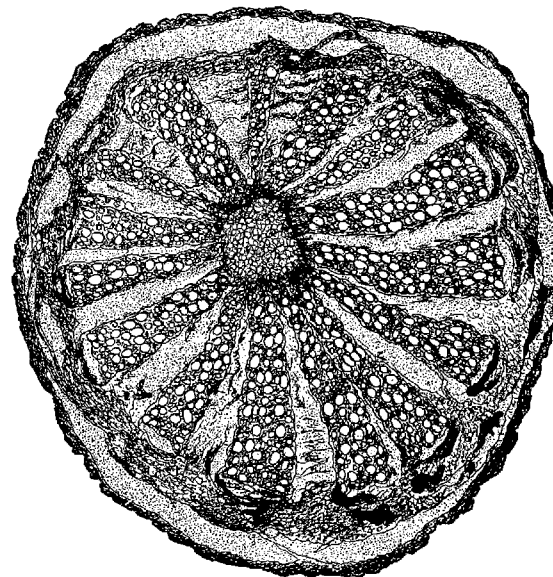
Melissa officinalis: flower and corolla, magnified.



Melissa officinalis: leaf.

Menispermum

Menispermum canadense, *Yellow Parilla*, *Canadian Moonseed.*—The rhizome and roots, U.S.P. 1880–1890; N. America (Canada to S. Carolina). Perennial climber, 2.5–3.5 M. (8–12°) long; stem round, striate; leaves 10–12.5 Cm. (4–5') broad, peltate, 3–5-lobed, pale beneath petioles long; flowers small, yellowish; fruit 8 Mm. ($\frac{1}{3}$ ') thick, black, resembling grapes. Rhizome 1 M. (3°) long, 6 Mm. ($\frac{1}{4}$ ') thick, yellowish-brown, knotty, wrinkled lengthwise, roots many, fracture tough, woody, inside yellowish, bark thick, wood-rays broad, porous, and longest on lower side, pith distinct; nearly inodorous; taste bitter;



Menispermum canadense: transverse section of rhizome magnified.

contains berberine (yellow), menispermine, starch, gum, resin, tannin. Tonic, alterative, diuretic; similar to calumba (owing to its bitterness); scrofulous affections, as a substitute for sarsaparilla. Dose, gr. 15–60 (1–4 Gm.); fluidextract (alcohol 65 p. c.), $\mathfrak{J}\text{ss}$ –1 (2–4 cc.).

Mentha crispa

Mentha crispa, *Crisped-leaved*, *Cross or Curled Mint.*—This is the cultivated form of *M. spicata* (*viridis*), known also as *M. aquatica* var. *crispa*, leaves pubescent, cordate pointed, crisped; *M. sati'va*, *M. arven'sis*, and *M. rotundifo'lia*, are under cultivation and sometimes produce similar crisped leaves.

MENTHA PIPERITA. PEPPERMINT, U.S.P.

Mentha piperita,
Linné. { The dried leaves and tops with not more than 2
p. c. of stems over 3 Mm. ($\frac{1}{8}$ ') thick, or other
foreign organic matter.

Habitat. Asia, Europe, N. America; wild in low ground, wet places; cultivated in Japan, Germany, England, Michigan, New York, etc.

Syn. Menth. Pip.; Brandy (Lamb) Mint, Lammint, Herba Menthæ Piperitæ; Fr. Menthe poivrée; Ger. Folia Menthæ piperitæ, Pfefferminzblätter.

Pi-pe-ri'ta. L. *piper*, *pepper*—peppery-mint—*i. e.*, from its aromatic burning taste.

Pep'permint—*pepper* + *mint*—*i. e.*, mint with pepper properties.

PLANT.—Perennial herb, possibly from *M. hirsuta*, *Water Mint*, by cultivation; rootstock creeping, producing long suckers by which it multiplies; stem square, purplish, .6–1.3 M. (2–4°) high. **LEAVES**, ovate-oblong, 1–9 Cm. ($\frac{2}{3}$ – $3\frac{2}{3}$ ') long, petiole 4–15 Mm. ($\frac{1}{8}$ – $\frac{3}{8}$ ') long, pubescent, acute, sharply serrate, light green, purplish-brown, upper surface nearly glabrous, lower surface glandular-hairy, especially on veins; more or less crumpled and frequently detached from stems, which are quadrangular, 1–3 Mm. ($\frac{1}{25}$ – $\frac{1}{8}$ ') thick, glabrous except for



Mentha piperita: flowering tops.

a few scattered deflexed hairs; flower-whorls in oblong (oval) spikes which are usually compact, or somewhat interrupted at base, 1–1.5 Cm. ($\frac{2}{3}$ – $\frac{3}{4}$ ') broad, rounded at summit, and in fruit 3–7 Cm. ($1\frac{1}{2}$ – $2\frac{1}{2}$ ') long; bracts oblong-lanceolate, very acuminate, 4–7 Mm. ($\frac{1}{8}$ – $\frac{1}{3}$ ') long, calyx tubular, equally 5-toothed, pubescent, glandular-punctate, often dark purplish; corolla tubular-campanulate, 4-cleft, 3 Mm. ($\frac{1}{5}$ ') long, often light purple; stamens 4, short; nutlets ellipsoidal, .5 Mm. ($\frac{1}{50}$ ') thick, blackish-brown; odor aromatic, characteristic; taste aromatic, pungent, followed by cooling sensation in the mouth. **POWDER**, greenish—leaf epidermis with wavy vertical walls, stomata, non-glandular hairs with papillose walls, glandular hairs with volatile oil and crystals, chlorenchyma, tracheæ, parenchyma, pollen grains. Should be col-

lected in dry weather, Aug.–Sept., when in bloom; strongest and most pungent of all mints. *Solvents*: alcohol; water partially. Dose, gr. 15–60 (1–4 Gm.).

