

T-V/4(4)

# MEDICAL BOTANY:

OR,

ILLUSTRATIONS AND DESCRIPTIONS

OF THE

## Medicinal Plants

OF THE LONDON, EDINBURGH, AND DUBLIN PHARMACOPŒIAS;

COMPRISING

A POPULAR AND SCIENTIFIC ACCOUNT OF ALL THOSE

## POISONOUS VEGETABLES

THAT ARE INDIGENOUS TO GREAT BRITAIN.

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MEDICAL BOTANY

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*Juniperus communis.*

G. Reid. Del.

Weddell. Sc.

London. Published for the Authors. Dec. 1829.



CXLI.

JUNIPERUS COMMUNIS.

*Common Juniper.*

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*Class XXII. DIOECIA.—Order XII. MONADELPHIA.*

*Nat. Ord. CONIFERÆ, Lin. 51. Juss. 100.*

GEN. CHAR. Male. *Catkin* conical. *Calyx* a scale. *Corolla* none. *Stamens* 3. Female. *Calyx* 3-parted. *Petals* 3. *Styles* 3. *Berry* pulpy, 3. seeded.

SPEC. CHAR. *Leaves* acicular, 3 in each whorl, spreading. *Stem* erect.

*Syn.*—*Juniperus vulgaris, baccis parvis purpureis. Raii. Syn. 441; Bauh. Hist. v. 1. p. 2. 293. f.*

*Juniperus vulgaris fructicosa. Bauh. Pin. 488.*

*Juniperus. Ger. Em. 1372. f.; Camer. Epit. 53. f.; Matth. Valgr. v. 1. 109. f.; Hall. Hist. v. 2. 319.*

*Juniperus communis. Lin. Sp. Pl. 1470; a, Willd. v. 4. 853; Fl. Brit. 1085; Eng. Bot. v. 16. t. 1100; Hook. Scot. 290; Woodv. t. 95; Pall. Fl. Ross. v. 1. t. 4.*

FOREIGN.—*Genevrier ordinaire, Fr.; Ginepro, Ital.; Embro, Sp.; Gemeiner Wacholder, Ger.*

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THE Common Juniper is an indigenous, evergreen shrub, growing on heaths and chalky hills, and flowering early in May. It is extremely abundant on Banstead downs, between Croydon and Epsom; and the specimen from which our figure was designed grew on a chalky bank, by the side of the road leading from Dartford to Darenth wood, in Kent.

It is a bushy plant, extremely variable in size, smooth, more or less erect, with very numerous, rigid, subdivided, leafy, quadrangular branches. The leaves are very numerous, three in each whorl, linear, entire, sharply pointed; channelled, and glaucous on the upper surface; convex, keeled and of a dark green colour beneath. The *male* and *female* flowers are on different plants. The catkins are axillary, sessile, conical, solitary, and furnished with three rows of whorled, imbricated, oval scales, three in each whorl, with a terminal one: the *male* flowers are of a yellowish colour at first, afterwards brown, and discharge a



copious cloud of yellow pollen. The filaments, which are found in the terminal florets only, are three, awl-shaped, united at the base, and bearing roundish anthers; in the lateral florets the anthers adhere to the base of the scale. In the *female* flowers the calyx is divided into three minute, permanent segments, united with the germen. The petals are green, rigid, acute, and also permanent. The germen is inferior, roundish, with three very short styles, and simple stigmas. The fruit is a nearly globular berry, of a bluish black colour, marked with the vestiges of the calyx and petals, having imbedded in its pulp, three angular, bony seeds.—Fig. (*a*) represents a catkin, magnified; (*b*) a scale with the anthers; (*c*) a female flower; (*d*) section of a berry, exhibiting the oily vesicles and seeds; (*e*) a seed.

**QUALITIES AND CHEMICAL PROPERTIES.**—The leaves of Juniper are balsamic and agreeable; to the taste resinous and somewhat bitter. The berries have a very agreeable odour; are soft, warm, and bitterish. They contain sugar, mucilage, a small quantity of light essential oil, of a white or yellow colour, possessing the flavour of the juniper, and a strong smell. A writer in the *Jour. Pharm.* 1827, p. 215, asserts that the berries contain an essential oil before their maturity, turpentine when ripe, and a resin when dry on the tree. Most of those which are used in this country are brought from Holland and Italy; and they should be chosen fresh, not much shrivelled, and free from mouldiness. The Italian are said to be the best. Gum Sandarach, or Vernix, as it is sometimes called, is an exudation from the *J. communis* growing in warm climates; though that which is generally met with in commerce is the produce of the *Thuja articulata*, or jointed Arbor-vitæ.\* It is commonly used as *pounce*.

