Citrus Aurantium, var. *sinensis*.

of sarcocarp with chromoplastids, oil reservoirs and globules of volatile oil; odor highly fragrant; taste pungently aromatic. *Solvents:* alcohol; water. Dose, gr. 15–30 (1–2 Gm.).

Commercial.—This sweet fruit grows only by cultivation; was unknown to the Greeks and Romans, being introduced first into Europe by the Portuguese in the 15th century. There are now some fifty varieties cultivated in Spain, Portugal, Madeira, Azores, China, West Indies, S. and S. W. United States, many of which have been given commercial names after the districts of production, as China, Portugal, Havana, Florida, California, Messina, and Malta (blood-red). These are imported in boxes of 100–200, having each orange wrapped in tissue-paper, the sweetest coming to us from Havana, Florida, and California.

CONSTITUENTS.—Volatile oil, hesperidin, (fixed oil, resin, gum, tannin, ash 4–5 p. c.).

Oleum Aurantii. Oil of Orange, *U.S.P.*—(Syn., Ol. Aurant., Oleum Aurantii Corticis, U.S.P. 1900, Orange Oil, Oil of Sweet Orange, Oleum Aurantiorum, Essence (Essential Oil) of Orange; Fr. Huile d'Orange; Ger. Pomeranzenschalenöl.) This volatile oil is produced mostly in S. Italy, Sicily, by expression from the fresh peel of the ripe fruit (sweet orange and its varieties), or rupturing the oil-glands mechanically and collecting the liberated oil, as with oil of lemon; if obtained by distillation the product is decidedly less fragrant. It is a yellow liquid, characteristic odor and taste of the outer part of sweet orange peel, sp. gr. 0.844; soluble in dehydrated alcohol, carbon disulphide, glacial acetic acid (1); neutral reaction, dextrorotatory; contains limonene (citrene, hesperidene), $C_{10}H_{16}$, 90 p. c., odor bearers (citral, citronellal, methyl ester of anthranilic acid). *Tests:* 1. With 90 p. c. alcohol (2)—does not form clear solution (dif. from washed citrus oils). 2. Evaporate 25 Gm. to dryness—residue not less than 2 p. c. (dif. from washed citrus oils). 3. Should not have a terebinthinate odor or taste (abs. of oil of turpentine); must meet requirements for heavy metals. The oil from the peel of bitter orange (*N.F.*) though chemically indistinguishable, has a superior flavor, but a limited production, and usually is mixed with this oil (sweet orange). Oil having a terebinthinate odor must not be dispensed. Should be kept cool, dark, in small, well-stoppered, completely filled, amber-colored bottles (to avoid developing terebinthinate odor). Usually shipped in tinned-copper cans. Dose, ♏j–5 (.06–.3 cc.).

ADULTERATIONS.—Oil of turpentine, alcohol, etc.

PREPARATIONS.—I. RIND: 1. *Tinctura Aurantii Dulcis.* Tincture of Sweet Orange Peel. (Syn., Tr. Aurant. Dulc.; Fr. Teinture d'Orange douce; Ger. Apfelsinenschalentinktur.)

Manufacture: 50 p. c. Similar to Tinctura Cardamomi Composita, page 137—macerating 50 Gm. in alcohol 100 cc., filtering through purified cotton, and finishing with alcohol q. s. 100 cc. Dose, ʒj–2 (4–8 cc.); as a flavoring vehicle.

Preps.: 1. *Syrupus Aurantii.* Syrup of Orange. (Syn., Syr. Aurant., Syrupus Aurantii Corticis, Syrup of Orange Peel; Fr. Sirop d'Écorce d'Orange; Ger. Pomeranzen(Orangen-schalen)-sirup.)

Manufacture: Triturate purified talc 1.5 Gm. with tincture of sweet orange peel 5 cc. and citric acid .5 Gm., and add gradually distilled water 40 cc., filter, add through filter distilled water q. s. 45 cc.; dissolve in this, by agitation, sucrose 82 Gm. (without heat), add distilled water q. s. 100 cc., mix thoroughly, strain; must not dispense when of terebinthinate odor or taste or shows other deterioration. Dose, *ad libitum*—flavoring.

2. *Elixir Gentianæ Glycerinatum, N.F.*, 1.5 p. c. 3. *Elixir Pepsini et Rennini Compositum, N.F.*, 5 p. c. 4. *Elixir Taraxaci Compositum, N.F.*, 6 p. c. 5. *Elixir Terpini Hydratis, N.F.*, 2 p. c.

II. OIL: 1. *Spiritus Aurantii Compositus.* Compound Spirit of Orange. (Syn., Sp. Aurant. Co.; Fr. Esprit d'Orange composée; Ger. Zusammengesetzter Orangengeist.)

Manufacture: 20 p. c. Dissolve oil 20 cc., + oil of lemon 5, oil of coriander 2, oil of anise .5 in alcohol q. s. 100 cc. Should be kept in dark amber-colored bottles. As a flavoring vehicle.

Preps.: 1. *Elixir Aromaticum.* Aromatic Elixir. (Syn., Elix. Arom., Simple Elixir; Fr. Elixir aromatique; Ger. Aromatisches Elixir.)

Manufacture: 1⅕ p. c. To compound spirit of orange 1.2 cc., add alcohol q. s. 25, to this add syrup 37.5, in several portions with agitation, distilled water 37.5, purified talc 3 Gm., filter until clear, wash filter with 25 p. c. alcohol q. s. 100 cc.—flavoring.

Preps.: 1. *Elixir Glycyrrhizæ,* 87.5 p. c. 2. *Numerous Elixirs*—as a vehicle.

2. *Elixir Aletridis Compositum, N.F.*, 1 p. c., + 10 other *N.F. Elixirs*—flavoring. 3. *Emulsa*—flavoring.

2. *Elixir Ferri Pyrophosphatis, Quininæ et Strychninæ, N.F.*, $\frac{1}{15}$ p. c. 3. *Elixir Pepsini Compositum, N.F.*, $\frac{1}{5}$ p. c. 4. *Liquor Ferri Peptonati, N.F.*, $\frac{1}{66}$ p. c. 5. *Liquor Ferri Peptonati et Mangani, N.F.*, $\frac{1}{66}$ p. c. 6. *Spiritus Cardamomi Compositus, N.F.*, 2 p. c. 7. *Spiritus Myrciæ, N.F.*, $\frac{1}{20}$ p. c. 8. *Spiritus Vanillini Compositus, N.F.*, 5 p. c. 9. *Syrupus Quinidinæ, N.F.*, $\frac{1}{50}$ p. c. 10. *Tabellæ Sulphuris et Potassii Bitartratis, N.F.*, $\frac{1}{20}$ ♏. (.003 cc.). 11. *Trochisci Eucalypti Gummi, N.F.*, $\frac{1}{20}$ ♏. (.003 cc.).

PROPERTIES AND USES.—Aromatic; chiefly for flavoring and in perfumery; fruit deliciously edible.

LIMONIS CORTEX. LEMON PEEL, *U.S.P.*

Citrus medica, var. **Limonum,** (*Risso*) *Hooker filius.* { The outer yellow rind of the fresh ripe fruit.

Habitat. N. India; cultivated in subtropics, Mediterranean Basin, United States (California, Florida), Australia, etc.

Syn. Limon. Cort.; Fr. Écorce (Zest) de Citron (Limon); Citron, Limon; Ger. Cortex Fructus Citri, Flavido Corticis Citri, Citronen Limonen)-schale; Limone, Citrone.

Med'i-ca. L. *medicus,* medical, curative—*i. e.,* properties useful in medicine.

Li-mon'um. L. a lemon, fr. Arab. *limun, limu,* taken from Skr. *nimbuka.*

PLANT.—Straggling bush or tree, 3–4.5 M. (10–15°) high, more tender than the orange, having many angular branches and sharp spines in the leaf-axils; bark gray, that of branches green, of twigs reddish or purple; leaves evergreen, 5–6 Cm. (2–2⅜′) long, ovate, acute, serrate, 12 Mm. (½′) petioles; flowers all the year round, sweet-scented, white to purplish-pink; fruit ovoid berry 7.5 Cm. (3′) long with nipple-shaped extremity, smooth, depressed punctations over the oil-glands, structure like orange; pulp acid, yellow; seed as in orange, only smaller. PEEL, the outer, lemon-yellow, dark yellow layer, recently separated by grating, paring, and consisting of an epidermal layer, numerous parenchyma cells containing yellow chromoplastids, and large oil reservoirs with globules of the volatile oil; odor fragrant,

Citrus medica, var. *Limonum: a,* flower; *b,* fruit.

distinctive; taste aromatic; sections mounted in a fixed oil show epidermal layer (small tabular cells), hypodermal layer containing numerous plastids, a mesocarp with colorless, thin-walled parenchyma, large elliptical oil reservoirs, granular protoplasm, calcium oxalate crystals. The inner spongy white portion should be removed and discarded. *Solvents:* alcohol; wine; water. Dose, ʒss–1 (2–4 Gm.).

Commercial.—Lemons reach us from California, Florida, W. Indies, Mediterranean region (Sicily, Spain, etc.) packed in boxes, each lemon being wrapped in white or brownish tissue-paper. Foreign varieties are known as *wax, imperial, gæta,* and all, when kept several months, deteriorate, owing to the decomposition of citric acid, into sugar and carbon dioxide, in consequence of which, to insure preservation and permit long shipments, they must be coated with melted paraffin, dissolved shellac, or varnish. The rind should be pared thinly from the fruit with sharp knives and carefully dried.

CONSTITUENTS.—Volatile oil, bitter principle, hesperidin, ash 4 p. c.

Oleum Limonis. Oil of Lemon, *U.S.P.*—(Syn., Ol. Limon., Lemon Oil, Oleum de Cedro; Fr. Essence (Huile) de Citron—Cédrat; Ger. Citronöl, Limonenöl.) This volatile oil is produced mostly in Sicily, S. France, Italy (Calabria), by expression from fresh peel of the ripe fruit, using several processes that rupture mechanically the oil-cells thereby liberating the oil and rendering it easily collected: 1, *spugna*—collecting by sponge the oil from ruptured cells of the quartered rind; 2, *scorzetta*—of the halved rind; 3, *machina*—substituting a complicated machine for manual labor of expression and collection; 4, *écuelle à piquer*—not much used but consisting of an instrument, bowl-shaped, 25 Cm. (10′) wide, of tinned-copper, having a raised opening in the center which forms with the outer edge a broad channel; to this there is a heavy cover similarly shaped, whose inner surface as well as that of the machine is armed with concentric rows of short 6 Mm. (¼′) spikes or ridges; an opening in the bottom allows the escape of oil. By a handle the cover is made to revolve rapidly one-half minute over the instrument, having between the two 5 to 8 fruits, after which they are replaced by fresh ones. About 7000 fruits can be exhausted daily by each machine. It is a pale yellow, greenish-yellow liquid, characteristic odor and taste of the outer part of fresh lemon peel, sp. gr. 0.853, dextrorotatory, soluble in alcohol (3), dehydrated alcohol, carbon disulphide, glacial acetic acid; neutral, slightly acid; contains at least 4 p. c. (7–8) of aldehydes calculated as citral, $C_{10}H_{16}O$, which gives the aroma and value (being also produced by oxidizing geraniol, $C_{10}H_{18}O$, with chromic acid), limonene (citrene), $C_{10}H_{16}$, 76 p. c., little cymene, $C_{10}H_{14}$, citronellal, $C_{10}H_{18}O$, phellandrene, pinene, geranyl acetate, a sesquiterpene, octyl aldehyde, nonyl aldehyde, methyl heptenone, terpineol. Should be kept cool, dark, in completely filled, well-stoppered, amber-colored bottles, and that having a terebinthinate odor must not be dispensed. Dose, ♏j–5 (.06–.3 cc.).

ADULTERATIONS.—Oils of other *Citrus* fruits, fixed oils, alcohol, oil of turpentine. The fragrant *Oil of Petit Grain Citronnier,* from immature fruits, leaves, and twigs, closely resembles *Neroli Petit Grain,* and may be used similarly.

Hesperidin, $C_{22}H_{26}O_{12}$.—A glucoside (bitter principle) from the white, spongy part or rind by boiling water; bitter, yellowish-white powder or white needles; soluble in diluted alkalies or acetic acid, black with ferric salts, and by diluted sulphuric acid decomposed into hesperetin, $C_{16}H_{14}O_6$, and glucose, $C_6H_{12}O_6$.

PREPARATIONS.—I. PEEL: 1. *Tinctura Limonis.* Tincture of Lemon. (Syn., Tr. Limon., Tinctura Limonis Corticis; Fr. Teinture d'Écorce de Citron; Ger. Citronenschalentinktur.)

Manufacture: 50 p. c. Similar to Tinctura Cardamomi Composita, p. 137—macerating 50 Gm. in alcohol 100 cc., filtering through purified cotton, and finishing with alcohol q. s. 100 cc. Dose, ʒss–2 (2–8 cc.).

Preps.: 1. *Syrupus Acidi Citrici*, 1 p. c. 2. *Emulsum Petrolati, N.F.*, 1.5 p. c.

II. Oil: *Liquor Magnesii Citratis*, $\frac{1}{10}$ cc. in 350. 2. *Spiritus Ammoniæ Aromaticus*, 1 p. c. 3. *Spiritus Aurantii Compositus*, 5 p. c. 4. *Acetum Aromaticum, N.F.*, $\frac{1}{10}$ p. c. 5. *Linimentum Terebinthinæ Aceticum, N.F.*, 1.6 p. c. 6. *Mistura Oleo-Balsamica, N.F.*, $\frac{2}{5}$ p. c. 7. *Spiritus Odoratus, N.F.*, $\frac{4}{5}$ p. c. 8. *Syrupus Eriodictyi Aromaticus, N.F.*, $\frac{1}{20}$ p. c. 9. *Syrupus Sennæ Aromaticus, N.F.*, $\frac{1}{7}$ p. c.

Unoff. Preps.: Peel: *Spirit*, 5 p. c., + oil 5 p. c. (alcohol), ʒss–2 (2–8 cc.). *Infusion. Syrup. Juice* (from fruit—used alone, neutralized by alkali, or made into syrup; soon spoils, but will keep a short time by letting stand until albumin is coagulated, straining into hot bottles, and covering with almond or sweet oil; flavor is preserved best by making it into concentrated syrup); yield $\frac{1}{2}$–1 ounce (15–30 cc.) per lemon, dose, ʒij–5 (8–20 cc.).

Properties and Uses.—Stimulant, stomachic, added usually to infusions, tinctures, etc., chiefly for flavoring. Juice refrigerant, relieves thirst, febrile inflammatory affections in agreeable beverages; diaphoretic (neutral mixture), scurvy (seamen on long voyages should take ℥j (30 cc.) daily as a preventive), acute rheumatism; locally in sunburn, pruritus of scrotum, uterine hemorrhage after labor, gargle in diphtheria.

Limones, Lemons. The fruit, U.S.P. 1820–1850. *Limonis Succus, Lemon Juice*, U.S.P. 1860–1900.

Citrus medica

C. med'ica, Citron.—Small tree, but fruit very large, 20–22.5 Cm. (8–9′) long, resembling pineapple in shape. The rind is popular as a dessert, essence in perfumery, and juice for similar purposes as that of lemon and lime fruits. *C. medica*, var. *acida. Succus Citri, Lime Juice;* contains citric acid 5–10 p. c. *Succus Citri et Pepsinum*, lime juice 60 p. c., + glycerite of pepsin 40.