ADULTERATIONS.—Leaves chiefly of varieties of this species: (a) var. *officina'lis*—leaves narrower, spikes longer; (b) var. *vulga'ris*—leaves broader, base more rounded, spikes more blunt and close; spearmint leaves, which may readily be distinguished from peppermint which has leaves with petioles, inflorescence thicker and more crowded, flowers larger with shorter calyx-teeth, and its own distinctive odor and taste.

Commercial.—English is regarded best, Japanese is consumed chiefly for obtaining menthol (50–80 p. c.), while United States produces most.

CONSTITUENTS.—Volatile oil 1 p. c. (menthol), resin, tannin, gum, chlorophyll.

Oleum Menthæ Piperitæ. Oil of Peppermint, U.S.P.—(Syn., Ol. Menth. Pip., Peppermint Oil; Fr. Essence de Menthe poivrée; Ger.



Mentha piperita: flower and corolla cut open; magnified 8 diam.

Pfefferminzöl.) This volatile oil, distilled from the fresh, overground parts of the flowering plant and rectified by steam distillation, is a colorless liquid, strong penetrating odor of peppermint, pungent taste, followed by a sensation of cold upon drawing air into the mouth; soluble in 4 vols. of 70 p. c. alcohol, showing not more than slight opalescence and no separation of oil globules (abs. of dementholized or impure peppermint oil), sp. gr. 0.912, levorotatory; contains 16 constituents: at least 5 p. c. of esters, calculated as menthyl acetate, $C_{10}H_{18}O_2$, and 50 p. c. of total menthol, free and as esters; also acetic and isovaleric acids, acetaldehyde, isovaleric aldehyde, amyl alcohol, pinene, phellandrene, limonene, $C_{10}H_{16}$, menthone, $C_{10}H_{18}O$, menthyl isovalerate, menthyl ester, cadinene, $C_{15}H_{24}$, a lactone, dimethyl sulphide; the hydrocarbons holding menthol dissolved are mainly the several terpenes (English—pinene, phellandrene, sesquiterpene; Japanese—sesquiterpene alone) with carvene odor, the higher boiling ones, $C_{15}H_{24}$, having less pleasant odor; menthol and its esters (first 2 constituents) are most important, the others occurring in small quantities, being objectionable for flavoring and removed by rectification with steam. **Tests:** 1. Distil oil 25 cc., collect the first 1 cc. and carefully superimpose it on 5 cc. of mercuric chloride T. S.—no white film at

zone of contact in 1 minute (abs. of dimethyl sulphide, found in non-rectified peppermint oils). Should be kept cool, dark, in well-stoppered, amber-colored bottles. Dose, m̄j-5 (.06-.3 cc.).

ADULTERATIONS.—Oil of erigeron, castor oil, oil of turpentine, oil of copaiba, oil of camphor, oil of sassafras, alcohol; the first, second, and third prevent its solubility in equal volume of 80 p. c. alcohol; the fourth gives buttery mass with sulphuric acid; oils of turpentine, camphor, and sassafras each render its action with iodine more violent, the two latter being red with nitric acid; dementholized oil (lower sp. gr.).

Menthol. **Menthol**, C₁₀H₁₉OH, U.S.P.—(Syn., Pipmenthol, Peppermint Camphor; Fr. Alcool Mentholique, Menthol Gauche, Camphre de Menthe; Ger. Mentholum, Pfefferminzkampfer, Mentha-kampfer.) This is a secondary alcohol (stearoptene), obtained from oil of peppermint or other mint oils (Japanese and Chinese oil of peppermint—*M. aren'sis* var. *piperas'cens*, *M. canadensis* var. *glabra'ta*). It is obtained by subjecting the volatile oil simply to refrigeration at -22.2° C. (-8° F.), by means of ice and salt; when solidified the temperature is allowed to rise gradually, the liquid portion poured off from time to time, and the crystals deprived of oil by expression; may purify by recrystallization. It is in colorless, acicular crystals, strong peppermint-like odor and taste, with a sensation of warmth followed by cold upon drawing air into the mouth; soluble in alcohol, chloroform, ether, petroleum benzin, liquid petrolatum, fixed or volatile oils, glacial acetic acid, slightly in water; alcoholic solution neutral, levorotatory; melts at 43° C. (110° F.); triturated with an equal weight of either camphor, phenol, thymol, or chloral hydrate—mixture becomes liquid; distilled with P₂O₅ yields menthene, C₁₀H₁₈, a colorless liquid of pleasant odor. *Tests*: 1. Heat 2 Gm. in open dish—gradually volatilizes with residue .05 Gm. (abs. of wax, paraffin, inorganic substances). 2. Few crystals dissolved in glacial acetic acid 1 cc., + sulphuric acid 3 drops and nitric acid 1 drop—not green (abs. of thymol). *Impurities*: Wax, paraffin, thymol, magnesium sulphate, inorganic substances. Should be kept cool, in well-closed containers. Dose, gr. 1-2 (.06-.13 Gm.).