**MEDICAL PROPERTIES AND USES.**—Juniper berries are carminative and diuretic, and given in the form of infusion, combined with other medicines of the same properties, will often be found to act freely on the kidneys. This virtue of the berries depends on their essential oil; and as the tops of the plant also contains it, they are sometimes used. The wood is considered to be sudorific, and has been occasionally substituted for guaiacum

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\* Desf. *Fl. Atlas II.* p. 333. t. 252.



and sassafras. The usual dose of an infusion made with three ounces of the berries to a pint of boiling water, is a teacupful every four or five hours, to which may be added suitable quantities of extract of dandelion, or cream of tartar, digitalis, squills, &c.

Linneus states in his "Flora Lapponica," that a decoction of juniper berries, when fermented, is used in Sweden as common drink; but the assertion of some writers, that it is substituted for tea and coffee, he contradicts.

OFF. PREP.—Oleum Juniperi. L. E. D.

Spiritus Juniperi compositus. L. E. D.

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### JUNIPERUS SABINA.—*Savin.*

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SPEC. CHAR. *Leaves* opposite, blunt, glandular in the middle, imbricated in 4 ways, the younger acute. *Stem* shrubby.

Syn.—Sabina. *Dod. Pempt.* 854; *Blackw. t.* 214.

Sabina folio cupressi. *Bauh. Pin.* 487; *Raii Hist.* 1415; *Duham. Arbr.* 2. t. 62.

Juniperus Sabina. *Lin. Sp. Pl.* 1472; *Willd. v.* 4. 852; *Gouan. Hort.*

*Monosp.* 510; *Scop. Carn.* 1228; *Ait. Kew. v.* 5. p. 414; *Woodv. t.* 259.

FOREIGN.—*Sabinne*, Fr.; *Sabina*, It. and Sp.; *Stinkender Wacholder*, Ger.

---

SAVIN is a native of the south of Europe and the Levant; it is, however, a hardy shrub, and was cultivated here by Turner in 1562, and probably much earlier. The flowers resemble those of the preceding species, and appear in May and June.

It is commonly of humble growth, but sometimes forms a handsome dark evergreen bush, three or four feet high, with a trunk a foot in diameter. It is covered with a reddish-brown bark, and sends off many branches, which are numerous subdivided. The leaves are very small, numerous, erect, opposite, pointed, of a bright green colour, and wholly invest the younger branches, which terminate in sharp points. The *male* catkin is conical, and consists of three opposite florets placed in a triple row, and a terminal one at the end; and at the base of each flower is a broad oval scale, fixed laterally to a columnar pedicel. There is no corolla. The filaments in the terminal flower are three, awl-shaped, and united at the base, with roundish anthers;



but in the lateral flowers the filaments are scarcely distinguishable, and the anthers are sessile. In the *female* flower the calyx is composed of three minute scales, united with the germen: the petals are three, rigid, acute, and permanent; and the germen supports three styles with simple stigmas. The fruit is a roundish, fleshy berry, of a blackish purple colour, marked with tubercles, and containing three small, irregular-shaped, hard seeds.

QUALITIES.—The leaves and tops of savin have a fœtid and oppressive odour, and a hot, bitter, and acrid taste. They give out a great part of their active matter to watery liquors, and the whole to rectified spirit; tinging the former of a brownish, and the latter of a dark green colour. Distilled with water they yield a large quantity of essential oil, on which the activity of the plant depends.

MEDICAL PROPERTIES AND USES.—Savin is a powerful stimulant, and was once much employed as an emmenagogue. A strong decoction and the powder have often been given in large doses, with a view to procure abortion; but if it be capable of producing such an effect, which is very doubtful, it is when it acts as a hydragogue purgative. Externally, the powder is occasionally used to destroy warts and other excrescences; and although much of the acrimony of the plant is destroyed by drying, and by the heat employed in boiling the fresh tops, to compose the ointment of the shops, enough is still retained to render it an efficacious application to blistered surfaces, when it is desirable to keep up a discharge; whether the salve be made as directed by the London and Dublin Colleges, or by combining a portion of the powder with lard. Under its operation, the discharge assumes a puriform character, and so concretes on the surface, as to require to be removed, from time to time, to admit the full action of the application. Of the powder the dose is ℥j to ʒj. In America, the *Juniperus virginiana*, or Red Cedar, which can scarcely be distinguished by experienced botanists from savin, produces precisely the same effects, and is used in the same manner.

OFF. PREP.—Ceratum Sabinæ. L. E. D. Extract: Sabinæ. D. Ol. Sabinæ. E. D.



PL143.



*Euphorbia officinarum.*

G. Reid. del.

London. Published for the Authors. Dec. 1829.

W. & A. G. Sc.



## EUPHORBIA OFFICINARUM.

*Officinal Spurge.**Class XI. DODECANDRIA.—Order III. TRIGYNIA.**Nat. Ord. TRICOCCEÆ, Lin. EUPHORBIEÆ, Juss.*

GEN. CHAR. *Corolla* four or five-petalled, fixed to the calyx. *Calyx* 1-leafed, ventricose. *Capsule* tricocous.