Coal Tar

Pix Carbonis, Coal Tar, Pix Lithanthracis, N.F.—The tar obtained as a by-product in the destructive distillation of coal for illuminating gas. A nearly black, thick liquid or semi-solid, heavier than water, odor characteristic, naphthalene-like, taste sharp burning; soluble in benzene, carbon disulphide, chloroform, partly so in alcohol, acetone, methyl alcohol, purified petroleum benzin, slightly so in water, imparting its characteristic odor and taste; alkaline reaction; burns with reddish, luminous sooty flame, being consumed by strong heat, ash 2 p. c.; 1. *Liquor Picis Carbonis*, Liquor Carbonis Detergens, 20 p. c. + quillaja 10 (70 p. c. alcohol).

Coffea arabica CAFFEA. COFFEE.

Caffeina. Caffeine, $C_8H_{10}O_2N_4.H_2O$, *U.S.P.*

Coffea arabica, *Linné,* and **Thea sinensis,** *Linné.* — A feebly basic substance (alkaloid) from the seeds of the former and leaves of the latter (Theaceæ), also occurring in other plants; or prepared synthetically. See page 407.

Habitat. 1. Tropical Africa (Arabia, Abyssinia, Ceylon, Mocha); cultivated in tropical countries (Java, W. Indies, S. America—Brazil (most), Guatemala (best), etc.). 2. S. E. Asia (upper Assam, China, Japan, Java, S. United States); cultivated.

Syn. Caff., Semen Coffea; Fr. Café; Ger. Kaffee (bohnen), Caffeia; Caffein, Theine, Guaranine, Trimethylxanthine, Methyltheobromine; Fr. Caféine, Théine; Ger. Coffeinum, Koffein, Kaffeïn, Thein.

Cof'fe-a. L. for coffee, after Coffee, a province of Narea, in Africa, where it grows abundantly; Arabic name of the decoction—*chaubé, cavé, cahua, caova.*

A-rab'i-ca. L. Arabian—*i. e.*, its chief habitat.

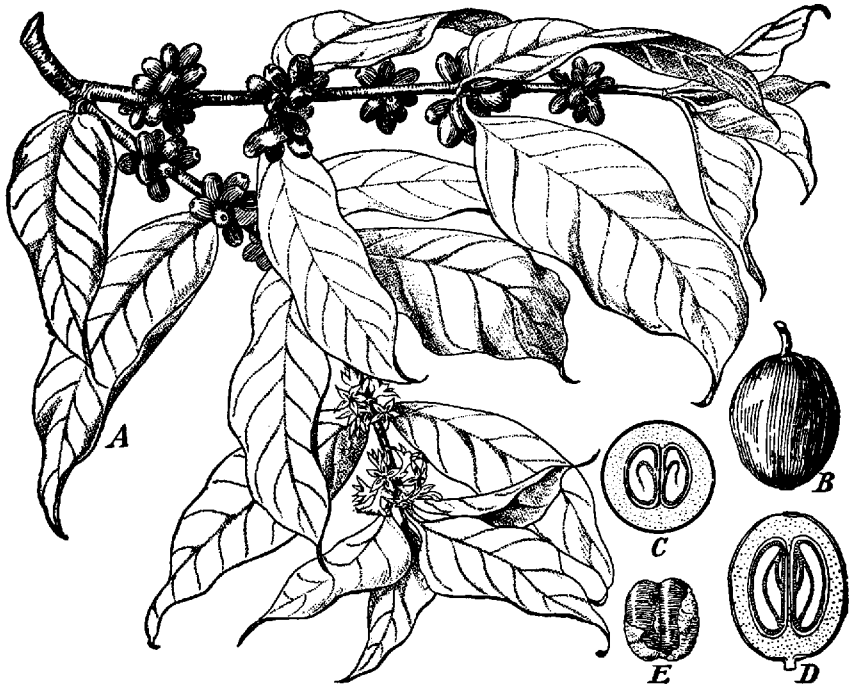
Plant.—Handsome shrub or small tree 3–4.5 M. (10–15°) high, by cultivation trimmed down to 1.5–2 M. (5–6°); bark smooth, gray; leaves 10–15 Cm. (4–6′) long; 2.5–5 Cm. (1–2′) wide, ovate, alternate, coriaceous, glossy, entire; flowers small, fragrant, white, funnel-shape, cymes; fruit oval, 12 Mm. (½′) long, scarlet, but purple when ripe, 2-celled, 2-seeded drupe, each seed in a parchment-like endocarp; pericarp with scanty, scarcely succulent pulp, dehiscent; seed large, solitary in each cell, rounded back, flat on ventral surface (by which they face each other), hard, bony, grayish, deep narrow fissure in center.

Adulterations.—Seed: Inferior grades: natural discolored (yellow and brown grain); artificial colored (Prussian blue, indigo, sugar, egg-albumen)—removed by soaking in water; factitious coffee made of clay, kaolin, evaporated skimmed milk, etc.—sink in ether, have little taste and no groove on flat side. Ground coffee: Sometimes roasted dandelion, chicory, amylaceous roots, corn, peas, beans, acorns, wheat, rye, sweet potatoes, coffee extract, etc.

Constituents.—Caffeine (free and combined with caffeic acid) 1–2.3 p. c., caffearine, fat (olein, palmitin) 13 p. c., glucose, dextrin 15 p. c., proteins 13 p. c., caffeo-tannic acid, (chlorogenic, coffalic), volatile oil, citric acid, trigonelline, pectin, oxydase, moisture 12–15 p. c., ash 3–5 p. c., Mocha 7–8 p. c.—K, Na, Mg, carbonates, phosphates.

Caffeina. Caffeine.—While this is now prepared commercially—chiefly synthetically, or from tea and tea-dust (sweepings), it may be obtained from a strong infusion of tea or unroasted coffee by adding lead acetate to precipitate tannin, coloring matter, etc., filtering, removing excess of lead by hydrogen sulphide, concentrating, crystallizing. It is in white, flexible, silky, glistening needles, usually matted together in fleecy masses, odorless, bitter, efflorescent, soluble in water (46), hot water (5.5), alcohol (66), chloroform (5.5), ether (530), benzene (100), boiling benzene (22), acetone (50); saturated aqueous solution neutral; melts, when anhydrous, at 236° C. (457° F.). *Tests:* 1. Dissolve .01 Gm. in hydrochloric acid 1 cc., add potassium chlorate .1 Gm., evaporate to dryness, invert the container over a vessel containing a few drops of ammonia T. S.—residue purple, destroyed by fixed alkalies (murexide reaction). 2. Aqueous solution + tannic acid T. S.—precipitate, soluble in excess of reagent. 3. Dry to constant weight—

loses 9 p. c.; incinerate—ash .05 p. c. 4. To .5 Gm. add sulphuric or nitric acid 5 cc.—colorless, faintly yellow (abs. of readily carbonizable substances). 5. Aqueous solution (1 in 50) + mercuric potassium iodide T. S.—no precipitate (abs. of alkaloids). *Impurities:* Alkaloids, readily carbonizable substances. Dose, gr. 1–5 (.06–.3 Gm.).



Coffea arabica: A, blooming and fruiting twig; *B*, fruit; *C*, fruit, cross-section; *D*, fruit, longitudinal section; *E*, seed still partly enclosed in the parchment-like endocarp.

Commercial.—Tree resembles our cherry, although more delicate, grows in clusters in hilly woods, 300–600 M. (1.000–2.000°) elevation; first known in Europe, 1652, as coming from Arabia, Abyssinia, where it was popular in the 15th century. The Dutch first grew it in Europe, 1690, and introduced it into America at Surinam, 1718, Cayenne, W. Indies, 1725. There are four varieties: 1, *Mocha*, best, smallest, dark yellow, growing on the Arabian hills around Mocha; 2, *Java* (*E. Indian, Ceylon*), largest, pale yellow; 3, *Rio, Brazilian* (*W. Indian, Demerara*), intermediate size, bluish or greenish-gray; 4, *Liberian* (*C. liberica*—most hardy and resistent to diseases), larger berries, finer flavor. The seeds are separated from papery endocarp by drying, passing between wooden rollers, and through a winnowing mill. In roasting at 250° C. (482° F.), the fat, sugar, and tannin are destroyed, some caffeine volatilized, and an empyreumatic volatile oil (coffeol, coffeone), or some other active principle, volatile or otherwise, is developed—losing 8 p. c. water, 9 p. c. organic matter, becoming pulverizable, more aromatic, and more soluble in water. Much care should be exercised in this process to use closed vessels and not too great heat. Caffeine exists in all plants as a complex tannoid, and as such possesses decided but different physiological activity from the free base (alkaloid). Decaffeinated coffee results from incipient germination, or dissolving out nine-tenths of the caffeine from raw beans, then roasting.

PREPARATIONS.—1. *Caffeina Citrata.* Citrated Caffeine. (Syn., Caff. Cit.; Br. Caffeinæ Citras, Caffeine Citrate; Fr. Citrate de Caféine; Ger. Koffeincitrat.)

Manufacture: Dissolve citric acid 50 Gm. in hot distilled water 100 cc., add caffeine 50 Gm., evaporate to dryness on water-bath, constantly stirring toward the end, reduce to fine powder. It is a white powder, odorless, slightly bitter, acid taste and reaction; forms clear syrupy solution with small quantity of water, but caffeine precipitates on dilution, being redissolved by additional water; compound unstable; contains 48–52 p. c. of anhydrous caffeine, $C_8H_{10}O_2N_4$. *Tests:* 1. Mix 2 cc. of aqueous solution (1 in 10) with lime water (50)—clear in the cold, but turbid upon boiling. 2. Dry to constant weight—loses 5 p. c.; incinerate—ash .1 p. c. 3. Aqueous solution (1 in 100) 5 cc.+ mercuric sulphate T. S. 1 cc., heat to boiling, add potassium permanganate T. S. 1 cc.—white precipitate. 4. Heat .25 Gm. + sulphuric acid 5 cc. in dish on water-bath for 15 minutes, protected from dust—may be yellow, but not brown (abs. of tartrate). 5. Aqueous solution (1 in 100) 10 cc., acidulated with hydrochloric acid, + barium chloride T. S—no turbidity (abs. of sulphate). *Impurities:* Heavy metals, tartrate, sulphate, water. Should be kept in well-closed containers. Dose, gr. 2–10 (.13–.6 Gm.).

2. *Caffeinæ Sodio-Benzoas.* Caffeine Sodio-Benzoate. (Syn., Caff. Sod.-Benz.; Fr. Soude benzoate dé Caféine; Ger. Caffeinum-Natrium benzoicum, Koffein-Natriumbenzoat.)

Manufacture: Mix caffeine and sodium benzoate each 50 Gm., rub to smooth paste with alcohol q. s., dry in moderately warm place. It is a white powder, odorless, bitter, soluble in water (1.1), some caffeine separating on standing, alcohol (30), partly in chloroform; aqueous solution (1 in 20) neutral, slightly acid or alkaline, not reddened by phenolphthalein T. S.; contains 47–50 p. c. of anhydrous caffeine and 50–53 p. c. of sodium benzoate, $NaC_7O_2H_5$. *Tests:* 1. Heat—decomposes with evolution of white vapors of caffeine—carbonaceous residue effervesces with acids and colors flame yellow. 2. Aqueous solution + ferric chloride T. S.—salmon-colored precipitate; + diluted hydrochloric acid—white precipitate (benzoic acid). 3. Dry to constant weight—loses 5 p. c. *Impurities:* Heavy metals, water, chlorinated compounds, readily carbonizable substances. Dose, gr. 2–10 (.13–.6 Gm.), in powder, capsule, effervescent draught, hypodermically (?).

Prep.: 1. *Ampullæ Caffeinæ Sodio-Benzoatis, N.F.*, 8.5 gr. (.55 Gm.). Dose, 2–4 ampuls.

3. *Caffeinæ Sodio-Salicylas, N.F.*—caffeine, sodium salicylate, āā, 50 p. c., alcohol q. s. Dose, gr. 1–5 (.06–.3 Gm.).

4. *Pulvis Acetanilidi Compositus, N.F.*, 10 p. c.

5. *Sal Pot. Brom. Eff. Co., N.F.*, $\frac{4}{5}$ p. c.

Unoff. Prep.: Effervescent Citrated Caffeine, 1.9 p. c. of anhydrous caffeine, ʒj–2 (4–8 Gm.).

PROPERTIES.—Tonic, stimulant, nervine, antiemetic, laxative, diuretic, antiperiodic, antiseptic. Caffeine in small doses stimulates appetite, digestion, secretion of bile, quickens heart action, respiration, increases arterial tension, urine; normal doses, cerebral stimulant, causing nervous restlessness, wakefulness, increased mental activity; large doses (gr. 5–10; .3–.6 Gm.) produce heaviness of head, insomnia, delirium, rapid, feeble pulse, cold extremities, elevated temperature, convulsions, paralyzes cardiac muscle, but death occurs from paralysis of respiration; valuable as a hydragogue diuretic; ordinary salts not suitable for hypodermic use as they decompose by the presence of water. Caffeine sodio-benzoate as a diuretic, cerebral and cardiac stimulant has the advantage of being moderately stable and non-irritating.

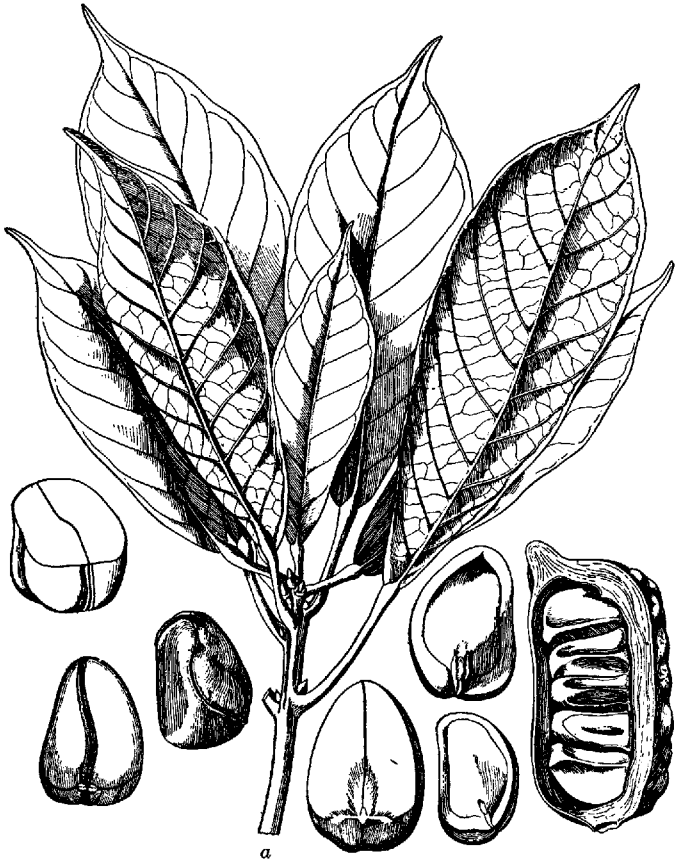
USES.—Caffeine in neuralgia or nervous headaches, diarrhea of cholera, phthisis, cardiac and renal dropsies, lithemia, gout, insomnia of chronic alcoholism, adynamic fevers. Coffee in intermittents, asthma paroxysms, opium narcosis, to antagonize general torpor of nervous centers; it is used mostly as a beverage, for which alone about 1,500,000,000 pounds (680,272 Kg.) are consumed annually, making 1 pound (.46 Kg.) to every living person; in the United States about 6–7 pounds (2.7–3 Kg.) per capita; in Holland 10 pounds (4.6 Kg.); an average cup contains 2.61 gr. (.2 Gm.) of caffeine.