PREPARATIONS.—LEAVES AND TOPS: 1. *Spiritus Mentha Piperitæ*. Spirit of Peppermint. (Syn., Sp. Menth. Pip., Essence of Peppermint; Fr. Alcoolat (Essence) de Menthe poivrée; Ger. (Englische) Pfefferminz (-essenz)-spiritus.)

Manufacture: Macerate for 1 hour peppermint leaves 1 Gm. in 50 cc. of water, strongly express; mix oil of peppermint 10 cc. in alcohol 80 cc., add macerated leaves, and alcohol q. s. 100 cc., macerate mixture for 6 hours, frequently shaking, filter. Should be kept in amber-colored bottles. Dose, m̄x-30 (.6-2 cc.).

Preps.: 1. *Elixir Catharticum Compositum*, N.F., 1.4 p. c. 2. *Liquor Phosphori*, N.F., ½ p. c. 3. *Mistura Opii et Rhei Composita*, N.F., 20 p. c. 4. *Mistura Rhei Alkalina*, N.F., ¼ p. c. 5. *Mistura Rhei Composita*, N.F., 3.5 p. c. 6. *Syrupus Ficus Compositus*, N.F., ⅔ p. c.

OIL: 1. *Aqua Mentha Piperitæ*. Peppermint Water. (Syn., Aq. Menth. Pip.; Fr. Eau de Menthe poivrée; Ger. Pfefferminzwasser.)

Manufacture: ½ p. c. Similar to Aquæ Mentha Viridis, page 523. Dose, ʒss-1 (15-30 cc.).

2. *Spiritus Mentha Piperitæ*, 10 p. c. 3. *Acetum Aromaticum*, N.F., ⅓ p. c. 4. *Cataplasma Kaolini*, N.F., ⅓ p. c. 5. *Elixir Euphorbia Compositum*, N.F., ⅓ p. c. 6. *Gargarisma Guaiaci Compositum*, N.F., ½ p. c. 7. *Lavatio Ori*, N.F., ½ p. c. 8. *Linimentum Opii Compositum*, N.F., 2.5 p. c. 9. *Mistura Carminativa*, N.F., ½ p. c. 10. *Mistura Chloroformi et Morphina Composita*, N.F., ½ p. c. 11. *Oleum Hyoscyami Compositum*, N.F., ⅓ p. c. 12. *Pilula Cathartica Vegetabiles*, N.F., ⅓ m. 13. *Pilula Rhei Composita*, N.F., ⅓ m. 14. *Tabella Sodii Bicarbonatis*, N.F., ⅓ m. **MENTHOL**: 1. *Menthol Camphoratum*, N.F., 47.5 p. c., + camphor 47.5, alcohol 5. 2. *Inunctum Mentholis*, N.F., 5 p. c., + hydrous wool fat 95. 3. *Inunctum Mentholis Compositum*, N.F., 5 p. c., + methyl salicylate 10, hydrous wool fat 85. 4. *Nebula Mentholis*, N.F., 2 p. c., + light liquid petrolatum q. s. 100. 5. *Nebula Mentholis Composita*, N.F., 1 p. c., + camphor 1, methyl salicylate ½, eucalyptol ½, oil of cinnamon ½, light liquid petrolatum q. s. 100. 6. *Petroxolinum Mentholis*, N.F., 10 p. c. 7. *Dentifricium*, N.F., ½ p. c. 8. *Dentiliniamentum Aconiti Compositum*, N.F., 36 p. c. 9. *Dentiliniamentum Aconiti et Iodi Compositum*, N.F., 2½ p. c. 10. *Linimentum Sinapis Compositum*, N.F., 2 p. c. 11. *Liquor Antisepticus*, N.F., ⅓ p. c. 12. *Liquor Pepsini Antisepticus*, N.F., ⅓ p. c. 13. *Nebula Aromatica*, N.F., ⅓ p. c. 14. *Pulvis Antisepticus*, N.F., ⅓ p. c. *Unoff. Preps.*: LEAVES AND TOPS: *Fluidextract*, ʒj-2 (4-8 cc.). *Infusion*, 5 p. c., ʒj-2 (30-60 cc.). *Syrup*, ʒj-4 (4-15 cc.). *Troches* (each contains oil ¼ m; .009 cc.). **MENTHOL**: *Plaster* (Br.), 15 p. c., + yellow wax 10, rosin 75.

PROPERTIES.—Carminative, stimulant, nervine, antispasmodic.

USES.—Spasmodic stomach and bowel pains, flatulency, nausea, cholera morbus, diarrhea, dysentery, colic, dysmenorrhea, nervous headache, hiccough, heart palpitation, vomiting, as a flavoring agent; externally the oil and menthol for rheumatism, neuralgia, toothache, antibacterial.

Mentha spicata MENTHA VIRIDIS. SPEARMINT, U.S.P.

Mentha spicata, Linné. (Mentha viridis, Linné.) { The dried leaves and tops with not more than 2 p. c. of stems over 3 Mm. (⅓') thick, or other foreign organic matter.