SPEC. CHAR.; Aculeate, naked, many angled; prickles in pairs, spreading, equal.

*Syn.*—Euphorbium. *Ger. Em.* 1178. *f.* 1; *Park.* 224; *Raii Hist.* 872; *Bauh. Pin.* 387; *Dod. Pempt.* 378. *f.*; *Blackw. Trew. Cent.* 3. *t.* 340. *f.* 2; *Tabern.* 104. *Euphorbii tenella planta.* *Lob. Ic.* 2. *t.* 25; *Advers. v.* 2. *t.* 28. *Poisonous Gum Thistle.* *Ger. Em.* 1178. *f.* 1. *Euphorbium cerei effigie caulibus crassioribus spinis validioribus armatum.* *Moris. Hist.* *p.* 85. *t.* 37. *f.* 6; *Seba Thes.* 1. *p.* 29. *t.* 19. *f.* 2. *Euphorbium polygonum spinosum cerei effigie.* *Isn. Act. Acad. Scien.* 1720. *p.* 385. *n.* 4. *t.* 10. *Euphorbia officinarum.* *Lin. Sp. Pl.* 647; *Willd. v.* 2. 881; *Amæn. Acad.* 3. *p.* 107; *Plenck. Icon.* *t.* 365; *Ait. Kew. v.* 2. *p.* 106; *Decand. Pl. Grasses,* *t.* 79.

THIS very singular prickly lactescent shrub is a native of Africa, where it grows in great abundance; and is the plant from which the resinous substance known by the name of euphorbium, is chiefly obtained. It belongs to a very extensive natural genus of herbaceous, or shrubby plants, abounding in an acrid milky juice, of which about thirteen are indigenous to this country. It is the *εὐφορβιον* of the ancient Greeks; and it was so named after Euphorbus, physician to Juba, king of Lybia. The Officinal Euphorbium plant is cultivated in our hothouses, and is said to have been introduced about the year 1597. Our figure, which represents a flowering branch, was made from a fine specimen in the collection of Mr. C. Law, of Stoke Newington.



The roots are small, whitish, cylindrical, and spreading. The stem is erect, thick, shrubby, succulent, with about eight obtuse angles, and furrowed with many longitudinal fissures; it is simple, or branched towards the top, entirely destitute of leaves, and rises to the height of four or five feet. The branches are more distinctly angled than the stem, of a dark green colour, sometimes with whitish dots, scolloped, and armed with sharp spines everywhere double. The flowers are yellowish-green, solitary, almost sessile, on the extremities of the branches at each pair of spines. The calyx is of one leaf, bell-shaped, persistent, yellowish, with five marginal teeth. The petals are four, turbinate, gibbous, thick, and attached by claws to the margin of the calyx. The filaments are about twelve, capillary, erect, longer than the corolla, and supporting distinctly two-lobed anthers. The germen is roundish, three-lobed, with three short, spreading, permanent styles. The capsule is three-lobed, bursting elastically, and containing three roundish seeds. Fig. (*a.*) represents a flower; (*b.*) the germen and styles.

**QUALITIES and CHEMICAL PROPERTIES.**—Euphorbium, applied in a small quantity to the tongue, discovers a sharp, biting taste; and retained in the mouth, it proves highly acrimonious, inflaming and ulcerating the parts. “When the tree grows old,” says Bruce, “the branches wither; and in place of milk, the inside appears to be full of powder, which is so pungent, that the small dust which I drew upon striking a withered branch, seemed to threaten to make me sneeze to death, and the touching of the milk with my fingers excoriated them as if scalded with boiling water.”

According to Dr. A. T. Thompson, its specific gravity is 1.124. Water, when triturated with it, is rendered milky, but dissolves one-seventh part only of the quantity employed: alcohol dissolves one-fourth, and affords a clear straw-coloured tincture, which is rendered milky by the addition of water. Ether takes up six parts in ten; and when the ethereal tincture is evaporated on water, it leaves on the side of the glass a pellicle of transparent resin, and on the water a cake of opaque adhesive whitish matter, which he found to consist of wax and resin.



ANALYSIS OF EUPHORBIIUM.

(Braconnot <i>Ann. Chim.</i> lxxviii.) 44	(Pelletier, <i>Bull. Pharm.</i> iv.).. 503
Resin ..... 37	Resin ..... 60, 80
Wax ..... 19	Wax ..... 14, 40
Malate of Lime ..... 205	Malate of Lime..... 12, 20
———— Potass ..... 2	———— Potass ..... 1, 80
Woody matter ..... 135	Woody Matter & Bassorine* 2
Water and Volatile Oil .... 5	Water and Volatile Oil... 8
Loss ..... 3	Loss ..... 80
—————	—————
100	100

The difference in the result of the labours of these celebrated chemists, can only be accounted for by the difference in the gum-resin on which they experimented. The resin which they isolated is transparent and of a reddish colour, insoluble in alkalis, and when dissolved in sulphuric and nitric acids, appears to differ essentially in its properties from all other resins. Euphorbium is obtained by making slight incisions in the plant, from which exudes a milk-like juice, that concretes into oblong or roundish tears.