Derivative Products:

1. *Coffea arabica* or *C. liber'ica; Coffea Tosta, Coffee, Roasted Coffee, N.F.*—The dried ripe seed, deprived of most of the seed-coat, and roasted until a dark brown color and characteristic aroma are developed yielding not less than 1 p. c. of caffeine, 3–5 p. c. of ash, and 10 p. c. of fat. Seed oval, variable size, one side convex, other flat with longitudinal groove showing papery seed-coat traces in cleft; characteristic aroma, pleasantly bitter taste. Powder, deep brown—many seed-coat fragments of parenchyma and stone cells, many endosperm cells with porous walls, oil and aleurone grains; starch grains few or wanting, no tracheæ. Dose, ʒss–1 (2–4 Gm.); 1. *Fluidextractum Coffeæ* (1st menstruum: glycerin 6.5 cc., alcohol 25, water 68.5; 2d: 25 p. c. alcohol q. s. 100), dose, ʒss–1 (2–4 cc.). Decoction, Infusion.

Cola nitida

Cola ni'tida, Kola, Cola, N.F.—The dried cotyledon of this or other species with not more than 1 p. c. of foreign organic matter, yielding not less than 1 p. c. of caffeine; W. Africa, W. Indies; cultivated. Tree 15–20 M. (50–65°) high, smooth stem, leaves 15–20 Cm. (6–8′) long, lanceolate-ovate, acuminate, flowers, staminate and pistillate, yellowish, fruit yellowish-brown, 5 segments, rough, woody, follicle 10–13 Cm. (4–5′) long, each segment 1–3-seeded. Cotyledon (seed) irregularly plano-convex, broadly oval, circular, 2.5–5 Cm. (1–2′) long, heavy, hard, tough; brown, outer surfaces wrinkled, inner lighter and smoother, slightly incurved and sharp; odorless; taste slightly astringent. Powder, reddish-brown—numerous starch grains, some altered, many show lamellæ and circular hilum or a central fissure, many parenchyma cells; solvent: diluted alcohol; contains caffeine (kola-tannate) 2.7–3.6 p. c., theobromine, starch 34–42 p. c., tannin, kola-red, kolatin, volatile oil—kolanin is a mixture of kola-red and caffeine, kolatine (only in fresh nuts, which should not be used, action



Cola nitida: a, leafy branch, ¼ nat. size; also longitudinal section of fruit, cross and natural longitudinal section of seed showing embryo enlarged.

opposite to caffeine). Stimulant, tonic, nervine, diuretic, astringent, similar to coffee, but resembles coca in aiding the endurance of fatigue without food; neuralgia, headache, migraine, diarrhea, indigestion, weak and irregular heart. Dose, gr. 15–30 (1–2 Gm.); 1. *Fluidextractum Kolæ* (67 p. c. alcohol), dose, ʒss–1 (2–4 cc.). Elixir, 8 p. c., ʒj–3 (4–12 cc.); Tincture, 15 p. c. (diluted alcohol), ʒj–2 (4–8 cc.).

Collinsonia

Collinso'nia canaden'sis, Stone-root, Horse-balm.—N. America. Rhizome 10 Cm. (4′) long, branches short, knotty, white inside, inodorous, taste bitter, nauseous; contains volatile oil, resin. Diaphoretic, diuretic, tonic, astringent, irritant.

MYRRHA. MYRRH, *U.S.P.*

Commiphora Myrrha, (*Nees*) *Baillon*, or other species. { A gum-resin yielding not less than 30 p. c. alcohol-soluble extractive, nor more than 4 p. c. acid-insoluble ash.

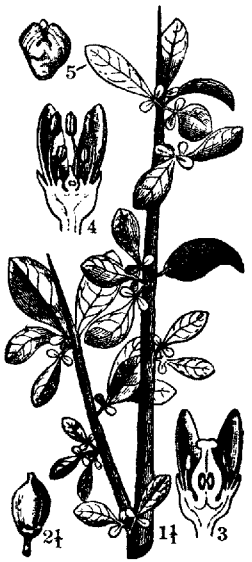
Habitat. E. Africa, S. W. Arabia, Somali country, around Hurrur; 450–900 M. (1500–3000°) elevation.

Syn. Myrrh, Gum Myrrh, Somali (Herabol) Myrrh, Resina Balsamodendri, Gummi-resina Myrrha; Fr. Myrrhe; Ger. Myrrha, Myrrhe.

Com-miph'o-ra. L. fr. Gr. κόμμι gum, + φέρος φέρειν bears, to bear—*i. e.*, produces gummy exudation.

Myr'rha. L. fr. Gr. μύρρα, classic name—Ar. *murr*; Heb. *mar*, bitter—*i. e.*, gum-resin has bitterish taste.

PLANT.—Low, stunted bush or small tree 2.5–3 M. (8–10°) high; trunk considerable size, with many irregular, knotty, abortive branches at right angles, terminating in sharp spines; bark whitish-gray; leaves trifoliate, 2.5 Cm. (1′) long, petiolate; leaflets sessile, 12 Mm. (½′) long, unequal, obovate, central one the largest; flowers diœcious; fruit 12 Mm. (½′) long, pyriform. GUM-RESIN (myrrh), in rounded, irregular tears or masses of agglutinated tears, reddish-brown, covered with yellowish dust; fracture waxy, granular, conchoidal, internally nearly white spots or lines, oily, translucent at edges; odor balsamic, aromatic; taste aromatic, bitter, acrid; triturated with water—brownish-yellow emulsion; with alcohol—brownish-yellow tincture, changing with nitric acid to purplish-red; macerated with water—neither swells nor dissolves. POWDER, yellowish-brown—numerous angular fragments of resin and gum, few fragments of lignified tissue, few starch grains. Reject tears dissolving completely in water, or those swelling with water. *Solvent:* alcohol. Dose, gr. 5–30 (.3–2 Gm.).



Commiphora Myrrha: 1, fruit-bearing twig; *2*, ripe fruit; *3*, and *4*, vertical section of pistillate and staminate flowers respectively; *5* embryo.

ADULTERATIONS.—Gum-resin of allied species (bdellium, etc.—fracture more transparent or opaque, odor and taste different), vegetable fragments, sand, salt, dark gums swelling or adhesive with water.

Commercial.—Trees form an undergrowth in the Red Sea coast forests where vegetation is scant, water scarce, and temperature high. Myrrh is formed in the bark and pith, and exudes spontaneously, like cherry-tree gum, or from artificial incisions through the stem-bark, being at first a juice, then oily, soft, yellowish, golden, finally hard and reddish. It is collected mostly by the Somali, both at home and across the Aden Gulf, Arabia, and formerly entered commerce via Egypt and Lavant ports, hence the name *Turkey myrrh*, but now is conveyed to the great fair of Berbera, there purchased by the Banians of India, and shipped via Aden to Bombay, where it is assorted into grades (bdellium separated) and put into chests, 100–200 pounds (46–90 Kg.). There are three varieties: 1, *Turkey* (*African*), the best—our official kind; 2, *Arabian*, cultivated in S. Arabia, east of Aden, called by Arabs *mur*, by Somalis *mulmul*, *heerabul*, resembles the preceding, but smaller, tougher, without white lines in fracture, less resin, volatile oil and fragrance, only 25 p. c. soluble in alcohol; 3, *Indian* (*Myrrha Indica*), called natively *bissabul*, by Somalis *hebbakhade*, resembles dark myrrh, but has mushroom-like odor, strong, almost acrid, taste; contains resin 21 p. c., volatile oil 8 p. c., many impurities; in commerce as Opopanax.

CONSTITUENTS.—Volatile oil 4–8 p. c., Resin 25–40 p. c., Gum 40–60 p. c., bitter principle (glucoside, soluble in alcohol, water), ash 3–8.5 p. c.—mostly calcium carbonate.

Volatile Oil, $C_{10}H_{14}O$.—Also called *myrrhol* or *myrrhenol*, identical in formula with thymol and carvol, but distinct from them; easily resinifies, pale yellow, thick liquid, sp. gr. 0.988.

Resin, $C_{48}H_{32}O_{10}$.—Often called *myrrhin*, soluble in alcohol, chloroform, ether; consists of 2 parts—one soft the other hard and acid, the latter yielding protocatechuic acid and pyrocatechin, and further divisible into 2 parts—β and γ commiphoric acids.

Gum.—Two kinds, one soluble, the other swelling—galactose and arabinose—in water, adhesive, making stable paste; one precipitated by neutral, the other by basic lead acetate.

PREPARATIONS.—1. *Tinctura Myrrhæ.* Tincture of Myrrh. (Syn., Tr. Myrrh.; Fr. Teinture de Myrrhe; Ger. Myrrhentinktur.)

Manufacture: 20 p. c. Similar to Tinctura Cardamomi Composita, page 137; menstruum: alcohol. Dose, ℥xv–60 (1–4 cc.); mostly used externally. 2. *Pilulæ Aloes et Myrrhæ, N.F.*, 1 gr. (.06 Gm.). 3. *Tinctura Aloes et Myrrhæ, N.F.*, 10 p. c. 4. *Tinctura Capsici et Myrrhæ, N.F.*, 12 p. c. 5. *Pilulæ Antiperiodicæ, N.F.*, ⅛ gr. (.008 Gm.). 6. *Pilulæ Rhei Compositæ, N.F.*, 1 gr. (.06 Gm.). 7. *Tinctura Antiperiodica, N.F.*, ⅕ p. c.

Unoff. Preps.: Fluidextract, ℥v–30 (.3–2 cc.). *Compound Iron Mixture* (*Griffith's*), 1.8 p. c. Plaster.

PROPERTIES.—Stimulant, tonic, expectorant, emmenagogue, astringent, carminative, vulnerary; increases circulation and the number of white blood corpuscles; it is eliminated by the genito-urinary and bronchial mucous membranes, augmenting and disinfecting their secretions; large doses vomit, purge, decrease bronchial secretion. Locally, stimulant, disinfectant, and antiseptic to mucous membranes, ulcerated surfaces, etc.

USES.—Atonic dyspepsia, amenorrhea, anemia, bronchial catarrh, cystitis, pharyngitis, chronic uterine and vaginal leucorrhea. Locally—ulcerated spongy gums, diseased mucous surfaces, relaxed throat, ptyalism, ozena, indolent ulcers; tincture freely diluted with water a good disinfectant gargle to ulcerated sore throat; much used in tooth powders and wash.

Commophora mukul

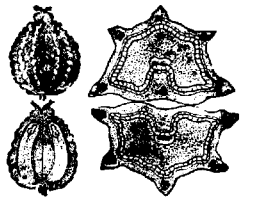
Commiphora Mu'kul, Indian Bdellium, and *C. africa'na, African Bdellium.*—Both occur in tears resembling myrrh, yellowish-brown, dusty, translucent, the former only slightly aromatic, not bitter, the latter with aroma distinct from myrrh, quite bitter; with nitric acid—no purplish-red; both contain volatile oil, resin, gum—the latter a bitter principle; a third variety is non-translucent; yielding a tincture blackened by ferric salts. *C. (Balsemoden'dron) Opobal'samum, Mecca Balsam (Gum).—Bal'samum Gileaden'se, Balm of Gilead.* Possibly the myrrh of the Bible; opaque, yellowish, fragrant, viscid liquid; contains volatile oil 10–30 p. c.; soft resin 70 p. c., hard resin 12 p. c.

Conium

Coni'um macula'tum, Conium, Poison Hemlock, N.F.—The dried full-grown, but unripe fruit with not more than 2 p. c. of foreign fruits, seeds, or other foreign organic matter, yielding not less than .5 p. c. of coniine; it is unfit for use when kept for more than 2 years, and should be carefully dried and preserved; Europe, Asia, N. Africa, naturalized in N. and S. America—waste places. Large branching herb, 2–2.5 M. (6–8°) high, stem furrowed, hollow, smooth, green, mottled with port-wine-colored spots; root biennial, fusiform, 15 Mm. ($\frac{3}{5}$′) thick, exuding milky juice when cut; flowers white, small umbels; leaves bi-pinnate, 15–30 Cm. (6–12′) long, incised, dentate, mucronate, grayish-green on drying. Fruit, cremocarp, broadly oval, greenish-gray, 2 mericarps often separated, each 3 Mm. ($\frac{1}{8}$′) long, 1.5 Mm. ($\frac{1}{16}$′) broad, ovoid; inner flattened side with deep longitudinal groove, outer

Conium maculatum.

convex with 5 pale yellow crenate ribs, pericarp without oil tubes; odor slight, but with solution potassium hydroxide T. S. strongly disagreeable, mouse-like; taste characteristic, disagreeable, acrid. Powder, greenish-gray—endosperm tissue, parenchyma cells containing fixed oil, aleurone grains, calcium oxalate rosettes, lignified fibers, seed-coat fragments, starch grains, tracheæ; solvent: alcohol; contains coniine (conine—liquid) .5–1.5 p. c., methylconiine, conhydrine, pseudoconhydrine, volatile oil, fixed oil, coniic acid, ash 8 p. c. Sedative, narcotic, anodyne, soporific, antispasmodic, anaphrodisiac; depresses all motor nerves, beginning in peripheries, thence to spinal cord, etc., causing motor paralysis without loss of sensation; spasmodic chorea, whooping-cough, melancholia, neuralgia, delirium tremens, tetanus, asthma, epilepsy, pneumonia; scrofulous glandular sores, affections of mammary glands, to check milk secretion, etc. *Poisoning:* Vomiting, fatigue, heaviness of legs, numbness, drooped eyelids, mydriasis, vertigo, impaired speech, slow pulse, paralysis of voluntary muscles, loss of speech, and vision, death from paralysis of respiratory muscles—emetics, lavage, tannin, strychnine, diffusible stimulants, atropine, warmth, epispastics, artificial respiration. Dose, gr. 1–5 (.06–.3 Gm.); 1. *Extractum Conii* (diluted alcohol + .3 p. c. of diluted hydrochloric acid), dose, gr. $\frac{1}{2}$–2 (.03–.13 Gm.). *Fluidextract* (diluted alcohol + 2 p. c. of acetic acid), ♏j–5 (.06–.3 cc.); Ointment; Tincture.



Conium: fruit and longitudinal section magnified 3 diam.; transverse section magnified 8 diam.