Habitat. England, wild in Europe, N. America; cultivated in the United States. *Syn.* Menth. Vir., Mint, Mackeral, Lady's, Brown, Lamb or Common Garden Mint, Lamint, Sage of Bethlehem, Herba Menthae Romanae (Acutæ); Fr. Menthe (romaine) verte, Baume vert; Ger. Grüne Minze, Römische Minze.

Men'tha. L. fr. Gr. μινθη, Minthe, a nymph, daughter of Cocytus, fabled to have been changed into a mint plant by Proserpine in a fit of jealousy (Theophrastus).

Spi-ca'ta. L. spiked—i. e., the flowers.

Vir'i-dis. L. green—i. e., the stem.

Spear'mint—spur + mint, from its spiry, spear-like inflorescence.

PLANT.—Perennial herb; rootstocks with elongated suckers, by which it multiplies extensively; stems .6-1.3 M. (2-4°) high, acutely quadrangular, branches opposite, smooth, often tinged with purple; flowers Aug.-Sept., spikes, calyx tubular, 5-toothed, corolla 4-lobed,

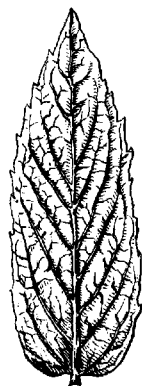
light purple. LEAVES, ovate-lanceolate, 1-9 Cm. ($\frac{2}{3}$ - $3\frac{2}{3}$ ') long, unequally serrate, nearly sessile, or petiole only 4 Mm. ($\frac{1}{8}$ ') long, bright green, somewhat glandular-hairy on under surface; more or less crumpled and mixed with large proportion of the light brown, purplish stems, occasionally with their characteristic opposite branches; stems distinctly quadrangular, 1-3 Mm. ($\frac{1}{25}$ - $\frac{1}{4}$ ') thick, nearly glabrous; flowers in opposite clusters, or more or less interrupted or crowded, lanceolate, nearly acute spikes; bracts linear-lanceolate, subulate, 7-10 Mm. ($\frac{1}{4}$ - $\frac{2}{3}$ ') long, subtending the flower clusters; calyx tubular, 5-toothed, glandular-punctate, somewhat pubescent near the teeth; corolla nearly white, light brown; stamens exserted; odor slightly pungent, characteristic; taste aromatic, characteristic, not followed by cooling sensation in the mouth. POWDER, green—closely resembles that of peppermint but without crystals from the globular heads of the glandular hairs. Should be collected in dry weather, Aug.-Sept., just as flowers appear, if for oil, just after flowers have expanded, and is heavier, weaker and less pungent than peppermint, being probably the cultivated form of *M. longifolia* (*sylvestris*), *Horse-mint*; loses on drying 75-85 p. c. Solvents: alcohol; water partially. Dose, gr. 30-60 (2-4 Gm.).

ADULTERATIONS.—Mostly through carelessness—leaves of other *Mentha* species, chiefly *M. piperita*, sometimes 30-50 p. c. in that coming from the South (Va., N. Ca., S. Ca.); its own odor and taste (lack of coldness), unequally serrate sessile leaves, slender interrupted spikes, and long calyx teeth should suffice for ready recognition.

CONSTITUENTS.—Volatile oil .5 p. c., resin, tannin, gum.



Mentha spicata (*viridis*):
flowering tops.



Mentha spicata (*viridis*):
leaf, natural size.

Oleum Menthae Viridis. Oil of Spearmint, U.S.P.—(Syn., Ol. Menth. Vir., Spearmint Oil; Fr. Essence de Menthe verte; Ger. Krauseminzöl, Romisch Minzöl.) This volatile oil, distilled from the flowering plant (fresh or partly dried) is a colorless, yellow, greenish-yellow

liquid, characteristic odor and taste of spearmint; soluble in 80 p. c. alcohol (1) with clear solution that becomes cloudy on further dilution with alcohol, sp. gr. 0.925, levorotatory; contains at least 43 p. c. of carvone, $C_{10}H_{14}O$, limonene, $C_{10}H_{16}$, 43 p. c., possibly pinene, $C_{10}H_{16}$, and an unidentified alcohol, $C_{10}H_{17}OH$. It is preserved for a long time by adding 3-4 p. c. of alcohol. Should be kept cool, dark, in well-stoppered, amber-colored bottles. Dose, mj-5 (.06-.3 cc.).

PREPARATIONS.—LEAVES AND TOPS: 1. *Spiritus Menthae Viridis*. Spirit of Spearmint. (Syn., Sp. Menth. Vir., Essence of Spearmint, Tinctura Olei Menthae Viridis; Ger. Grüne Minzessenz.)

Manufacture: Macerate for 1 hour spearmint leaves 1 Gm. in water 50 cc., strongly express; mix oil of spearmint 10 cc. in alcohol 80, add macerated leaves, and alcohol q. s. 100 cc., macerate mixture for 6 hours, frequently shaking, filter. Should be kept in amber-colored bottles. Dose, ℥x-30 (.6-2 cc.).

Prep.: 1. *Elixir Manacæ Compositum*, N.F., 1.5 p. c.

OIL: 1. *Aqua Menthae Viridis*. Spearmint Water. (Syn., Aq. Menth. Vir.; Fr. Eau de Menthe verte; Ger. Römisch Minzwasser.)