**POISONOUS EFFECTS.**—From experiments on animals, M. Orfila infers—First. That Euphorbium exerts a local action extremely violent, capable of producing acute inflammation. Secondly. That its fatal effects depend rather on sympathetic irritation of the nervous system, than on its absorption. Thirdly. That it acts on the human species as on dogs.

We know of but one case in which euphorbium was taken as a poison by a human being. It is recorded in the *Philosophical Transactions* for 1760. It states that Mr. Willis took, by mistake, two ounces of the tincture of euphorbium, prepared with two drachms of camphor, two ounces of rectified spirit, and two

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\* *Bassorine* is obtained from those gum-resins that contain it, by treating them successively with water, alcohol, and ether. Being insoluble in these liquids, it remains mixed merely with the woody particles, from which it is easy to separate it, by repeated washings and decantations; because one of its characteristics is to swell extremely in water, and to become very buoyant. This substance swells up in cold as well as boiling water, without any of its parts dissolving. It is soluble, however, almost completely by the aid of heat, in water acidulated with nitric or muriatic acid. If, after concentrating with a gentle heat the nitric solution, we add to it highly rectified alcohol, there results a white precipitate, flocculent and bulky, which washed with much alcohol and dried, does not form at the utmost the tenth of the quantity of bassorine employed, and which presents all the properties of gum arabic.—Vauquelin *Bull. Pharm.* iii. 56.



drachms of euphorbium. Mr. Willis administered, a few minutes after, larger quantities of warm water, which produced copious vomitings. The patient complained of a burning heat at the stomach, when he was made to drink oil and water alternately, the vomitings continuing. Some time after, Mr. Dymock ordered an ounce of ipecacuanha wine, which procured copious evacuations from the stomach and bowels; and milk, and an opiate, soon restored tranquillity. Orfila seems to think that the ill effects experienced may be in some measure attributed to the camphor.

Scopoli asserts, that the Leafy-branched Spurge, *Euphorbia Esula*, produced death in a woman who half an hour before had swallowed thirty grains of the root. He also states that he has seen gangreen of the abdomen, and death to succeed quickly, to the imprudent application of it to the abdomen.

**MEDICINAL PROPERTIES AND USES.** Euphorbium is cathartic and emetic, but its operation is so violent that it is never employed. It is the most violent errhine we possess, occasioning a copious secretion from the nostrils, followed by a sense of heat, and occasionally by hæmorrhage and inflammation. When a minute portion is mixed with powdered starch, and cautiously taken as snuff, it has been found useful in lethargy, deafness, paralysis, amaurosis, and various anomalous affections of the head. But for a more particular account of the action of errhines, and of the cautions required in their employment, we must refer our readers to our account of *ASARUM EUROPÆUM*, Art. xxiii.

Many other species of this extensive genus have been employed in medicine, amongst which the *Euphorbia Lathyrus*, or Caper Spurge, has lately excited considerable attention on the continent. Its seeds have been lately proposed as a substitute for ipecacuanha, and the oil expressed from them may, according to Dr. Carlo Calderini, be advantageously substituted for that of the *Croton Tiglium*.

When the seeds are very ripe, they are to be dried and separated from the black ones, which will turn rancid. The oil is obtained by simple pressure: fourteen ounces of the seeds yield six of very fine oil, which much resembles castor oil. It has the



same colour, but is not quite so heavy; it is void of odour, is not acrid, nor has it an unpleasant flavour; it is very transparent. With lime, especially in hot weather, it soon becomes rancid and turbid, and acquires a pungent taste. It does not dissolve in alcohol. It forms soap with the alkalies.

It acts, says the Italian author, as a very mild purgative, producing neither vomiting, choleric, or tenesmus. The dose for adults is from four to eight drops. To children of two or three years old, two or three drops are administered in a cup of chocolate. Almond emulsion and water, sweetened with sugar, also form good vehicles for it.

In America, the *Euphorbia Ipecacuanha* and *E. corollata*, or Great-flowered Spurge, are used medicinally. Dr. Bigelow, in his valuable work, gives figures of them; and from him we give the subjoined account of their effects.

The *Euphorbia Ipecacuanha*, in doses from ten to twenty grains, is both emetic and cathartic, is more active in proportion to the number of grains administered, and in small doses operates with as much ease as most emetics, in a majority of instances. If it fails, however, at first, it is not so safely repeated as the other emetics in common use. Given in large doses it excites active and long continued vomiting, attended with a sense of heat, vertigo, indistinct vision, and prostration of strength.