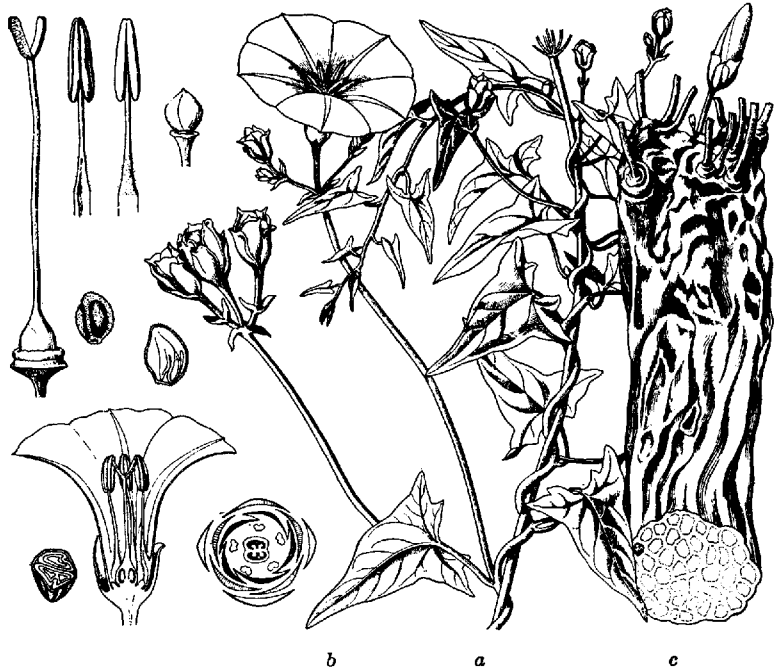
Convallaria majalis.

Convallaria

Convalla'ria maja'lis, Lily-of-the-Valley, Convallariæ Radix, Convallaria Root, Lily-of-the-Valley Root, N.F.—The dried rhizome and roots with not more than 5 p. c. of leaves or other foreign organic matter, yielding not more than 6 p. c. of acid-insoluble ash; United States; cultivated in gardens. Stemless perennial; leaves 2–3, radical, smooth, elliptical; flowers campanulate, white, 1-sided raceme. Rhizome, variable length, 1–3 Mm. ($\frac{1}{25}$–$\frac{1}{8}$′) thick, brownish, few circular stem-scars, 3–5 thin, tortuous, branching roots on lower portions of nodes; fracture short, fibrous, internally whitish; odor faint; taste sweetish, bitter, acrid. Powder, brown—cakes on standing, few starch grains and calcium oxalate raphides, endodermal cells with porous walls, tracheæ; solvents: diluted alcohol, boiling water partially; contains convallamarin, convallarin, resin. Heart tonic, diuretic, emetic, purgative, sternutatory, poisonous, similar to digitalis, but non-cumulative; heart greatly slowed; arrhythmia, "cardiac hurry", dropsy. Dose, gr. 2–10 (.13–.6 Gm.); 1. *Fluidextractum Convallariæ Radicis* (75 p. c. alcohol), dose, ♏ij–10 (.13–.6 cc.). Extract or convallamarin, gr. ½–2 (.03–.13 Gm.); Infusion, 25 p. c., ℥ss–1 (15–30 cc.). *Poisoning:* Symptoms and treatment similar to digitalis.

Convolvulus mechoacanna

Convol'vulus Mechoacan'na, Mechoacanna Root.—Considered by some identical with *Ipomœa pandurata;* occurs in sections, light, whitish, mealy, contains little resin.



b a c

Convolvulus Scammonia: a, blooming plant, *b*, fruiting twig; *c*, root (½ natural size); also flower, anther, pistil, fruit, seed, diagram of flower, enlarged.

Convolvulus scammonia

Convol'vulus Scammo'nia, Scam'mony, U.S.P. (resin) 1820–1900; (root) 1910; W. Asia, Syria, Greece. Perennial twining herb, 6–9 M. (20–30°) long; leaves sagittate, bright green; flowers yellow, funnel-shaped; fruit capsule, 4-seeded. Root, vertical, cylindrical, 10–25 Cm. (4–10′) long, 1–4.5 Cm. ($\frac{2}{5}$–1½′) thick, grayish-brown, twisted, furrowed, root-scars, hard, heavy; fracture tough with projecting wood-fibers; internally mottled, yellowish porous wood-wedges, separated by whitish parenchyma containing starch and resin; odor slight, jalap-like; taste slightly sweet; acrid. Powder, grayish-brown—starch grains, calcium oxalate prisms, resin cells, tracheæ, wood-fibers, stone and cork cells; solvents: alcohol, ether; contains resin 3–10 p. c., gum, tannin 3 p. c., sugar 15 p. c., starch, extractive. Hydragogue, cholagogue cathartic—acts locally on upper intestine like jalap, but being a greater irritant causes more griping—sometimes fatal purgation; should be combined with aromatics, potassium sulphate and other cathartics; dropsies, cerebral affections, torpid intestines with slimy mucus. Dose, gr. 5–20 (.3–1.3 Gm.); Resin, gr. 3–8 (.2–.5 Gm.).

Copaiba

COPAIBA. COPAIBA, *U.S.P.*

Copaiba, *Miller,* one or more S. American species. } An oleoresin.

Habitat. Brazil (Venezuela, Colombia), Amazon valley, banks of the Orinoco River.

Syn. Copaib., Balsam of Copaiba, Copaiva, Balsam Capivi; Fr. Copahu, Oleo-résine (Baume) de Copahu; Ger. Balsamum Copaivæ, Copaivabalsam.

Co-pai'ba. L., Sp., and Port., fr. Brazil. *cupauba—i. e.*, native name of the tree and its product.

PLANT.—Handsome tree, 4.5–18 M. (15–60°) high, much branched, bark brown, rather smooth; leaves alternate, paripinnate; leaflets opposite, 3–5 pairs, 2.5–5 Cm. (1–2′) long, ovate, entire, glabrous, coriaceous, pellucid-punctate; flowers small, white; sepals 5; apetalous; stamens 10; pod small, 2.5 Cm. (1′) long, orange-brown, dehiscent into 2 valves, 1-seeded. OLEORESIN (copaiba), pale yellow, brownish-yellow, viscid liquid, without fluorescence or with only slightly greenish fluorescence; odor peculiar, aromatic; taste persistent, bitter, acrid; soluble in chloroform, ether, carbon disulphide, fixed or volatile oils, petroleum benzin (1), any addition producing a flocculent precipitate, partly soluble in alcohol, more completely in dehydrated alcohol, insoluble in water; sp. gr. 0.940–0.995. *Tests:* 1. Heat 2 Gm. on water-bath—no odor of oil of turpentine, and residual resin should be hard, brittle, and weigh 36 p. c. of original copaiba taken (abs. of oil of turpentine, paraffin, fatty oils). 2. Float 3–4 drops of oil of copaiba on a mixture (nitric acid 1 drop + glacial acetic acid 3 cc.)—no reddish zone; shake, no reddish or purple liquid (abs. of gurjun balsam). 3. Shake 5 cc. + 15 cc. alcohol, boil 1 minute, cool—no oil separates after standing 1 hour (abs. of paraffin oils). 4. Not over 5 p. c. insoluble in dehydrated alcohol. Dose, ♏x–60 (.6–4 cc.).

ADULTERATIONS.—OLEORESIN: Those of allied species, that partially deprived of oil, oil of turpentine, volatile oils, rosin, rosin oil, paraffin, paraffin oils, fatty oils (linseed, castor, etc.), Venice turpentine, African copaiba, gurjun balsam, alcohol—often evinced through different odors on slowly heating. OIL: Gurjun balsam oil, increasing specific gravity, African copaiba oil—insoluble in equal volume of alcohol.

Commercial.—Much was written concerning copaiba during 1625–1638, but Marcgrav and Piso first described its collection, also the tree, 1648; Jacquin studied the genus, 1760, as did Desfontaines some years later, while Hayne, 1827, Bentham, 1870, Baillon, 1877, separated by the varying foliage 11 species in Brazil alone, all having similar flowers, fruit, and valuable, hard, strong, tough, durable wood. However, most of copaiba comes from 7 species: Brazil—*C. Langsdorf'fii, C. confertiflo'ra, C. coria'cea, C. oblongifo'lia;* N. W. Orinoco Valley—*C. officina'lis;* Amazonian region—*C. guianen'sis, C. multiju'ga.* It is a pathogenic product, possibly an antiseptic protective, occurring in schizogenic ducts (cavities differing greatly in size), from which it is obtained by making large auger holes or boxes, square or wedge-shape, into the center of the tree, near the base, whence it usually flows at once, demanding alertness to avoid loss, often giving 12 pounds (5.5 Kg.) in 3 hours; if none should appear the aperture is closed with clay or wax and reopened in 2 weeks, when, as a rule, the discharge is abundant. The flow at first is thin, clear, colorless, but soon becomes thicker and yellowish, as it does also with age. A tree may yield 10–12 gallons (38–45 L.), in 2–3 annual flows, and when abandoned, the ducts, some the length of the stem, occasionally fill and, acting as high liquid columns, furnish sufficient pressure to burst the trunk with a cannon-like report. It is exported in casks, demijohns, cans, jugs, the value depending upon the amount of contained volatile oil. There are several varieties: 1, *Para,* most limpid, palest; contains volatile oil 60–90 p. c.; 2, *Maranham,* denser, consistence of olive oil, odor slightly different; contains volatile oil 40–60 (rarely 80) p. c.; 3, *Rio Janeiro,* resembles closely the Maranham—these three (Brazilian) form clear mixtures with one-third to one-half their weight of ammonia water, but milky if more alkali or fixed oil present; 4, *Surinam* (*C. guianensis*), rather thin, light yellow, soluble in ether, chloroform, alcohol (4–5 parts, turbid with equal portion), violet with bromine (1) + chloroform (20); contains volatile oil 70–80 p. c.; 5, *Maracaibo,* the thickest, turbid, dark yellow; solidifies with magnesium oxide, not clear with ammonia water; contains volatile oil 20–40 p. c., and owing to large amount of resin is well adapted for Massa Copaibæ, *N.F.,* as it combines with magnesium oxide forming resin soap, which gradually becomes dry and hard; Para and other varieties may be used but sufficient volatile oil must be evaporated to render residue viscid upon cooling. Copaiba is exported not only from the above ports, but also from Angostura, Cayenne, W. Indies, Trinidad, C. America, etc.

CONSTITUENTS.—Volatile oil, Resin, bitter principle, copaivic acid, $C_{20}H_{32}O_2$ (oxycopaivic acid, $C_{20}H_{28}O_3$, from Para, metacopaivic acid, $C_{22}H_{34}O_4$, from Maracaibo—all three acids crystalline). Has no benzoic or cinnamic acid, hence the name balsam is misapplied.

Copaiba Langsdorffii.

Oleum Copaibæ. Oil of Copaiba, $C_{15}H_{24}$ (Br.—U.S.P. 1850–1900).—This volatile oil is distilled from copaiba with water or steam, and upon it most of the medicinal properties of the oleoresin depend. It is a pale yellowish liquid, oxidizing by exposure, characteristic odor of copaiba, aromatic, bitter, pungent taste; consists chiefly of caryophyllene, $C_{15}H_{24}$; sp. gr. 0.900, increasing with age; soluble in 2 volumes alcohol; that from Maracaibo dark blue with hydrochloric acid gas. Should be kept cool, dark, in well-stoppered, amber-colored bottles. Dose, ♏v–15 (.3–1 cc.), in emulsion, capsule, or on sugar.

Resina Copaibæ. Resin of Copaiba.—(Acidum Copaibicum). The residue left after distilling off the volatile oil from copaiba. It is brownish-yellow, brittle, slight odor and taste of copaiba, to which the resin returns when mixed with the volatile oil of copaiba; soluble in alcohol, ether, chloroform, benzene, volatile oils; contains copaivic, or metacopaivic acid, mixed with neutral resin. Dose, gr. 5–15 (.3–1 Gm.).

PREPARATIONS.—1. *Massa Copaibæ, Solidified Copaiba, N.F.,* 94 p. c. + magnesium oxide 6 p. c., water q. s. to dampen, heat. Dose,

gr. 15–30 (1–2 Gm.). 2. *Mistura Copaibæ, Lafayette Mixture, N.F.*, 12.5 p. c. 3. *Mistura Copaibæ et Opii, Chapman's Mixture, N.F.*, 25 p. c. + tinct. opii 3.2, sp. æth. nitrit. 25, +. Dose, ʒj–2 (4–8 cc.).

Unoff. Preps.: Capsules. Emulsion. Electuary. Pills. Suppositories.

PROPERTIES.—Similar to turpentine; diuretic, stimulant, expectorant, laxative, nauseant, disinfectant; acts mainly on the mucous membranes (genito-urinary), by which, and also skin, it is eliminated; increases quantity as well as solids of the urine, and imparts odor to urine, sweat, milk. breath; sometimes erupts the skin—roseola, urticaria, etc.

USES.—Gonorrhea, cystitis, bronchitis, dysentery, diarrhea, hemorrhoids, psoriasis, dropsy, leprosy; volatile oil is not so valuable for gonorrhea, gleet, etc., as the oleoresin, but better for throat affections. Externally—chilblains, sore nipples, anal fissures, often added to varnishes and *vice versa*. Long usage may cause indigestion and renal irritation.

Poisoning, Incompatibles, Synergists: Same as for turpentine.

Allied Products:

1. *Copaiba Mar'tii, C. cordifo'lia, C. Jus'sieui, C. Jac'quini, C. nit'ida*—all furnish oleoresin, usually poor in the amount of volatile oil.

2. *Hardwick'ia pinna'ta.*—E. India. Tree yields dark brown oleoresin, containing volatile oil 20–40 p. c., resin, no copaivic acid.

3. *Dipterocar'pus ala'tus.*—India. Tree yields gurjun balsam or wood oil—an oleoresin resembling copaiba, containing gurjunic (metacopaivic) acid.

4. *Copal, Gum Copal.*—A fossil resin of Zanzibar or exuding from many leguminous plants of Africa, S. America, W. Indies. Occurs in yellowish-brown masses, wrinkled surface, conchoidal fracture, glossy, odorless, tasteless; when melted becomes soluble in alcohol, ether, and oil of turpentine. Same medicinal properties as copaiba, only weaker; used mainly in preparing varnishes.

Coptis

Cop'tis trifo'lia, Coptis, Goldthread, N.F.—The dried plant with not more than 3 p. c. of foreign organic matter; N. America, damp, mossy woods. Plant with scape 7.5–12.5 Cm. (3–5′) high, leaves radical, 3-foliate; evergreen, obovate-cuneate, coriaceous, flowers May, whitish; fruit 7 follicles, seed black. Rhizome, in loose, matted masses (rhizome, roots, leaves), golden-yellow; odor faint; taste bitter without astringency. Powder, yellowish-green—starch grains, elliptical stomata, chloroplastids, root cells with reddish contents, tracheæ; contains berberine, coptine (white, possibly identical with hydrastine), resin, ash 8 p. c. Masticatory; mouth wash for canker-sores, gargle for sore throat, ulcerated mouth. Dose, gr. 15–60 (1–4 Gm.); 1. *Fluidextractum Coptis* (diluted alcohol). *Tincture*, 10 p. c.; *Infusion, Decoction*, 5 p. c.

Coriandrum

CORIANDRUM. CORIANDER, *N.F.*

Oleum Coriandri. Oil of Coriander, *U.S.P.*

Coriandrum sativum, *Linné.* { The volatile oil distilled from the dried ripe fruit.

Habitat. C. Asia, S. Europe (China, Italy; cultivated in the United States, Europe).

Syn. Coriand., Coriander Seed, Coliander; Br. Coriandri Fructus; Fr. Coriandre; Ger. Koriander(samen); Ol. Coriand., Coriander Oil; Fr. Essence de Coriandre; Ger. Korianderöl.

Co-ri-an'drum. L. fr. Gr. κόρις, a bed-bug—*i. e.*, from a resemblance in odor of the leaves, also the entire plant and fruit when young.