Manufacture: $\frac{1}{2}$ p. c. Similar to *Aquæ Aromaticæ*: shake often during 15 minutes, oil .2 cc. with distilled water 100, in a capacious bottle, set aside 12 hours or more, filter, adding distilled water q. s. 100 cc., or triturate oil .2 cc. with purified talc 1.5 Gm. and recently boiled distilled water q. s. 100 cc., filter until clear. Dose, ℥ss-1 (15-30 cc.).

Prep.: 1. *Liquor Sodæ et Menthae*, N.F., 98 p. c.

2. *Spiritus Menthae Viridis*, 10 p. c. 3. *Elixir Catariaæ et Fœniculi*, N.F., $\frac{1}{10}$ p. c.

Unoff. Preps.: LEAVES AND TOPS: *Infusion*, 5 p. c., ℥j-2 (30-60 cc.). *Fluidextract*, ℥j-2 (4-8 cc.). LEAVES AND TOPS, OR OIL: *Syrup*, ℥j-4 (4-15 cc.).

PROPERTIES.—Carminative, stimulant, nervine; flavoring.

USES.—Same as peppermint, but as it is much milder it is to be preferred in disorders of infancy, culinary purposes, confectionery, perfumery—flavoring chewing gum, world celebrated mint julep, mint sauce, peas and other green vegetables.



Menyanthes trifoliata.

Menyanthes

Menyanthes trifoliata, Buckbean, Bogbean, Water Shamrock.—The root (rhizome), U.S.P. 1820–1830; dried leaves; United States. Perennial herb, 2.5–3.7 M. (8–12°) high; rhizome 1–2.5 Cm. ($\frac{3}{4}$ –1') thick, slightly longer, branching, black; leaves on petioles, 10–15 Cm. (4–6') long, ternate, leaflets sessile, 5–8 Cm. (2–3') long, obtuse, obovate, entire or crenate, smooth, pale green, inodorous, bitter; contains menyanthin (glucoside, yields menyanthol), mucilage, albumin, sucrose, fat, ash 10 p. c. Tonic, febrifuge, emmenagogue, antiscorbutic, vermifuge; large doses emetic, purgative; rheumatism, scrofula, scurvy, dropsy, intermittents, jaundice, dyspepsia, worms. Dose, gr. 15–30 (1–2 Gm.).

Mitchella

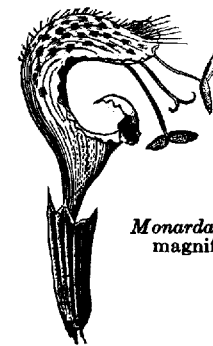
Mitchella repens, *Mitchella*, Squaw Vine, Partridge-berry, N.F.—The dried plant with not more than 5 p. c. of foreign organic matter; N. America. Creeping evergreen of the woods, reaching .3–.6 M. (1–2°) in length. Occurs in loosely matted masses of—branches, rhizomes, fine roots, stems and leaves; rhizomes brownish, filiform, roots fibrous; stems quadrangular; light green, striated; leaves opposite, dark green, smooth, coriaceous, ovate, entire, up to 2 Cm. ($\frac{4}{5}$ ') long, short petiole, lower surface shiny; flowers purplish, fragrant; fruit scarlet-red berry; odor faint; taste slightly bitter. Powder, grayish-green—numerous calcium oxalate raphides, epidermal cells, stomata, chlorenchyma cells, some with amorphous content, tracheæ, parenchyma, starch grains; solvent: diluted alcohol; contains saponin-like substance, resin, wax, gum, sugar. Tonic, astringent, diuretic; resembles chimaphila and viburnum, all at times being prescribed together. Dose, ζ ss–1 (2–4 Gm.); 1. *Fluidextractum Mitchellæ* (diluted alcohol): Preps.: 1. *Elixir Aletridis Compositum*, 6.55 p. c.; 2. *Elixir Heloniadis Compositum*, 12.5 p. c.

Momordica

Momordica Balsamina, Balsam Apple, E. India.—Climbing plant, also cultivated in gardens throughout the United States for its yellow cucumber-like fruit. This is soaked in whisky and used domestically as a vulnerary.

Monarda

Monarda punctata, Horse-mint.—The leaves and tops, U.S.P. 1820–1870; United States. Perennial, .6–1 M. (2–3°) high, stem branched, downy, leaves 5–7.5 Cm. (2–3') long, lanceolate, serrate, punctate, flowers yellow, spotted red with pinkish bracts, downy, calyx 5-toothed, aromatic, pungent, bitter; contains volatile oil. Carminative, stimulant, emmenagogue, nervine, diaphoretic, diuretic; flatulent colic, nausea, rheumatism, neuralgia, diarrhea; in infusion. Dose, gr. 15–60 (1–4 Gm.). *Oleum Monardæ* (volatile oil), U.S.P. 1820–1870, is yellowish or reddish, sp. gr. 0.930; contains terpene, $C_{10}H_{16}$, 50 p. c., thymol (monardin), $C_{10}H_{14}O$, 25–61 p. c., also alcohol, $C_{10}H_{18}O$, and its acetic, butyric, and formic esters.