The *Euphorbia corollata* is a very certain purgative, possessing about double the strength of jalap. It exerts its cathartic effects in doses of less than ten grains. If given to the amount of fifteen or twenty grains, it is very sure to prove emetic; the proportion of its failures not being greater than occurs in the use of other emetic medicines. The only inconvenience attending it appears to be, that if given in small doses as a purgative, it is apt to produce nausea; while in large doses suitable for an emetic, it has sometimes induced hypercatharsis.

The milky juice of the *Euphorbia helioscopia*, Sun Spurge, or Wart-wort, is used in many parts of Britain as a stimulating application for destroying warts and other excrescences. Having procured four pounds of the leaves of this plant, which abounds in every waste ground, we submitted it to pressure, and obtained



nearly two ounces of juice, which, when evaporated in a water-bath, produced ten drachms of extract, resembling that of the white poppy both in colour and consistence. The expressed juice, when fresh, is of a dirty brown colour, and after two ounces of it had stood a few days in a phial lightly corked, a pungent odour escaped, not unlike that which is yielded by nitric acid.

Oct. 18, 1826, we gave half an ounce of the juice to a kitten, and the same to a full grown rabbit, which produced no visible effects on either.

19th. The kitten having been kept without food since yesterday, appears to be quite well. Four drachms of the extract were therefore rubbed down with a small quantity of distilled water, and half the quantity was administered to it. Immediately the animal was released, it fell from the table on the floor, and remained on the same spot, on its side, till it died, at the expiration of half an hour. Its limbs moved but little, and those motions were not convulsive, but evidently efforts to rise. Inspirations were first made at intervals of twenty seconds; shortly afterwards at more lengthened periods, but just prior to death were short and frequent: neither vomiting nor purging were produced. The pupil was from the first dilated to its full extent, and so remained to the last.

Six hours after, we examined the stomach, which contained nothing but the poison; and this had produced no apparent effects on that organ; for not a blush was to be seen on the whole surface of its mucous membrane, nor on that of the œsophagus. The lungs were flabby, but the right side of the heart and the venous system were gorged with uncoagulated blood. The brain was minutely inspected, but we discovered no unusual turgescence of vessels.

Ten grains dissolved in water produced no effects on a kitten of the same litter.





*Eryngium maritimum.*

G. Rad. del.

Weddell Sc.

London Published for the Authors Dec. 1829.



## ERYNGIUM MARITIMUM.

*Sea Eryngo, or Sea Holly.**Class. V. PENTANDRIA.—Order II. DIGYNIA.**Nat. Ord. UMBELLATÆ, Lin. 45. UMBELLIFERÆ, Juss. 60.**GEN. CHAR. Flowers sessile, capitate. Petals oblong, equal, inflexed. Receptacle conical, scaly. Fruit ovate, bristly.**SPEC. CHAR. Radical leaves roundish, plaited, spinous. Scales of the receptacle 3-cleft.**Syn.—Eryngium marinum. Raii Syn. 222; Ger. Em. 1162. f.; Camer. Epit. 448. f.; Dod. Pempt. 730. f.; Matth. Valgr. v. 2. 42. f.; Bauh. Hist. v. 3. 86. f. Eryngium maritimum. Lin. Sp. Pl. 337; Willd. v. 3. 1358; Fl. Brit. 288; Eng. Bot. v. 10. t. 718; Bauh. Pin. 386; Hook. Scot. 87; Woodv. t. 102. FOREIGN.—Panicaut commun, Fr.; Eringio, Ital.; Eryngo, Span.; Dracher distel, Ger.*

THIS is a perennial plant, growing abundantly on the sandy sea-shores throughout Europe; flowering in July and August. The specimen from which the annexed figure was drawn grew at Mersea island, on the Essex coast, where we also found *Hyoscyamus niger*, *Lepidium latifolium*, *Glaucium luteum*, *Inula crithmoides*, *Convolvulus Soldanella*, and several other rare, or very local, British plants.

Sea Holly has a creeping, cylindrical, whitish root, as thick as an ordinary finger, and so long that it is with difficulty plucked up entire. The stem rises to the height of twelve inches or more; it is round, branched, thick, leafy, and striated. The radical leaves are roundish or kidney-shaped, stalked, plaited, and 3-lobed; those of the stem are sessile; and the whole are smooth ribbed, veiny, of a pale glaucous or sea-green colour with an elegant blue tint, and toothed with sharp spines, like those of the holly, from which the plant has obtained its English name. The flowers are disposed on the summit of the stem and branches in dense conical heads, like those of thistle. They are small, numerous, of a bright blue colour, and separated from each other



by little rigid, chaffy scales, and encompassed with a large pinnatifid spinous involucre. The scales, one of which accompanies each sessile floret, are three-toothed, longer than the florets, and spinous. The calyx is superior, and consists of five erect, pointed, equal leaves. The corolla is composed of five equal, oblong, channelled petals, with their points turned inwards. The five filaments are capillary, longer than the corolla, bearing oblong anthers; the germen is ovate-oblong, clothed with erect bristles, and furnished with two filiform, nearly erect styles, and simple stigmas. The fruit is bristly, separable lengthwise into two parts, and consisting of the like number of oblong, nearly cylindrical seeds. Fig. (a) represents a flower magnified; (b) the same, showing the inflexed petals, &c.; (c) a petal; (d) the styles; (e) the 3-cleft scale.