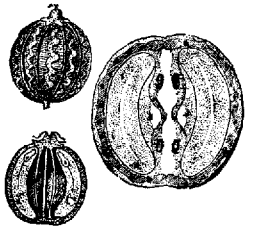
Sa-ti'vum. L. *sativus*, sown, cultivated—*i. e.*, kind used, in contradistinction to the wild-grown.

PLANT.—Annual herb, odor of bed-bugs; stem .3–.6 M. (1–2°) high, solid; leaves bi- or tripinnate; leaflets linear, pointed, lobed, light green, resembling parsley; flowers June, white, rose-colored, umbels small, 4 Cm. ($1\frac{3}{5}$′) broad, 5–8-rayed. Fruit—Coriandrum, Coriander (Seed), *N.F.*—The dried ripe fruit with not more than 5 p. c. of other fruits, seeds, or other foreign organic matter, yielding not more than 1.5 p. c. of acid-insoluble ash, nor less than .5 p. c. of volatile ether-soluble extractive; mericarps usually coherent, but easily separated, cremocarp nearly globular, 2–5 Mm. ($\frac{1}{12}$–$\frac{1}{5}$′) broad, yellowish-brown, apex with 5 calyx teeth and short stylopodium; mericarps 2, each with 5 prominent, straight primary ribs and 4 distinct secondary ribs; commissural surface deeply concave with 2 vittæ; odor and taste agreeably aromatic. Powder, light brown—chiefly endosperm and lignified tissues of pericarp, many calcium oxalate crystals in rosettes, aleurone grains, numerous globules of fixed oil, yellow oil tubes (vittæ); solvents: alcohol, water partially. Dose, gr. 10–30 (.6–2 Gm.).

CONSTITUENTS.—Volatile oil .5–1 p. c., fat 13 p. c., tannin, malic acid, mucilage, ash 7 p. c.

Oleum Coriandri. Oil of Coriander.—This volatile oil, distilled with water or steam from the dried ripe fruit crushed between rollers, is a colorless, pale yellow liquid, characteristic odor and taste of coriander, soluble in 3 vols. of 70 p. c. alcohol, sp. gr. 0.870, dextrorotatory; contains a terpene—*d*-pinene, $C_{10}H_{16}$, 5 p. c., geraniol, borneol, and an alcohol—linalool (coriandrol), $C_{10}H_{18}O$, 45–90 p. c., from which 1 molecule of H_2O may be withdrawn, leaving $C_{10}H_{16}$. Should meet the requirements of the tests for heavy metals in volatile oils and be kept cool, dark, in well-stoppered, amber-colored bottles. Dose, ♏ij–5 (.13–.3 cc.).

ADULTERATIONS.—FRUIT: Stems, fragments of leaves; OIL: Oils of turpentine, sweet orange, cubeb and cedar-wood—all recognized by being less soluble in 70 p. c. alcohol.



Coriandrum: fruit and longitudinal section magnified 3 diam.; transverse section magnified 8 diam.

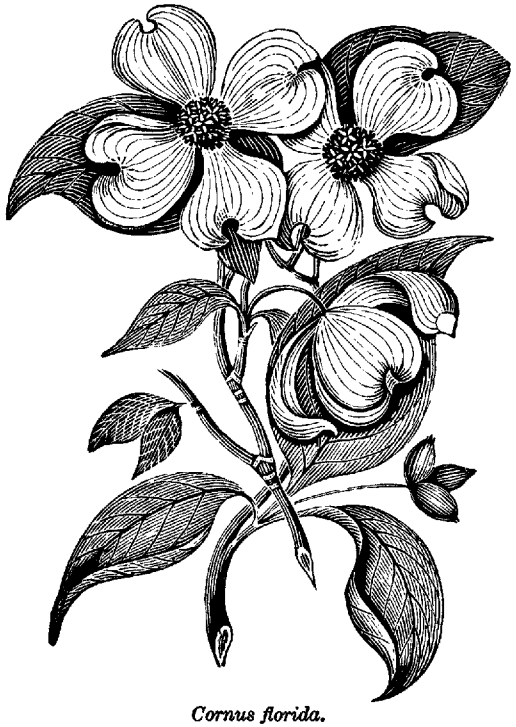
Commercial.—Coriander was popular with the ancients; in the fresh state all parts upon being bruised are fetid, the fruit becoming fragrant only upon drying; when ripe plants are cut down with sickles, dried, and fruit thrashed out. Russia produces the bulk of the crop, although we grow mostly our home consumption; that from Bombay (Indian) is larger and ovoid but seldom reaches the United States.

PREPARATIONS.—OIL: 1. *Fluidextractum Cascaræ Sagradæ Aromaticum*, $\frac{1}{100}$ p. c. 2. *Spiritus Aurantii Compositus*, 2 p. c. 3. *Syrupus Sennæ*, $\frac{1}{2}$ p. c. 4. *Confectio Sennæ, N.F.*, $\frac{1}{2}$ p. c. 5. *Emulsa*, as preferred. FRUIT: 1. *Fluidex-*

tractum Stillingiæ Compositum, N.F., 6.3 p. c. 2. *Infusum Gentianæ Compositum, N.F.*, ⅘ p. c. *Fluidextract*, ♏xv–30 (1–2 cc.). *Infusion*, 5 p. c., ℥j–2 (30–60 cc.).

PROPERTIES.—Aromatic, carminative, stimulant, stomachic.

USES.—Indigestion, flatulency, corrective to griping medicines, such as senna, rhubarb, jalap; flavoring to gin and in cooking. Oil also used in colic, rheumatism, neuralgia.



Cornus florida.

Cornus

Cor'nus flor'ida, Cornus, Dogwood Bark, N.F., Cornaceæ.—The dried root-bark with not more than 5 p. c. of adhering wood nor 2 p. c. of other foreign organic matter; N. America. Small tree, 4.5–10.5 M. (15–35°) high, 12.5–25 Cm. (5–10′) thick, flowers greenish with 4 large white involucral leaves, petaloid; fruit bright red. Bark, in irregular, chip-like pieces, portions of quills less than 5 Cm. (2′) long, bark 1–4 Mm. ($\frac{1}{25}$–$\frac{1}{6}$′) thick, scaly, dingy brown, reddish where corky layers removed, heavy cork patches wanting (abs. of trunk bark); inner surface reddish-brown, short striæ; fracture short, roughened from stone cells; odor slight; taste bitter, astringent. Powder, reddish-brown—parenchyma cells with amorphous substance, stone cells, numerous calcium oxalate rosette crystals, starch grains, cork with brownish pigment; lignified fibers and tracheæ very few or wanting (abs. of trunk bark and wood); solvent: diluted alcohol; contains cornin (cornic acid), tannin 3 p. c., resin, ash 10 p. c. Astringent, tonic, febrifuge, stimulant; when fresh—emetic; formerly in large doses as an antiperiodic, given between the paroxysms, instead of cinchona, but owing to inferiority now seldom employed. Dose, gr. 15–60 (1–4 Gm.); 1. *Fluidextractum Corni* (glycerin 15, diluted alcohol 85). Decoction, 5 p. c., ℥j–2 (30–60 cc.).

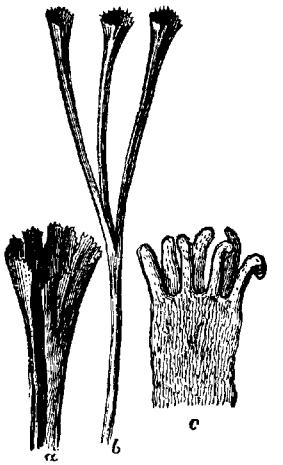
C. circina'ta, Round-leaved Dogwood.—The bark, U.S.P. 1820–1860; N. America. Shrub 1.6–3 M. (5–10°) high, branches greenish, warty; leaves round, 10–12.5 Cm. (4–5′) wide, woolly beneath; flowers white cymes; fruit, blue drupe. Bark quilled, curved, greenish, brownish-gray, with suberous warts or longitudinal lines, inside cinnamon-brown; used like *C. florida*, but is more bitter and less astringent.

C. Amo'mum (seric'ea), Silky Cornel, Swamp Dogwood.—The bark, U.S.P. 1820–1870; N. America. Shrub 1.6–3 M. (5–10°) high, branches purple; leaves elliptical, silky beneath; flowers yellowish, woolly cymes; fruit pale blue. Bark quilled, thin, outside purplish-brown, less warty than preceding, otherwise resembles it; used like *C. florida*, but is less bitter and astringent.

Corsican Moss

Corsican Moss.—Mediterranean. A mixture of 20–30 different Algæ species, mainly *Sphærococcus* (*Fucus*) genus; these are yellowish-brown.

Crocus sativus.



Crocus; *a*, stigma, upper part magnified 4 diam.; *b*, style with stigmas; *c*, papillose margin of stigma, magnified 120 diam.

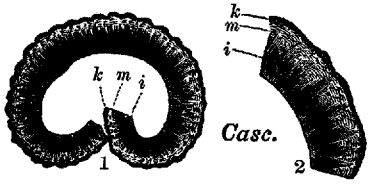
Crocus sativus

Cro'cus sati'vus, Crocus, Saffron, N.F.—The stigma with not more than 10 p. c. of yellow styles and 2 p. c. of other foreign organic matter, yielding not more than 7.5 p. c. of total ash; W. Asia, Spain, France. Low perennial bulbiferous herb with depressed globular corm (bulb), 2.5 Cm. (1′) thick; leaves grass-like; flowers lilac, bluish-purple. Stigmas 3, united or separate, attached to apex of style, 25 Mm. (1′) long, cornucopia-shaped, dark, rich red (developed by toasting after being collected), margin dentate or fimbriate, styles 10 Mm. (⅖′) long, solid, yellowish, odor strong, peculiarly aromatic; taste bitterish, aromatic, colors saliva orange-yellow; with sulphuric acid—blue, gradually changing to violet, deep red-wine; macerated in water—yellow solution, in methyl alcohol—deep orange; contains picrocrocin (saffron-bitter—by hydrolysis yielding volatile oil and fructose), crocin (impure—amorphous), fixed oil, ash 7.5 p. c. *Adulterations*—common: florets, dyed stamens, petals, moisture 12 p. c., mineral matter (sodium bicarbonate, biborate, sulphate, potassium nitrate, Rochelle salt, lactose, etc.), increasing ash 17–32 p. c. There are three varieties: 1. Austrian (best); 2, French (Gatinais); 3, Spanish (inferior from presence of style bases and stigmas); known as *hay saffron*, as distinguished from *cake saffron*, which is no longer in commerce. Diaphoretic, carminative, emmenagogue, anodyne; to promote exanthematous eruptions in measles, etc., dysmenorrhea, conjunctivitis. Should be kept dark, in tightly closed containers. Dose, gr. 5–30 (.3–2 Gm.); 1. *Tinctura Croci*, 10 p. c. (diluted alcohol), dose, ʒj–2 (4–8 cc.); 2. *Tinctura Opii Crocata*, 2.5 p. c.; 3. *Pilulæ Antiperiodicæ*, ¼ gr.; 4. *Tinctura Antiperiodica*, ⅖ p. c. *Infusion* (tea), 2 p. c., ℥ij–4 (60–120 cc.).

Croton eluteria

Croton Elute'ria, Cascarilla.—The dried bark, U.S.P. 1820–1890; Bahama Islands. Plant 1.5–6 M. (5–20°) high, stem, 2.5–20 Cm. (1–8′) thick, leaves 2.5–7.5 Cm. (1–3′) long, ovate, lanceolate, petiolate, under side bronzed-silver, flowers monœcious, white, odorous, fruit

Cascarilla: bark quill.



Cascarilla: *1*, cross-section enlarged; *2*, cross-section 8 times enlarged; *k*, cork; *m*, middle bark; *i*, liber.

15 Mm. (⅗′) thick, ovate, silvery-gray, 3-furrowed, 3-celled; bark in quills or curved pieces, 10 Cm. (4′) long, 3–8 Mm. (⅛–⅓′) broad, 1–3 Mm. (1/25–⅛′) thick, silvery-gray from lichen, or brown when this is absent, the exposed surface wrinkled, transversely fissured, inner surface reddish-brown, smooth, fracture short, resinous, thin whitish medullary rays, odor aromatic, musk-like, especially when burned, taste aromatic, bitter; contains volatile oil 1.6 p. c., cascarillin, betaine, resin 15 p. c., tannin, pectin, vanillin. Stimulant, tonic, febrifuge; intermittents, dyspepsia, diarrhea, poor substitute for cinchona. Dose, gr. 15–30 (1–2 Gm.); tincture, 20 p. c. (70 p. c. alcohol), dose, ʒss–2 (2–8 cc.); extract, dose, gr. 5–8 (.3–.5 Gm.); infusion, 5 p. c., dose, ʒiv–8 (15–30 cc.). *C. lu'cidus*, growing with the preceding plant; *C. ni'veus* (*pseudochi'na*), *Copalchi Bark*, Mexico, and *C. Malam'bo*, *Malambo Bark*, Venezuela. All produce barks that resemble closely.

Croton Eluteria.

Cucurbita pepo PEPO. PEPO, *U.S.P.*

Cucurbita Pepo, *Linné.* The dried ripe seed of cultivated varieties with not more than 5 p. c. broken or defective seeds, or other foreign organic matter.

Habitat. Tropical Asia, America; cultivated.

Syn. Pumpkin Seed, Pumpkin, Pompion, Cold Seeds, Semen Peponis, Semina Cucurbitæ; Br. Cucurbitæ Semina Præparata; Fr. Semences de Potirons; Ger. Kürbissamen.

Cu-cur'bi-ta. L. see etymology, page 597, of Cucurbitaceæ.

Pe'po. L. fr. Gr. πέπων, pumpkin, old form, pompon, lit. cooked by the sun, ripe, mellow—*i. e.*, not eaten until ripe.

PLANT.—Trailing annual; stem rough, hollow, hairy, 3–9 M. (10–30°) long, tendrils branched; leaves large, .25–.5 M. (10–20′) long,

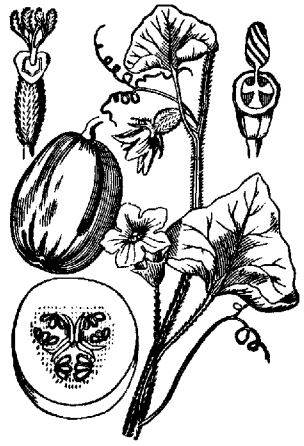
15–30 Cm. (6–12′) wide, obtusely cordate, hispid, palmately 5-lobed, serrate, petioles 7.5–20 Cm. (3–8′) long; flowers July, large, 5–12.5 Cm. (2–5′) wide, yellow, bell-shaped, monœcious, axillary; anthers 3, syngenesious; fruit Oct., large, round, oblong, smooth, fleshy, yellow, furrowed, .25–.5 M. (10–20′) in diameter. SEED, broadly elliptical, ovate, 15–23 Mm. ($\frac{3}{5}$–$\frac{5}{6}$′) long, 6–9 Mm. ($\frac{1}{4}$–$\frac{3}{8}$′) broad, 2–3 Mm. ($\frac{1}{12}$–$\frac{1}{8}$′) thick; yellowish-white, smooth, occasionally with thin transparent fragments of adhering pulp, shallow groove parallel to and within 1 Mm. ($\frac{1}{25}$′) of the margin; fracture short, seed-coat consisting of a white coriaceous outer layer and a membranous inner layer (sometimes dark green); embryo whitish, straight with small conical hypocotyl and 2 plano-convex cotyledons; slightly odorous when contused; taste bland, oily. POWDER, yellowish-white,—epidermal cells, stone cells, parenchyma cells, endosperm cells with aleurone grains, cotyledons with cells containing fixed oil and many small aleurone grains; integuments 21 p. c., kernel 79 p. c. *Solvent:* alcohol. Dose, ʒj–2 (30–60 Gm.).