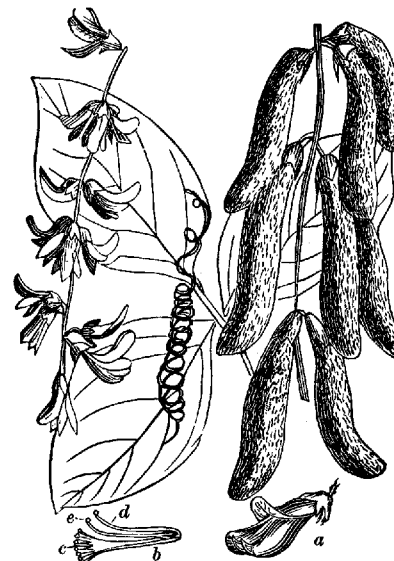
Monarda punctata: flower magnified.

Morus rubra

Morus rubra, Red Mulberry.—N. America. Fruit in dense spikes with coalesced perianths, 2.5 Cm. (1') long, dark purple, fleshy; contains sugar 10 p. c., pectin, citrates, malates; refrigerant, flavoring.

Mucuna

Mucuna pruriens, Cowhage, Cowitch.—Hairs of the pods, U.S.P. 1840–1870; E. and W. Indies. Climbing plant, flowers resemble those of the pea, purple; leaflets hairy; pods coriaceous, shape of italic letter *f*, 10 Cm. (4') long, covered with brown hairs, 2.5 Mm. ($\frac{1}{16}$ ') long, stiff, filled with brown granular matter, readily penetrating the skin, causing violent itching. Detached from pods (which then are eaten as also when green in India) by dipping into honey, scraping into paste; contains resin, tannin. Anthelmintic for round worms; irritant in paralysis; action on worms thought to be mechanical. Dose, gr. 1–3 (.06–.2 Gm.), followed by calomel, jalap; ointment also used.



Mucuna pruriens: a, flower; b, stamen system; c, anthers; d, filament; e, anther.

Myrica

Myrica cerifera, or *M. carolinensis*, *Myrica*, Bayberry Bark, Wax Myrtle Bark, N. F.—Myricaceæ. The dried bark of the root with not more than 5 p. c. of adhering wood or other foreign organic matter; S. United States; dry woods, fields. Dense evergreen shrub, 1.5-3 M. (4.5-9°) high, grayish; leaves oblong, entire, fragrant, dark green; flowers, staminate—yellow catkins, pistillate—greenish aments; fruit, bluish-white drupes, waxy. Bark (root) in transversely curved pieces, strips, quills, varying length, up to 20 Mm. ($\frac{3}{4}$ ') broad, 1-2.5 Mm. ($\frac{1}{8}$ - $\frac{1}{10}$ ') thick, rarely 5 Mm. ($\frac{1}{3}$ '—aerial stem), grayish, brownish, scaly, occasional warts, lenticels, inner surface brownish, striated; fracture short, weak, uneven; odor characteristic; taste astringent, bitter, acrid. Powder, reddish-brown—numerous starch grains, calcium oxalate crystals, lignified fibers, stone cells, gummy lignin, few tracheæ; contains resins, myricinic acid, tannin, red coloring, fat, gum, starch. Alterative, cholagogue, diuretic, sialagogue, astringent, tonic; diarrhea, scrofula, jaundice. Dose, gr. 5-30 (.3-2 Gm.); 1. *Pulvis Myricæ Compositus*, *Composition Powder*, 60 p. c. + ginger 30, capsicum 5, clove 5—stimulant, carminative. Dose, gr. 10-20 (.6-1.3 Gm.). *Extract*, gr. 5 (.3 Gm.).

Myristica

MYRISTICA. MYRISTICA, U.S.P.

Myristica fragrans,
Houttuyn.

{ The dried ripe seed deprived of seed-coat—the kernel, with or without thin coating of lime, yielding not less than 25 p. c. non-volatile, ether-soluble extractive, nor more than .5 p. c. acid-insoluble ash.

Habitat. Molucca Islands; cultivated in tropics, India, Philippine Islands, Amboyna, Boura, New Guinea, E. Indies, W. Indies, S. America, Ceylon, Sumatra, Java, etc.

Syn. Myrist., Nutmeg, Round Nutmeg; Fr. Muscade des Moluques, Noix Muscade, Nux Muschata, Nuces Nucistæ; Ger. Semen Myristicæ, Muskatnuss, Myristicasamen.

My-ris'ti-ca. L. see etymology, page 190, of Myricaceæ.

Fra'grans. L. *fragran(t)s*, sweet-scented—*i. e.*, from its fragrant odor.

Nut'meg. OE, *nut* + *muge*, musk, corrupted into *meg*—*i. e.*, from its odor.