QUALITIES AND MEDICAL PROPERTIES.—Eryngo root has a sweet, agreeable taste and aromatic smell; and it gives out its properties to water. This root was formerly supposed to be possessed of many virtues. Boerhaave reckons it as the first of aperient diuretic roots, and it has been recommended in gonorrhœa and visceral obstructions, particularly of the gall-bladder and liver. Menstrual suppressions are reported to be removed by it, and quartan agues are likewise stated to have yielded to it. To crown its other virtues, it is much esteemed for its supposed aphrodisiac qualities; and at Colchester, where the candied root is prepared, considerable quantities of it are still sold we are informed, in consequence of her Majesty Queen Charlotte being presented with a box of it, as she passed through that town on her first arrival in England. It is now little used by medical practitioners; but while we are taught to believe by respectable authorities that two grains, and even one, of blue pill for a dose, can act beneficially on the system, we see no reason why this root and many others should be destitute of all virtue, when properly administered and judiciously persevered in, even though their direct effects on the system manifest themselves in no very evident manner.

The *E. campestre*, or Field Eryngo, with deeply divided leaves, which grows naturally in our meadows and pastures adjoining the sea, is said to possess the same qualities and medical properties, and is preferred on the continent.





*Geoffroya inermis.*

G. Reid, del.

Weddell, sc.

London, Published for the Authors. Dec. 1829.



## GEOFFROYA INERMIS.

*Smooth Bastard Cabbage-tree.**Class XVII. DIADELPHIA.—Order IV. DECANDRIA.**Nat. Ord. PAPILIONACEÆ, Lin. LEGUMINOSÆ, Juss.*GEN. CHAR. *Calyx* 5-parted. *Drupe* ovate. *Nucleus* compressed.SPEC. CHAR. Unarmed. *Leaves* pinnate; *leaflets* ovate—lanceolate, smooth.*Syn.—Andira* Ibaiariba, sive Angelin. *Piso Bras. t. 81.**Geoffroya inermis*, foliis lanceolatis. *Swartz Prodr. 106.*Cabbage Bark-tree, or Worm Bark-tree. *Wright in Phil. Trans. v. 67. t. 10.**Geoffroya inermis. Lin. Sp. Pl. 1043; Willd. v. 3. 1130; Woodv. v. 2. t. 112; Ait. Kew. v. 3. 52; Jacq. Amer. t. 180.*FOREIGN.—*Umari de la Jamaïque, Fr.; Geoffrea, It.; Geoffrunrinde, Ger.*

THE Smooth Geoffroya, or Bastard Cabbage-tree, universally known in the West Indies by the name of the Worm Bark-tree, is a native of Jamaica and Martinique, growing in the low savannas. It is a lofty tree, whose wood is white, and so tough as to be preferred beyond all others for the shafts of carriages. It was first introduced into this country by Messrs. Lee and Kennedy, who cultivated it at Hammersmith about the year 1778.

This tree rises to a considerable height, sending off several branches towards the top of a straight, smooth trunk. The external bark is smooth and grey; internally it is black and furrowed. The leaves are pinnate; composed of six or seven pairs of lanceolate-acuminate, smooth leaflets, about three inches long, of a dark green colour, standing in pairs on short foot-stalks, with a terminal one. The flowers are disposed in very large,



much-branched, terminal, downy panicles. The calyx is bell-shaped, of a dark purple colour, and divided into five obtuse segments. The corolla is papilionaceous, of a pale rose-colour, and is described by Dr. Woodville as consisting of a roundish, concave *vexillum*, notched at the apex; two oblong, obtuse, and somewhat shorter *alæ*, and an obtuse, divided *carina*. The filaments, nine of which are connected at the base, bearing roundish anthers; the germen is oval, with a tapering, curved style, and hooked stigma. The fruit resembles a small plum, is pulpy, marked on each side with a longitudinal furrow, and contains a hard nut or seed, separated into two valves.

The generic name *Geoffroya*, was given by Jacquin, in honour of Stephen Francis Geoffroy, a Parisian physician, who wrote a treatise on materia medica, in which an analysis is given of every officinal plant, and of several ingenious essays in the *Mémoires de l'Acad. des Sciences*. The trivial name, *inermis*, was applied to this species by Dr. Wright, to distinguish it from another (*G. spinosa*) which is armed with spines.