CONSTITUENTS.—Resin (yielding phytosterin, etc.) .5 p. c. Fixed oil 30 p. c., proteins (myosin, vitellin), cucurbitine (?), salicylic acid, sugar, ash 3–4 p. c.

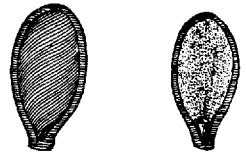
Resin.—Probably the active principle, residing in the tegmen or embryo, obtained by treating the seed, after the removal of fixed oil, with alcohol, ether, chloroform; it is soft, greenish-brown, acrid, bitter. Dose, gr. 15 (1 Gm.).

Fixed Oil.—Claimed to possess (ʒiv; 15 cc.) the medicinal power of the drug, due no doubt to the presence of some resin, and is obtained by expression, or by treating seed with benzin; consists of the glycerides of oleic, myristic, and palmitic acids. The seed-infusion saturated with sodium chloride precipitates myosin, and when CO_2 is added vitellin separates, which behaves like egg-yolk (due to its contained vitellin); the protein is possibly its emulsionizing principle.

PREPARATIONS.—(Unoff.): *Fluidextract,* dose, ʒss–1 (15–30 cc.). *Emulsion* (ʒij–4; 60–120 Gm. fresh seed, deprived of testa, should be beaten into a paste with sucrose + water or milk Oj; .5 L.), dose, ʒv (150 cc.) at 2-hour intervals beginning at 10 o'clock A.M. Patients should remain quietly in bed all day; on the night before, and also before breakfast, give saline purgative to remove mucus, and about 3–4 hours after the pint (.5 L.) has been taken administer castor oil ʒj–2 (30–60 cc.). Should fast the day previous to taking the medicine.



Cucurbita Pepo.



Pumpkin seed; entire and longitudinally divided, showing embryo.

PROPERTIES AND USES.—Tenifuge, vermifuge, diuretic, valuable because of its freedom from taste and harshness of action, but has the disadvantage of uncertainty. Same treatment applies to tape- and lumbricoid worms.

Cudbear

Roccel'la (*tincto'ria*) and *Lecano'ra* (*tarta'rea*) species, or other lichens; *Persio, Cudbear, N.F.*—Parmeliaceæ. A purplish-red powder prepared from these lichens, yielding 12 p. c. ash; Holland. Made by heating lichens for a week with diluted ammonia, drying, powdering; alcoholic preparations deep red—lighter with acids, purplish-red with alkalies. To color preparations; 1, *Tinctura Persionis,* 10 p. c. (75 p. c. alcohol): Prep.: 1. *Syr. Phos. Co.,* $\frac{1}{6}$ p. c. 2. *Tinctura Persionis Composita,* 1.5 p. c. + caromel 10 p. c. (33 p. c. alcohol): Preps.: 1. *Elix. Ammon. Valer.,* $\frac{1}{6}$ p. c.; 2. *Elix. Cinchon. Alk.,* 5 p. c.; 3. *Syr. Bromidor.,* $\frac{1}{6}$ p. c.; 3. *Elixir Aromaticum Rubrum,* $\frac{1}{5}$ p. c.; 4. *Elixir Bromidorum Trium,* $\frac{1}{5}$ p. c.; 5. *Elixir Pepsini Compositum,* $\frac{1}{10}$ p. c.; 6. *Liquor Aromaticus Alkalinus,* $\frac{1}{5}$ p. c.; 7. *Syrupus Pini Albæ Compositus,* $\frac{1}{10}$ p. c. *Lacmus, Litmus,* a blue pigment from these lichens by mixing (powder) with potassium carbonate, diluted ammonia water, exposing to air 6 weeks for fermentation, when it gradually turns red, purple, blue, and at the different stages is mixed with chalk and formed into cakes. *Orchil* is prepared likewise adding diluted ammonia, sulphuric acid and sodium chloride—deep purple.

Curcuma starch.

Cur'cuma lon'ga, Turmeric.—The rhizome, U. S. P. 1820–1870; S. Asia, Indian Ocean Islands. Plant is a perennial; leaves radical, 1 M. (3°) long, lanceolate; flower-scape short, spike 15 Cm. (6′) long, flowers orange-yellow, in pairs; rhizome 2.5–5 Cm. (1–2′) long, 12 Mm. ($\frac{1}{2}$′) thick (long turmeric) to 18–25 Mm. ($\frac{3}{4}$–1′) thick (round turmeric), sometimes in sections, yellowish-gray, annulate, inside orange-yellow, fracture resinous; odor ginger-like; taste warm, aromatic; contains volatile oil 1 p. c., viscid oil 11 p. c., pungent resin, curcumin (coloring matter) .3 p. c., starch, ash 5–7 p. c. Powder deep yellow, brownish-red by alkalies or borax. There are several varieties: 1, Madras (best, bright yellow, often in cut pieces—Pubna preferred); 2, Bengal (reddish, mostly round); 3, Java (reddish-gray); 4, Chinese (often branched); 5, Cochin (possibly from *C. viridiflo'ra*). Used as stimulant, tonic, aromatic, condiment, for jaundice, and as ginger; Tincture, 15 p. c., (diluted alcohol) for coloring ointments, solutions, etc.

Turmeric rhizome and stem.

Curcuma longa

Cur'cuma Zedoa'ria, Zedoaria, Zedoary, N. F.—The dried rhizome with not more than 2 p. c. of foreign organic matter; India, largely cultivated. Perennial reed-like plant. Rhizome (tuber) occurs as *long* and *round*, varying in size, 12–37.5 Mm. ($\frac{1}{2}$–1$\frac{1}{2}$′) long, usually cut into transverse rounded sections, twisted, wrinkled, 1–4 Cm. ($\frac{2}{5}$–1$\frac{1}{5}$′) broad, 5–10 Mm. ($\frac{1}{5}$–$\frac{2}{5}$′) thick, grayish-brown, hairy, rough, few root-scars, transverse surface brownish, dark circular endodermis separates cortex from central cylinder; stele with yellowish resin cells, lighter fibro-vascular bundles, fewer in cortex; fracture short, mealy, waxy; odor aromatic, camphor-like; taste aromatic, warm, bitter. Powder, brownish—numerous starch grains and thick-walled hairs, parenchyma, few bast-fibers; no calcium oxalate crystals or stone cells; contains volatile oil .5–1 p. c., resin (pungent taste), starch, mucilage, ash 7 p. c. Stomachic, aromatic, stimulant; dyspepsia, flatulence—weaker than ginger. Dose, gr. 10–30 (.6–2 Gm.); 1. *Pilulæ Antiperiodicæ*, $\frac{1}{8}$ gr.; 2. *Tinctura Amara*, 2 p. c. 3. *Tinctura Antiperiodica*, $\frac{1}{5}$ p. c.

Cusparia

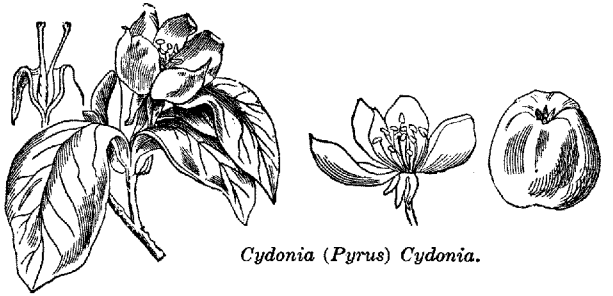
Cuspa'ria Angostu'ra, (Galipe'a Cusparia (officina'lis)), Angustura (Bark); Cusparieæ Cortex, Cusparia Bark.—The bark, U.S.P. 1820–1870; Northern South America. Tree 4.5–6 M. (15–20°) high, leaves with 3 leaflets, 15–25 Cm. (6–10′) long, 5–10 Cm. (2–4′) broad, spotted white, tobacco odor, flowers white; bark in flat, curved, or quilled pieces 2.5 Mm. ($\frac{1}{10}$′) thick, ochrey-gray, friable periderm, inside cinnamon-red, striæ of calcium oxalate, aromatic, bitter; contains volatile oil, resin, angusturin, 4 alkaloids. Used for diarrhea, dysentery, dyspepsia, typhoid, stimulant, febrifuge, large doses emetic; in infusion, tincture, extract. Dose, gr. 10–30 (.3–2 Gm.).

Angustura bark: one-half natural size.

False Angustura Bark (*Strychnos Nux-vomica*) has stone-cells, no striæ of calcium oxalate; is very bitter, not aromatic, contains strychnine, brucine.

Cusparia

Cydo'nia (Py'rus) Cydonia, Quince.—Pomaceæ. The seed; U.S.P. 1850–1880; W. Asia. Tree 2.5–6 M. (8–20°) high, with crooked, straggling branches; leaves like pear leaves; flowers white or purplish; fruit pear-shaped; seed 6 Mm. ($\frac{1}{4}$′) long, ovate, triangular, brown, covered with whitish, mucilaginous, epithelium causing seed of each cell to adhere; swell with water, forming heavy mucilage; 2 cotyledons, white, oily, bitter-almond taste; very similar to apple seed. Contain mucilage (cydonin) 20 p. c. (not precipitated by borax or potassium silicate, soluble in cold and hot water), fixed oil, proteins; used as demulcent, protective; fruit astringent. *Mucilago Cydonii* (1 part + water 50), U.S.P. 1880; may use rose water, or camphor water—externally.



Cydonia (Pyrus) Cydonia.

Cytisus

Cyt'isus Scopa'rius, Scoparius, Broom Tops, N.F.—The dried tops with not more than 5 p. c. of stems over 3 Mm. ($\frac{1}{8}$′) thick nor 2 p. c. of other foreign organic matter; W. Asia, S. Europe, United States. Shrub 1.2–2.4 M. (4–8°) high, with many pentangular, wand-like branches in close fascicles—suitable for broom-making; leaves downy, trifoliate; leaflets sessile, 6–12 Mm. ($\frac{1}{4}$–$\frac{1}{2}$′) long, lanceolate; flowers numerous, large, brilliant yellow,

papilionaceous; fruit pod, 4 Cm. ($1\frac{3}{5}$′) broad, compressed. Tops—stems thin with branched twigs, 1–3 Mm. ($\frac{1}{25}$–$\frac{1}{8}$′) thick, angled, winged, dark green, nearly glabrous, many brownish cork patches; internally yellowish; fracture short-fibrous (thin), tough and splintery (thick); leaves scarce; odor slight, on bruising more distinct; taste disagreeable, bitter. Powder, dark green—non-glandular, non-lignified hairs, chlorenchyma, stomata, pith and wood parenchyma, tracheæ, starch grains, pollen grains; solvent: diluted alcohol; contains sparteine (colorless oily liquid alkaloid) .3 p. c., scoparin (diuretic), volatile oil, tannin, fat, wax, sugar, ash 5 p. c. Cardiac stimulant, narcotic, diuretic, poisonous; large doses paralyze respiratory and motor centers, causing convulsions and death by asphyxia; cardiac affections, palpitation—inferior to digitalis, although quicker and without cumulative tendency. *Poisoning:* similar to digitalis in effect and treatment. Dose, gr. 15–30 (1–2 Gm.); 1. *Fluidextractum Scoparii* (diluted alcohol). *Decoction, Infusion,* each 5 p. c., ℥j–2 (30–60 cc.); juice, 75 p. c., + alcohol 25, ℥j–2 (4–8 cc.); sparteine sulphate, gr. $\frac{1}{6}$–$\frac{1}{2}$ (.01–.03 Gm.); scoparin, gr. 1–10 (.06–.6 Gm.). *Spar'tium jun'ceum, Spanish Broom*—leaves soft, hairy; seed reniform; properties similar to *Cytisus Scoparius;* fibers used for cordage, coarse cloth, etc.

Cytisus Scoparius: flowering branch.

Daemonorops draco

Dæmon'orops (*Cal'amus*) *Dra'co, Draconis Resina* (*Dragon's Blood*).—Borneo, Sumatra. A spontaneous resinous exudation from the ripening fruit; occurs in tears, globular pieces 4 Cm. ($1\frac{3}{5}$′) thick, cylindrical sticks .3 M. (12′) long, or in irregular cakes, dark brown, inside bright red, fracture dull, irregular, inodorous; when heated aromatic like benzoin, tasteless; contains red resin (draconin), benzoic acid or cinnamic acid, or both wanting, dracoresinotannol, dracoresin, dracoalban, ash 8–9 p. c. Mild stimulant, astringent. Used in tooth powders, plasters, varnishes.

Dammar

Ag'athis loranthifo'lia (*Dam'mara*), *Dammar.*—E. India. A spontaneous resinous exudation, in transparent, straw-colored rounded masses, almost odorless, and tasteless, fracture conchoidal; contains resin of which 40 p. c. is insoluble in alcohol and 60 p. c. soluble; by distillation get terpene, $C_{10}H_{16}$. Used mostly in varnishes, rarely in plasters. That from New Zealand—*Kauri Resin*—is found also fossil and often sold as copal.

Daphne

Daph'ne Meze'reum, D. Gnid'ium, or *D. Laure'ola, Mezereum, Mezereon, N.F.*—Thymelæaceæ. The dried bark from aërial portions with not more than 2 p. c. of foreign organic matter; Europe, Siberia, New England. Small slender herbs, .3–1.3 M. (1–4°) high, branching; leaves 5–7.5 Cm. (2–3′) long, obovate, sessile, entire; flowers fragrant, tubular, rose red (1), white (2), yellowish-green (3); fruit ovate, bright red (1), scarlet (2), purplish-black (3). Bark in flexible, tough quills, flattened strips up to 90 Cm. (3°) in length, .3–1 Mm. ($\frac{1}{75}$–$\frac{1}{25}$′) thick, yellowish-brown (1), purplish-brown (2), purplish-gray (3), smooth, numerous lenticels, brownish-black apothecia, corky layer easily separable from middle bark, inner surface yellowish-white, satiny, lustrous, finely striate; fracture tough, fibrous; odor slight; taste at first slight, increasingly pungent, acrid. Powder, light grayish-brown—numerous bast-fibers, attenuated ends, walls free from pores, brownish cork cells, starch-bearing medullary rays, few starch grains; solvents; diluted alcohol, boiling water; contains acrid resin, acrid volatile oil, daphnin, wax, sugar, yellow coloring matter, malic acid; by dry distillation yields umbelliferon. Alterative, stimulant, diuretic, diaphoretic, sialagogue, vesicant; syphilis, scrofula, rheumatism, skin diseases; externally—local irritant like cantharides, applied to indolent ulcers to make them again active, also to maintain discharges from setons, fly blisters, etc. *Poisoning:* Have vomiting, purging, cold sweats, prostration, collapse, convulsions, death—evacuate stomach with warm demulcent drinks, then milk, fatty oils, opium, stimulants. Dose, gr. 1–10 (.06–.6 Gm.); 1. *Fluidextractum Mezerei,* (67 p. c. alcohol): Prep.: 1. *Linimentum Sinapis Compositum,* 20 p. c. 2. *Fluidextractum Sarsaparillæ Compositum,* 3 p. c. Decoction; Extract. *Daphne salicifo'lia;* Mexico—leaves used natively as a vesicant; fruits of the various species contain 31 p. c. of fixed oil.

transverse section, magnified 15 diam.