PLANT.—Evergreen tree 7.5-15 M. (25-50°) high, much branched, bark brownish-gray, smooth, young branches green; leaves leathery, smooth, entire, 10-15 Cm. (4-6') long, acute at both ends, prominently veined, dark green; flowers dioecious, small, yellow, fruit pendulous, smooth, yellow, 7.5 Cm. (3') long, 5 Cm. (2') wide, resembling a peach, but grooved by a longitudinal furrow, pericarp, 12 Mm. ($\frac{1}{2}$ ') thick, tough, fleshy, with astringent juice, yellowish-white, dehiscing from above along the furrow into 2 equal valves that become dry and coriaceous when ripe, and from between which readily falls out the erect, blunt, single seed closely enveloped, reticulately furrowed and almost completely covered by an irregularly cut fleshy arillus (mace); when deprived of this latter the seed-testa is dark brown, hard, thick, smooth, shining, woody; inner seed-coat thin, membranous, pale brown. **KERNEL** (myristica, nutmeg), ovoid, ellipsoidal, 20-30 Mm. ($\frac{3}{8}$ - $\frac{1}{2}$ ') long, 15-20 Mm. ($\frac{3}{8}$ - $\frac{1}{2}$ ') thick, light brown, reticulately furrowed from the tightly oppressed arillus, broad end with large circular,

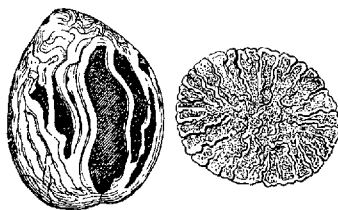
upraised scar from which arises a groove extending to a depression at opposite end (chalaza), easily cut, surface having waxy luster, mottled from light brown perisperm penetrating into the yellowish-brown endosperm; longitudinal section through endosperm above large scar shows cavity with shrunken remains of embryo and usually with a growth of mold; odor characteristically aromatic; taste pungently aromatic. **POWDER**, reddish-brown—fragments of perisperm with reservoirs containing volatile oil, parenchyma cells filled with aleurone and starch grains, .003-.02 Mm. ($\frac{1}{83}$ - $\frac{1}{1250}$ ') broad—blue with iodine T. S., whereas starch in mace—yellowish-red; occasional tracheæ; mounts in chloral hydrate T. S.—shows numerous globules of fixed oil, which may separate in rod-like crystals; mounts in fixed oil—show separated aggregates of crystals which strongly polarize light; powder from “limed” nutmegs under microscope, upon adding water containing 25 p. c. of sulphuric acid—show separation of calcium sulphate crystals (needles, short rods) which do not polarize light. Some accept the hard testa and kernel as the seed, like peach seed, but the U.S.P. recognizes solely the kernel or nucleus, that central part left after the fleshy portion, arillus, and hard testa have been removed. Those that are broken, of light weight, feeble odor and taste, musty, wormy and black-veined should be rejected. *Solvents*: alcohol; ether. Dose, gr. 5-20 (.3-1.3 Gm.).

ADULTERATIONS.—**KERNELS**: Rare—those punctured, boiled, and plugged, recognized by lightness, insect ravages, and pegs (on breaking open); also false nutmegs, in spite of easy detection; Papua (large), Macassar (small)—*M. fatua* and *M. argentea*—both longer, more narrow and pointed, the former with little aroma after drying, the latter more brittle and aromatic, and furrowed with 4 broad stripes. **POWDER (GROUND)**: Common—partially or wholly exhausted refuse, from percolation or distillation.

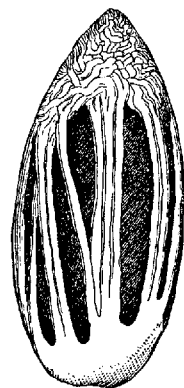
Commercial.—Plant prefers light soil, shade, and moist climate, produces fruit when 8-9 years old, matures at 25, and yields annually for 60-70 years. Fruit was unknown to the ancients, Avicenna being the first to notice it, and is collected when split on one or both sides, Sept.-Dec., (also April-June) by means of a hook on a long pole, or by hand, placed into baskets, pericarp and arillus removed, and the seed, spread on frames to dry by sun or fire at 60° C. (140° F.), being turned over every few days for 2 months. When kernels rattle in the shells, the latter are cracked off with mallets, and the former assorted, the best being rubbed over with powdered lime and packed in white-washed casks or chests for market. The Chinese are supplied with uncracked seed, while inferior grades are utilized for expressing the fixed oil. There are several varieties: 1, *Unlimed (Brown, Penang, Singapore)*, as above described, sometimes oily to the touch, and mixed with clove; 2, *Limed (Dutch, Batavian)*, prepared in the Banda Islands by steeping the dried seed for a short time in a mixture of salt water and lime (a protection against insect attacks, and possibly to kill the embryo thereby restricting the culture to their own provinces), then exposing to the sun several days and packing for market; 3, *Artificial*, prepared by compressing a mixture of earthy and powdery matter, being less aromatic than the genuine, also soft and crumbly when in



Myristica fragrans: twig with the fruit.



Nutmeg, with mace, and transverse section.



Wild nutmeg, with mace.

boiling water 3 minutes; contains volatile oil 2 p. c., fat 15 p. c., ash 11-18 p. c.

CONSTITUENTS.—Volatile oil 2-8-15 p. c., fixed oil 25-30 p. c., starch, proteins, mucilage, ash 2-5 p. c.

Oleum Myristicæ. *Oil of Myristica, U.S.P.*—(Syn., *Oil of Myrist.*, *Myristica Oil*, *Oil of Nutmeg*, *Oleum Nucistæ Æthereum*; Fr. *Essence de Muscade*; Ger. *Oleum Macidis, Ætherisches Muskatnussöl.*) This volatile oil, distilled from the dried kernels of the ripe seed with water or steam, is a colorless, pale yellow liquid, characteristic odor and taste of nutmeg; soluble in alcohol (1), in 90 p. c. alcohol (3), sp. gr. 0.859-0.924, dextrorotatory; contains *d*-pinene and *d*-camphene 80 p. c., dipentene 8 p. c., eugenol, safrol, myristicol, $C_{10}H_{16}O$, and myristicin, $C_{12}H_{14}O_3$. The nutmeg camphor (once thought to be myristin), which sometimes settles on standing, is myristic acid. *Tests*: 1. Evaporate 3 Gm. on water-bath—residue .06 Gm. 2. Recently distilled oil in alcohol (1)—neutral or only slightly acid. Should be kept cool, dark, in well-stoppered, amber-colored bottles. Dose, Mij -3 (.13-.2 cc.).