**MEDICAL PROPERTIES AND USES.**—It appears from Dr. Wright's paper,\* that Mr. P. Duguid of Jamaica was the first who gave any account of the virtues of this tree, in the *Edinburgh Essays, Physical and Literary*, vol. ii.; but as we cannot procure a sight of this work, we are unable to avail ourselves of his remarks; which is less to be regretted, in consequence of his not detailing the experiments which he signified his intention of doing. Although Cabbage-tree-bark is admitted into the list of our authorized materia medica, we never remember to have seen it prescribed. We cannot, therefore, be supposed to have any practical acquaintance with its effects. Dr. Wright, who resided long in Jamaica, remarks, "Cabbage-bark has certainly powerful effects, and its anthelmintic quality is established by the experience of several ages." It may be given either in decoction, syrup, powder, or extract.

The decoction is made by boiling one ounce of fresh-dried or well preserved cabbage-bark in a quart of water, over a slow fire, till the water resembles deep-coloured Madeira. This must be

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\* See *Philosophical Transactions*, v. 67, p. 507.



strained off, sweetened with sugar, and used early, as it does not keep many days. The syrup is formed by dissolving double the quantity of sugar in any portion of the decoction, and this will retain its virtues for many years. By evaporating the strong decoction of this bark to a proper consistence, the extract is prepared, though it must be continually stirred to mix intimately the resinous part, on which probably its efficacy will depend. The powder requires no directions; it resembles jalap, but is not so heavy.

A strong healthy person may take of the decoction, or syrup, two table-spoonfull; of the extract, three grains; of the powder,  $\text{ʒss}$ ; and the dose must be gradually lessened, so that a child of one year should take only of the two first half a table-spoonfull; of the extract, half a grain; and of the powder, five grains. These doses may be gradually increased till a nausea is excited; but it is better to begin with small ones, and gradually increase them. The decoction is given in Jamaica, seldom failing to destroy worms in the intestines, and discharge them in considerable quantities. By frequent use, however, these animals become familiarized to the poison, and it is necessary to stop, or employ other medicines of inferior power. Cold water, Doctor Wright continues, should not be drank during its operation, as it is apt to occasion sickness, vomiting, fever, and delirium. When these occur, or when too large a dose has been given, the stomach must be cleared with warm water, the patient purged with castor oil, and take plenty of lime-juice for common drink, vegetable acids being the best antidote for this poison.

Mr. Anderson, in a paper contained in vol. iv. of the Medical Commentaries, recommends the decoction to be given in gradually augmented doses, for eight or nine mornings in succession, and then a dose of jalap and calomel, which seldom fails to bring away the worms, some dead and some alive. There is another kind of this bark used for the same purposes. It is the produce of the *Geoffroya Surinamensis*, (Bonpl. Monogr. p. 13.)—“*foliolis 13—15 oblongis retusis sub-marginatis utrinque glabris.*” It is said to act more quickly than the Jamaica, and consequently is less liable to induce narcotic effects. It is of a ferruginous colour,



with reddish-brown *striæ*, while the other is grey externally, and yellow internally, the latter colour turning somewhat black by age. The Surinam cabbage-bark may also be distinguished from the other by having a *sour* as well as bitter taste; and while the Jamaica bark smells so disagreeable as to be called by some the *bilge-water tree*, the former has a less nauseous odour, and loses it in dessication.

M. G. T. Huttenschmid has furnished the public with a comparative analysis of the two barks, which has not, we believe, been hitherto published in any English work.

<i>G. Jamaicensis.</i>	<i>G. Surinamensis.</i>
Colouring principle.	Astringent oxidated principle.
Gum.	Green astringent chalybeate principle.
Starch.	Gum.
Wax.	Starch.
Resin.	Malic acid.
Carbonate and phosphate of lime.	Alkaline carbonate.
Carbon.	Muriatic and sulphuric acid.
Phosphorus.	Phosphate and oxalate of lime.
Sulphur.	Magnesia.
Silex.	Oxide of iron.
Oxide of iron.	Manganese.

OFF. PREP.—Decoctum *Geoffroyæ inermis*, D.





*Dorstenia Contrayerva.*

*G. Reid, del.*

*Weddell sc.*

*London. Published for the Authors Jan. 1830.*



## DORSTENIA CONTRAYERVA.

*Angular-leaved Dorstenia.*

Class XXI. MONŒCIA.—Order II. DIANDRIA.

Nat. Ord. SCABRIDÆ, Lin. URTICÆ, Juss.

GEN. CHAR. *Receptacle* common, one-leaved, fleshy, in which solitary seeds are nestled, or placed in sockets without attachment.

SPEC. CHAR. *Scape* with a quadrangular receptacle. *Leaves* deeply pinnatifid, palmate, serrated.

Syn.—*Cyperus longus odoratus peruanus*. Bauh. Pin. 14.

*Drakena radix*. Clus. Exot. 83.

*Dorstenia spondylii folio, dentariæ radice*. Plum. Icon. t. 119.