Daphne Mezereum.

STRAMONIUM. STRAMONIUM, *U.S.P.*

Datura Stramonium, *Linné.* { The dried leaves and flowering tops, with not more than 3 p. c. stems over 8 Mm. (⅓′) thick, nor 4 p. c. acid-insoluble ash, yielding not less than .25 p. c. alkaloids.

Habitat. Asia; naturalized universally (Europe, England, N. America, etc.).

Syn. Stramon., Jamestown Weed, Jimson Weed, Thorn-apple, Devil's (Mad) Apple, Stink-weed, Stink-wort, Devil's Trumpet, Fire-weed, Jamestown Lily, Apple of Peru; Br. Stramonii Folia; Fr. Stramoine, Pomme Epineuse, Feuilles de Stramoine; Ger. Stechapfel, Dornapfel, Stechapfelblätter.

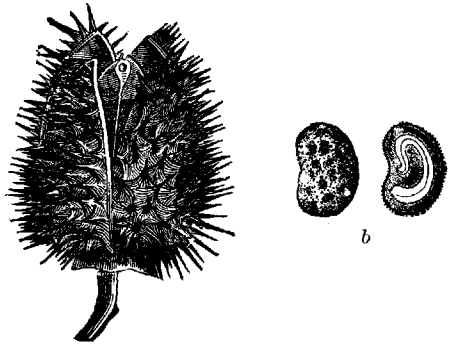
Da-tu'ra. L. fr. Hind. *dhatura*, a plant, or an alteration of Ar. *tatorah—i. e.*, their name for the plant.

Stra-mo'ni-um. L. contr. of Gr. στρύκνον μανικόν, used by Dioscorides for this and for *Atropa Belladonna.*

Jimson-weed. For Jamestown, Va., where first found growing on ship rubbish.

PLANT.—Course annual bushy herb, rank, noxious odor; stems cylindrical, flattened, longitudinally wrinkled, occasionally 1-more-furrowed, succulent, greenish, purplish-brown, nearly solid, 1–1.5 M. (3–5°) high, 2.5–4 Cm. (1–1⅗′) thick, 2–3-branched above ground; root tapering, white; flowers June–Sept., calyx tubular, green, 4 Cm. (1⅗′) long, 5's, corolla white, purplish, tubular, funnel-shaped, 7.5–10 Cm. (3–4′) long, 5 Cm. (2′) broad, 5's; fruit capsule, 5 Cm. (2′) long, ovate, obtusely quadrangular, covered with unequal, sharp, rigid spines, 4-celled, dehiscing half-way down into 4 segments; ovary 2-carpelled, 2-celled; seed numerous, brownish-black, angled, flattened, 4 Mm. (⅙′) long. LEAVES, 5–30 Cm. (2–12′) long, 4–15 Cm. (1⅗–6′) broad, usually matted, wrinkled, crushed, petiolate, inequilaterally ovate, acuminate, sinuate-toothed or angled, teeth few, acute with rounded sinuses, sparsely hairy, dark green, under surface light green; stems often flattened, wrinkled, furrowed; odor distinct, heavy, narcotic taste unpleasant, nauseous. POWDER, brownish-green— stomata with 3 neighboring cells, calcium oxalate in rosette aggregate crystals; non-glandular hairs, few glandular hairs, tracheæ, stem fragments with spiral tracheæ, wood-fibers, collenchymatous cells, parenchyma cells, microcrystals, no bast-fibers. *Solvents:* 75 p. c. alcohol; diluted alcohol; hot water partially. Dose, gr. 1–5 (.06–.3 Gm.).

Datura Stramonium: flowering branch.



Datura Stramonium: a, fruit; *b,* stramonium seed and section, magnified 3 diam.

ADULTERATIONS.—Leaves of allied species (usually smaller), belladonna, French cultivated, and *Xan'thium Struma'rium.*

Commercial.—Plants were known possibly to the ancients, but not described until the 16th century (Gerarde), nor introduced into medicine before 1672 (Störck). They infest fields, roadsides, waste places, near houses (never in mountains or woods), exhale rank, heavy, repellant narcotic odor, and grow well with us, especially in Michigan and other western States, all parts being medicinal. Gypsies brought leaves and seeds to Europe from Asia in the middle ages, and used the smoke therefrom to intoxicate their dupes. Leaves should be gathered while flowering, by pulling up entire plant, then quickly removing and drying, by which they often become broken or cut into pieces.

CONSTITUENTS.—Daturine .2–.4 p. c., volatile oil (containing daturic acid, $C_{17}H_{34}O_2$), chlorophyll, mucilage, albumin, potassium nitrate, ash 17–20 p. c.

Daturine.—An alkaloid combined with malic (daturic) acid, and consisting of hyoscyamine, atropine (the former usually predominating), and probably little scopolamine (hyoscine); forms salts (hydrochloride, sulphate, etc.). Dose, gr. $\frac{1}{120}$–$\frac{1}{60}$ (.0005–.001 Gm.).

PREPARATIONS.—1. *Extractum Stramonii.* Extract of Stramonium. (Syn., Ext. Stramon.; Fr. Extrait de Feuilles de Stramoine; Ger. Stechapfelblätterextrakt.)

Manufacture: PILULAR, macerate, percolate 100 Gm. with 75 p. c. alcohol until exhausted, reclaim alcohol, evaporate residue at 70° C. (158° F.) to pilular consistence, frequently stirring, mix thoroughly; after assay add enough glucose for extract to contain 1 p. c. of total alkaloids, mix thoroughly. POWDERED, macerate, percolate 100 Gm. with alcohol, reserve first 100 cc. and continue until exhausted (100 cc.); reclaim alcohol from second percolate until residue in still is 10 cc., to which add first reserve and distill until residue of syrupy consistence; transfer to a dish, rinse still with little warm alcohol, which add to dish and evaporate at 70° C. (150° F.) to soft extract, frequently stirring, add dried starch 5 Gm., heat, with stirring, until nearly dry, thoroughly incorporate dried starch 2 Gm., expose to current of warm air until dry, pulverize; after assay add enough dried starch for extract to contain 1 p. c. of total alkaloids, mix thoroughly, pass through fine sieve; contains .9–1.1—1 p. c. of the alkaloids; 1 Gm. represents 4 Gm. of the drug. Should be kept in small, wide-mouthed, tightly-stoppered bottles. Dose, gr. ⅙–½ (.01–.03 Gm.).

Prep.: 1. *Unguentum Stramonii, N.F.,* pilular ext. 10 p. c., hydrous wool fat 20, benzoinated lard 65, diluted alcohol 5.

2. *Tinctura Stramonii.* Tincture of Stramonium. (Syn., Tr. Stramon.; Br. Tinctura Stramonii, Tincture of Stramonium; Fr. Teinture de Stramoine; Ger. Stechapfeltinktur.)

Manufacture: 10 p. c. Similar to Tinctura Veratri Viridis, page 104; menstruum: diluted alcohol—percolate 95 cc., assay, and add enough menstruum for the 100 cc. to contain .0225–.0275—.025 Gm. of total

alkaloids. Dose, ♏v–30 (.3–2 cc.).

3. *Fluidextractum Stramonii, N.F.*, (80 p. c. alcohol). Dose ♏j–5 (.06–.3 cc.).

Unoff. Preps.: Plaster, Juice (*Succus Stramonii*), Cigarettes, Fomentation.

PROPERTIES.—Narcotic, anodyne, antispasmodic, diuretic, mydriatic. Internally very similar but stronger than belladonna; weaker externally. Large doses produce dry throat, cardiac irregularity, high fever with delirium, increase sexual desire, possibly laughing and hallucinations (like in cholera, alcoholism), dizziness, fainting, red eruptions, dilated pupils, insomnia, black objects appear green; pneumogastric becomes paralyzed, thus stopping the inhibitory action, hence whole system paralyzed finally by over-stimulation, including the heart, then delirium, stupor, convulsions, death by asphyxia; in case of recovery remember nothing that has occurred; does not affect some animals, as caterpillar tribe, goats, etc.

USES.—Insanity, mania, melancholia, epilepsy, nervous asthma (gr. 15 (1 Gm.) of leaves smoked with tobacco or sage at each paroxysm), whooping-cough, dysmenorrhea, retention of urine, hepatic colic, laryngeal cough, chorea. Ointment in ulcers, hemorrhoids, fissures, skin diseases, poison-ivy eruptions, rheumatism, bruises, sprains. In the absence of belladonna may use stramonium with good results.

Poisoning, Incompatibles, Synergists: Same as for belladonna.

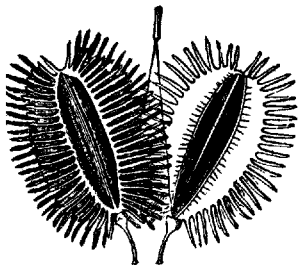
Allied Plants:

1. *Datura Tat'ula, Purple Thorn-apple.*—Similar to official and considered by some the same, but has purple stems, petiole, and corolla; was recognized, along with *D. Stramonium*, U.S.P. 1910.

2. *D. fastuo'sa (al'ba)—Daturæ Folia, Daturæ Semina* (Br.); India. Used natively as a criminal poison; capsule small, subglobular, spinous, seed yellowish-brown, triangular, rough. *D. Met'el, Entire-leaved Thorn-apple*, Africa, S. Asia; capsule and seed like *D. fastuosa (alba)*, leaves nearly entire, downy. *D. sanguin'ea*, Peru; large shrub, or tree, leaves nearly entire, downy beneath, flowers large, upper half of corolla yellow, lower half blood-red.

Daucus

Dau'cus Caro'ta, Carrot (Seed).—The fruit, U.S.P. 1820–1870; N. Asia, Europe; biennial herb, .6–1 M. (2–3°) high, hispid; flowers July–Sept., white; root fleshy, fusiform, aromatic, edible; fruit 4 Mm. (1/6′) long, oval, flat, grayish-brown, each mericarp with 9 ribs, 6 vittæ; odor aromatic; taste pungent; contains volatile oil, fixed oil. Stimulant, diuretic, excitant; dropsy, strangury, nephritic affections, amenorrhea, ulcers, eczema, itching; in infusion, fluidextract. Dose, gr. 10–30 (.6–2 Gm.).



Daucus Carota: magnified 5 diam.

Delphinium

Delphin'ium Aja'cis, Delphinium, Larkspur Seed, N.F.—The dried ripe seed with not more than 2 p. c. of foreign seeds or other foreign organic matter; S. Europe, cultivated as ornament, naturalized in United States. Plant, annual, hairy, bearing attractive flowers. Seed, irregularly tetrahedral, triangulate, 2 Mm. (1/12′) long and broad, blackish-brown, seed-coat crustaceous, endosperm whitish, fleshy, oily, embryo small; odor faint; taste bitter, then biting, acrid. Powder, gray-brown—endosperm parenchyma filled with fixed oil and aleurone grains, elongated cells from inner layer of seed-coat; contains alkaloids ajacine, ajaconine, (activity), fixed oil, volatile oil, resin, ash 7 p. c. Parasiticide, sedative, poisonous—similar to aconite and staphisagria; locally to destroy vermin, lice, itchmite; rheumatism, neuralgia; rarely used internally. 1. *Tinctura Delphinii*, 10 p. c. (alcohol). *D. Consol'ida, Field Larkspur*, U.S.P. 1820–1870, is a near related species with beautiful blue flowers, similar seed (tetrahedral, 1–2.5 Mm. (1/25–1/10′) broad, black, pitted), constituents, properties and uses. *D. urceola'tum (exalta'tum)*, Penn., Minn., and *D. carolinia'num (azu'reum)*, Wis., Ark. supply seeds having similar properties.

Delphinium Consolida.

Stavesacre seed: *a*, natural size; *b*, cross-section; *c*, longitudinal section.

2. *D. Staphisag'ria, Staphisagria, Stavesacre*, Ripe seed, U.S.P. 1880–1910, Mediterranean Basin, cultivated. Annual herb, 1–1.3 M. (3–4°) high, branched, downy; root large, tapering; leaves 10–12.5 Cm. (4–5′) broad, palmately 5–9-parted, long, hairy petioles, flowers purplish, racemes; fruit 3-follicles, each 12-seeded, seed irregularly triangular, tetrahedral, flattened, dark brown, grayish, lighter with age, 4–7 Mm. (1/6–1/4′) long, 3–6 Mm. (1/8–1/4′) broad, coarsely reticulate; odor slight, disagreeable; taste bitter, acrid. Powder, grayish-black—parenchyma and endosperm cells enclosing aleurone grains and fixed oil; solvents: alcohol, boiling water; contains alkaloids 1 p. c.: delphinine, delphinoidine, delphisine, staphisagrine, fixed oil, volatile oil, resin, ash 9 p. c. Parasiticide, sedative, irritant, poisonous; popular with Greeks, Romans, etc., but too dangerous for internal use—locally to kill vermin, lice, itchmite; rheumatism, neuralgia, earache, toothache. *Poisoning:* Symptoms and treatment similar to aconite and veratrum viride. Dose, gr. 1–2 (.06–.13 Gm.). *Fluidextract; Extract; Tincture*, 10 p. c., ♏v–15 (.3–1 cc.); *Ointment*, 20 p. c. Delphinine, gr. 1/60–1/10 (.001–.006 Gm.).

Dicentra

Dicen'tra canaden'sis or *D. Cuculla'ria, Corydalis, Turkey (Squirrel) Corn, N.F.*—The dried tubers with not more than 3 p. c. of foreign organic matter; N. America, Canada to Ky. Low glaucous perennial herb, leaves dissected, scapes several, each with 4 greenish-white, purple-tinged flowers. Tubers spheroidal, ovoid, 10–15 Mm. ($\frac{2}{5}$–$\frac{3}{5}$′) thick, single, clusters 2–3, smooth or pitted, grayish-brown, translucent; fracture hard, horny, whitish, waxy interior, or granular and tough; nearly odorless; taste bitter. Powder, yellowish—numerous starch grains, few tracheæ, stone cells, few calcium oxalate rosette crystals; contains corydaline, fumaric acid, bitter extractive, resin, starch. Tonic, diuretic, alterative; syphilitic, scrofulous and cutaneous affections. Dose, gr. 10–30 (.6–2 Gm.); 1. *Fluidextractum Corydalis* (75 p. c. alcohol): Prep.: 1. *Elixir Corydalis Compositum*, fldext. 6 p. c., + fldexts. stillingia 6, xanthoxylum 3, blue flag 9, potassium iodide 5, dose, ʒj–2 (4–8 cc.). 2. *Fluidextractum Stillingiæ Compositum*, 25 p. c.

Dioscorea

Dioscore'a villo'sa, Dioscorea, Wild Yam Root, Colic (Rheumatism) Root, N.F.—Dioscoreaceæ. The dried rhizome with not more than 2 p. c. of foreign organic matter; United States; moist thickets. Slender twining climber, dicœcious; leaves ovate, cordate, acute; flowers greenish, panicles; fruit triangular winged capsule. Rhizome, knotted, woody, elongated, 6–20 Mm. ($\frac{1}{4}$–$\frac{4}{5}$′) thick, often compressed, bent, branched, nodular, stem-scars above, slender tough roots beneath, pale brown, scaly; fracture short, tough, yellowish, scattered wood-bundles; odorless; taste starchy, insipid, acrid. Powder, whitish—parenchyma cells, starch grains, few calcium oxalate raphides, fibro-vascular bundles with tracheæ and tracheids, epidermal tissue; contains resin, saponin body, starch (dioscorein—"Eclectic" resinoid), ash 2–7 p. c. Diaphoretic, expectorant, emetic; rheumatism, bilious colic. Dose, ʒss–1 (2–4 Gm.); 1. *Fluidextractum Dioscoreæ* (diluted alcohol). 2. *Tinctura Viburni Opuli Composita*, 3.5 p. c. Decoction, Tincture, Dioscorein, gr. 1–4 (.06–.25 Gm.).