Fixed Oil. (*Oleum Myristicæ Expressum, Oleum Nucistæ.*)—Obtained by bruising nutmegs, exposing them in a bag to steam, and expression between heated plates; the oil runs out a liquid, but congeals upon cooling; often called *nutmeg butter*, and improperly *oil of mace*; it is an orange-brown solid, sp. gr. 0.995, melting at 45° C. (113° F.), soluble in hot ether (2), hot alcohol (4); consists mainly of myristin, with some myristic acid, palmitin, olein, resin, volatile oil 6 p. c. Dose, gr. 2-5 (.13-.3 Gm.).

PREPARATIONS.—I. SEED: 1. *Tinctura Lavandulæ Composita*, 1 p. c. 2. *Tinctura Rhei Aromatica*, 2 p. c. 3. *Pulvis Aromaticus, N. F.*, 15 p. c. 4. *Pulvis Cretæ Aromaticus, N. F.*, 6 p. c. 5. *Syrupus Sennæ Aromaticus, N. F.*, $\frac{1}{2}$ p. c. II. OIL: 1. *Spiritus Ammoniac Aromaticus*, $\frac{1}{10}$ p. c. 2. *Elixir Pepsini et Rennini Compositum, N. F.*, $\frac{1}{100}$ p. c. 3. *Mistura Oleo-Balsamica, N. F.*, $\frac{2}{3}$ p. c. *Spiritus Myristicæ (Br.)*, 10 p. c. Dose, $\text{m}\nu$ -20 (.3-1.3 cc.).

PROPERTIES.—Stimulant, stomachic, narcotic, flavoring, condiment, increases gastric juice, digestion, appetite; large doses, like camphor, act on the cerebrum, causing stupor, delirium.

USES.—Flatulence, gastric debility, diarrhea, dysentery, vomiting, colic, dyspepsia, flavoring, condiments.

Allied Products:

1. *Macis, Mace.*—The arillode of the seed of *Myristica fragrans*, U.S.P. 1850-1900. When fruit first gathered the fleshy pericarp is removed, the thin coating (arillode) enveloping the seed peeled off with a knife, then sprinkled with salt water, as a preservative, and dried by sun or fire; or it may be allowed to remain on the seed until thoroughly dry, when it freely cracks and peels off. It is a brilliant, scarlet (fresh), or brownish-orange (dry), brittle, in narrow bands, 2.5 Cm. (1') long, branched, lobed above, fatty when scratched or pressed, fracture short, showing many oil-cells; odor fragrant; taste warm, aromatic; contains volatile oil (*oleum macidis*) 4-9-17-35 p. c., resin 25 p. c., sugar 1 p. c., amyloextrin 1.8 p. c., fixed oil, mucilage, proteins (no starch), ash 1-3 p. c.; solvent: alcohol. *Tinctura Macidis*, 20 p. c. (alcohol). *Adulterations*: Common (entire and powdered)—nutmeg, starch, ginger, and mace of *M. malabarica* and *M. fatua*; this latter readily being detected by darker reddish color, more fatty, resinous, lustrous surface, weaker taste and odor, yielding 10 times more ether-extract, and microscopic specimen turning dark brown with potassium hydroxide solution, becoming yellow with sulphuric acid. Stimulant, tonic, flavoring. Dose, gr. 5-20 (.3-1.3 Gm.).

2. *False, Long, Wild, Male Nutmegs*—*M. fatua* and *M. argentea*.—These are 4-5 Cm. (1 $\frac{3}{4}$ -2') long, paler and less aromatic than official, the mace inodorous and less deeply lobed.

Nectandra

Nectandra Rodiaei, Bebeeru Bark.—The dried bark, U.S.P. 1860-1870; S. America, Guiana. Large tree, 18-24 M. (60-80°) high, bark ash-gray, smooth, leaves 12.5-15 Cm. (5-6') long, 5-7.5 Cm. (2-3') broad, coriaceous, shining; flowers yellowish-white, jasmine odor, wood strong (valuable in shipbuilding); fruit, subpyriform, 5-7.5 Cm. (2-3') long, bitter. Bark flat pieces 6 Mm. ($\frac{1}{4}$ ') thick, 3-6 M. (1-2°) long, 10-15 Cm. (4-6') broad, many longitudinal depressions, inside cinnamon-brown, coarsely striate, fracture granular, with stone cells, astringent, bitter; contains bebeerine (identical with buxine, paracine, and pelosine), siripine; wood has nectandrine. Tonic, antiperiodic, febrifuge; intermittents, menorrhagia, leucorrhœa, headache, neuralgia, dyspepsia, consumption, in infusion, decoction. Dose, ʒss -1 (2-4 Gm.); bebeerine, gr. 1-10 (.06-.6 Gm.).