Diospyros

Dios'pyros virginia'na, Persimmon.—Ebenaceæ. The unripe fruit dried, U.S.P. 1820–1870; United States. Tree, 6–21 M. (20–70°) high, much smaller northward; wood hard, blackish; leaves 7.5–12.5 Cm. (3–5′) long, entire, glaucous beneath, elliptical; flowers yellowish; fruit plum-like, 2.5 Cm. (1′) thick, green, 4-lobed calyx at base; short style at apex, 6-celled, 6-seeded; taste astringent, when ripe orange-red, by frost sweet, edible; contains tannin, malic acid. Astringent for diarrhea, chronic dysentery, uterine hemorrhage, leucorrhea, sore throat; in infusion, tincture, syrup. Dose, gr. 15–60 (1–4 Gm.). Persimmon beer, made by fermenting ripe fruit with hop, as a beverage, and the bark as tonic and astringent, are popular to some extent.

Dipteryx odorata

Coumarou'na (Dip'teryx) odora'ta, Tonka Bean; Coumarinum, Coumarin, N.F.—The anhydride of ortho-oxycinnamic acid occurring naturally in this plant, also in *Melilo'tus officina'lis* and others, or prepared synthetically; Guiana. Large tree; fruit resembles mango, peach, oblong-ovate, single-seeded; seed 4 Cm. ($1\frac{3}{5}$′) long, compressed, rounded at each end, testa dark brown, thin, wrinkled, somewhat glossy, often covered with small white crystals (coumarin); kernel brownish, oily; odor agreeably aromatic, resembling vanilla; taste bitter, aromatic. There are two varieties: 1, Dutch; 2, English; contains coumarin (odorous principle) 1.5–2 p. c., fixed oil 25 p. c., sugar, mucilage. Coumarin, $C_9H_6O_2$—developed in process of curing by steeping seed in rum, or 80 p. c. alcohol, for 1–2 days, concentrating, adding water to separate fixed oil; occurs in colorless, prismatic crystals, characteristic fragrant odor, bitter, aromatic, burning taste; soluble in alcohol, ether, chloroform, fixed or volatile oils, sparingly in water, more readily in hot water. Saturated aqueous solution + iodine T. S. —brown, flocculent precipitate, which clots on shaking, forming dark green curdy mass and clear liquid (dist. from vanillin); solution in ether—not extracted by ammonia water (dist. from vanillin). Narcotic, stimulant, insecticide, paralyzant to the heart; whooping-cough (fluidextract), flavoring sachets, cigars, tobacco, butter, perfumery, deodorizing iodoform. Dose, gr. 5–10 (.3–.6 Gm.). Coumarin 65 times stronger; 1. *Oleum Ricini Aromaticum*, $\frac{1}{100}$ p. c.

Dorema ammoniacum

Dore'ma Ammoni'acum, Ammoniacum, Ammoniac.—The gum-resin, U.S.P. 1820–1890; E. Persia, Turkestan. Plant of striking appearance, dying after flowering; stem 1.6–2 M. (5–7°) high, greenish, joints greenish-purple; flowers small, white; leaves—radical and cauline. Gum-resin (ammoniac) exudes from stem and root, through fissures (due to varying temperature) or animal and insect punctures. It is in *tears* or *cakes*, the former preferred when 1.5–6 Mm. ($\frac{1}{16}$–$\frac{1}{4}$′) thick, yellowish, fracture conchoidal, waxy, milk-white; odor peculiar; taste acrid, bitter, nauseous; contains gum 18–28 p. c., resin 70 p. c., volatile oil 1–4 p. c., ash 1–4 p. c. Stimulant, expectorant, rubefacient, similar but less powerful than asafetida; bronchitis, chronic catarrh, asthma, pleurisy; externally resolvent in white swelling, tumors, glandular enlargements. Dose, gr. 10–30 (.6–2 Gm.); emulsion (water—milky), 4 p. c., ʒss–1 (15–30 cc.). The root, under the name of Bombay Sumbul or Boi, although of closer texture, firmer, denser, and more reddish is used largely to adulterate the "false sumbul" so prevalent with us in the past, but it in reality resembles more closely our present *Ferula Sumbul* root of the *N.F.* *D. Au'cheri*, W. Persia, yields also a similar product (ammoniac), while *D. robus'tum* gives a dissimilar gum-resin. *Ferula tingita'na, African Ammoniac*, is believed to be the "Ammoniacum" of the ancients; it is darker than our ammoniac, with agreeable odor like benzoin, but bitter, acrid taste; contains gum 9 p. c., resin 68 p. c., and yields umbelliferon.

Dorema Ammoniacum.

Dorstenia

Dorste'nia Contrayer'va, Contrayerva.—The root, U. S. P. 1820–1850; W. Indies, C. and S. America. Acaulescent perennial; leaves lobed, radical, 10 Cm. (4′) long; flowers staminate and pistillate, fruit capsule, disperses seed by hygroscopism; root (rhizome) fusiform, 1–2-headed, 5–7.5 Cm. (2–3′) long, 12 Mm. (½′) thick, reddish; odor unpleasant; taste acrid, bitter; contains contrayerbine, cajapine, volatile oil, resin, bitter principle, starch. Stimulant, tonic, aromatic, stomachic; low fevers, typhoid, diarrhea, dysentery, serpent bites; in decoction, tincture. Dose, gr. 30 (2 Gm.).

Drimys

Dri'mys Win'teri (*Win'tera aroma'tica*).—The bark, U.S.P. 1820–1860; S. America; small tree; leaves coriaceous; flowers white; fruit black berries, 4–8; bark in quills or curves, 2.5–8 Mm. ($\frac{1}{10}$–$\frac{1}{3}$′) thick, grayish-brown, striate, fracture granular, with white stone cells and yellow resin cells, odor of canella and cinnamon, for which drugs it has been substituted; sometimes called Winter's cinnamon; contains volatile oil (which has winterene, $C_{15}H_{24}$), tannin 9 p. c., pungent resin 10 p. c. Used for colic, flatulence, scurvy; in infusion or tincture. Dose, gr. 5–30 (.3–2 Gm.).

Drimys Winteri.

Drimys (Coto)

Coto Bark.—Bolivia. May be from *Dri'mys Win'teri* var. *granaten'sis.* In flat or curved pieces 12 Mm. (½′) thick, cinnamon color and odor, taste pungent, bitter; contains cotoin, $C_{14}H_{12}O_4$, hydrocotoin, protocotoin, volatile oil, resin. Dose, gr. 1–5 (.06–.3 Gm.); cotoin, gr. ¾–2 (.05–.13 Gm.).

Drosera

Dro'sera rotundifo'lia, or *D. an'glica* and *D. longifo'lia, Drosera, Sundew, N. F.*—Droseraceæ. The air-dried flowering plant of the former, frequently mixed with the two latter closely allied species, or at times wholly replaced by them with not more than 5 p. c. of foreign matter, yielding not more than 10 p. c. of acid-insoluble ash; N. Temperate zone, N. America. Small moss-like plant, glittering in sunshine when covered with dew. Matted or broken leaves, stems and fibrous black rootlets, reddish throughout; leaves mostly basal, petiolate; blade orbicular, 15 Mm. (⅗′) broad, reddish glandular tentacles above, scape filiform, smooth, 10–30 Cm. (4–12′) long, few 5-parted, small white fugacious flowers, raceme. *D. anglica*—leaves linear, obovate, glabrous or sparsely hairy petioles; *D. longifolia*—leaves spatulate, blades 2–3 times longer than broad, petioles and scape smooth; odorless; taste faintly bitter, acidulous. Powder, reddish-brown—oval-headed tentacles, few glandular hairs, stomata, fibro-vascular bundles, tracheæ, parenchyma containing reddish substance, few starch grains; solvent: 67 p. c. alcohol; contains resin (acrid, odorous, greenish-brown), glucose, citric, malic acid, ferments (converts albumin into peptone), ash 30 p. c. Stimulant, expectorant; chronic bronchitis, whooping cough, tuberculosis—of doubtful efficacy. Dose, ℥ss–1 (2–4 Gm.); 1. *Fluidextractum Droserœ* (67 p. c. alcohol). Tincture 10 p. c.

Duboisia *Duboi'sia myoporoi'des.*—Australia. Small tree having properties similar to those of belladonna and hyoscyamus; leaves 7.5–10 Cm. (3–4′) long, 12–25 Mm. (½–1′) broad, petiolate, midrib prominent, entire, taste bitter; contains duboisine .3–1 p. c., a volatile alkaloid (mixture of hyoscyamine, scopolamine, and atropine), which forms numerous salts. Dose of leaves, gr. 1–3 (.06–.2 Gm.), duboisine hydrobromide or sulphate, gr. $\frac{1}{120}$–$\frac{1}{60}$ (.0005–.001 Gm.); used externally for eye affections, in solution (1 p. c. in water).

Dulse *Dulse (Halyme'nia (Fucus) palma'tus* and *H. ed'ulis*).—Atlantic and Mediterranean coasts; blood-red—when dry dark purple, fronds flat.

Ecballium ECBALLIUM. SQUIRTING CUCUMBER.

Elaterinum. Elaterin, $C_{20}H_{28}O_5$, *U.S.P.*

Ecballium Elaterium, (*Linné*) *A. Richard.* { A substance obtained from the juice of the fruit.

Habitat. W. Asia, N. Africa, S. Europe—Mediterranean Basin, dry waste places; cultivated.

Syn. Squirting or Wild Cucumber, Wild Balsam Apple; Fr. Concombre sauvage, Elatérine, Elatine; Ger. Eselsgurke, Springgurke, Elaterin.

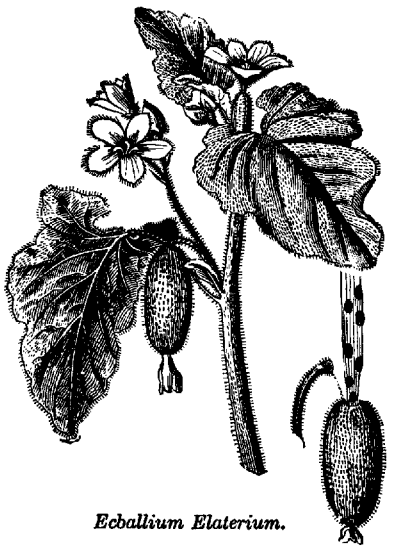
Ec-bal'li-um. L. fr. Gr. ἐκ, out, + βάλλειν, to throw—*i. e.*, the fruit expelling its contents when fully ripe.

El-a-te'ri-um. L. fr. Gr. ἐλατήριον, driving out, purging—*i. e.*, its medicinal property. **El-a-te-ri'num, E-lat'er-in**—both simply derivative names.

PLANT.—Common perennial, squash-like vine; stem trailing, tendril-bearing, succulent, bristly, .6–1.3 M. (2–4°) long; leaves cordate, 7.5–12.5 Cm. (3–5′) long, lobed, hispid, pale green; flowers monœcious, yellow; fruit 5 Cm. (2′) long, 2.5 Cm. (1′) broad, oblong, pale yellowish-green, beset with fleshy prickles, 3-celled, containing bitter, watery, mucilaginous juice in which are many light brown seed.

CONSTITUENTS.—Elaterin 44 p. c., green resin 17 p. c., starch 6 p. c.; prophetin, ecballin (elateric acid), hydroelaterin, elaterid.

Elaterinum. Elaterin.—Obtained by exhausting elaterium (a substance deposited by the juice of the fruit) with hot alcohol and precipitating with water, or treating with hot chloroform and precipitating with ether, washing with ether and recrystallizing from alcohol or chloroform. It is in minute, white, hexagonal scales, prismatic crystals; odorless; slightly acrid, bitter taste, permanent, soluble in alcohol (325), boiling alcohol (100), chloroform (15.5), ether (450), benzene (310); insoluble in water; alcoholic solution neutral. *Tests:* 1. Solution of .01 Gm. in 5 cc. of melted phenol, + a few drops of sulphuric acid—crimson, rapidly changing to scarlet; incinerate—ash negligible. 2. Shake .1 Gm. with distilled water 9 cc. + diluted hydrochloric acid 1 cc.; to separate portions of filtrate add .5 cc. mercuric potassium iodide T. S., or iodine T. S.—no turbidity (abs. of alkaloids). *Impurities:* Alkaloids, readily carbonizable substances. Dose, gr. $\frac{1}{20}$–$\frac{1}{10}$ (.003–.006 Gm.).



Ecballium Elaterium.

ADULTERATIONS.—ELATERIUM: Starch, calcium carbonate, various minerals colored green. Owing to this adulteration and the irregular treatment in collecting and curing, it becomes a very uncertain product, hence the official Elaterin is much to be preferred, which as a rule is pure.

Commercial.—Fruit when ripe is yellow and falls to the ground from its attachment, and at the instant of separation the entire contents are expelled violently (hence called squirting cucumber), through the socket or peduncle orifice—due to osmosis from pericarp to central pulp, causing engorgement, therefore tension and rupture at weakest point. Elaterium should be prepared from the fruit collected with the stalk, just before ripe, cutting fruit lengthwise, lightly pressing (best without pressure), straining the juice, setting aside to deposit, and putting this (sediment) on porous tiles to dry by gentle heat, avoiding exposure to the sun. Forty cucumbers without pressure yield 6 gr. (.4 Gm.), and 40 pounds (18 Kg.) yield only 240 gr. (15.5 Gm.). Elaterium occurs in grayish fragments or scales, odor tea-like, taste bitter, acrid; should not effervesce with hydrochloric acid. Dr. Clutterbuck's is considered best.

PREPARATIONS.—(*Unoff.*) ELATERIN: *Trituration,* 10 p. c., gr. ½–¾ (.03–.05 Gm.). *Pulvis Elaterini Compositus,* 2.5 p. c., gr. 1–4 (.06–.26 Gm.). ELATERIUM, dose, gr. ⅛–¼ (.008–.016 Gm.). *Solution of Elaterium,* ¼ p. c., in alcohol + ½ p. c. nitric acid, dose, ♏xxx (2 cc.).

PROPERTIES.—Hydragogue cathartic (most powerful known), producing profuse watery evacuations with griping and much prostration; large doses nauseate, vomit, inflame stomach and bowels, increase flow of urine, and may kill. Does not vomit nor purge dogs, rabbits, but kills them by convulsions. Those working in it often have ulcerated fingers, eyes, etc.

USES.—The fruit was employed by the ancients, being recommended by Dioscorides in mania, melancholia. Sydenham used it in dropsy, but it fell into disfavor through its severity, until brought forward again by Dr. Ferriar. Useful in dropsy, Bright's disease with dropsy (as it is believed to eliminate more urea through the bowels than any other cathartic), brain and lung congestion, uremia, but never in heart disease.

Poisoning.: Same as for aloe, etc. Evacuate stomach, give demulcents, opium, stimulants.