*Dorstenia quadrangularis*. Stokes' Bot. Mat. Med. v. 4. p. 338.

Tuzpalitz. Hernand. Mexic. 147.

*Dorstenia Contrayerva*. Lin. Sp. Pl. 176; Willd. v. 1. p. 683; Jacq. Ic. v. 3. t. 614; Blackw. t. 579; Ait. Kew. v. 1. p. 268; Woodv. v. 1. t. 51.

FOREIGN.—*Dorstène a feuilles de berce*, Fr.; *Contrajerva*, It.; *Contrayerba*, Sp.; *Contraerva*, Port.; *Contrayerva*; *Wurmtreibende Dorstenie*; *peruanische Giftwurzel*, Ger.

THIS is a perennial plant, a native of South America and some of the West India islands. It has long obtained a place in our pharmacopœias, on account of its supposed alexipharmic virtues; but Dr. Houston has shown that the roots of at least two other species of this genus, viz. *D. Houstonia* and *D. Drakena*, of Willdenow, are promiscuously gathered and exported for those of the officinal *Contrayerva*.

The root is fusiform, compact, rugose, knotty, furnished with many long slender fibres, externally of a brownish colour, and internally whitish. The leaves are radical, three or four inches in length, palmate, deeply laciniated and toothed, pointed, rough, with short hairs, and stand upon longish footstalks, winged towards the leaves. The scapes or flower stems are round,



simple, pubescent, rising to the height of three or four inches, and terminate in a fleshy, expanded, flat, quadrangular receptacle, about an inch long, and three-fourths of an inch broad, placed vertically, covered with many minute, scarcely conspicuous flowers immersed in its substance, and occupying the whole of its disc. The flowers are male and female intermixed. There is no corolla. The calyx of the female flowers, according to Dr. Stokes, is prismatic, with four teeth inflected horizontally; that of the male flowers bipartite, very short, concave, and erect. The filaments are awl-shaped, with roundish anthers. The germen is roundish, with a bifid style, and simple stigmas. The seeds are solitary, triangular, and pointed. The capsule, when ripe, possesses an elastic power, by which the seed is thrown out with considerable force. Fig. (a) exhibits a portion of the receptacle, with the flowers considerably magnified; (b) a seed.

**QUALITIES.**—The dried roots have an agreeable aromatic smell; a rough, bitterish, warm, acrid taste. By the assistance of heat, both water and alcohol extract its virtues. The watery decoction is of a dark brown colour, and very mucilaginous.

**MEDICAL PROPERTIES AND USES.**—Contrayerva has generally been regarded as stimulant, sudorific, and tonic. It has been recommended, on the authority of Pringle, Huxham, and other eminent physicians, as a useful remedy in fevers of a typhoid character, in malignant eruptive diseases, and in chronic dysentery, and diarrhoea. It has also been found useful in atonic gout, in chronic rheumatism, and in some other diseases. Dr. Cullen observes, that wine may always supersede the stimulant power of this medicine in fevers, and that debility is better removed by the tonic and antiseptic powers of cold and Peruvian bark, than by any stimulants. The compound powder of contrayerva made up into balls, and called *lapis contrayervæ*, was formerly employed in typhoid fevers, small pox, and other diseases of the malignant kind.

**DOSE.**—Of the powdered root, the dose may be from gr. xv. to ʒss.

**OFF. PREP.**—Pulvis Contrayervæ compositus, L.





*Lythrum Salicaria.*

G. Reid del.

Weddell sc.

London, Published for the Authors, Jan 1830.



CXLVI

LYTHRUM SALICARIA.

*Spiked Purple Willow-herb, or Loosestrife.*

*Class XI. DODECANDRIA—Order I. MONOGYNIA.*

*Nat. Ord. CALYCANthemæ, Lin. SALICARIÆ, Juss.*

GEN. CHAR. *Calyx* 12-toothed, inferior. *Petals* six.  
*Capsule* 2-celled.

SPEC. CHAR. *Leaves* opposite, lanceolate; heart-shaped at the base. *Flowers* in leafy spikes. *Stamens* twelve.

*Syn.*—*Salicaria vulgaris purpurea, foliis oblongis. Raii. Syn. 367.*

*Lysimachia spicata purpurea. Bauh. Pin. 246; Ger. Em. 276. f.*

*Lysimachia altera. Matth. Valgr. v. 2. 299. f.; Camer. Epit. 687. f.*

*Salicaria. n. 854.; Hall. Hist. v. 1. 378.*

*Lythrum Salicaria. Lin. Sp. Pl. 640; Willd. v. 2. 865; Fl. Brit. 510; Eng. Bot. v. 15. t. 1061; Curt. Lond. fasc. 3. t. 28; Hook. Scot. 147.*

FOREIGN.—*Salicaire; Lisimaque rouge, Fr.; Salicaria, Ital.; Braune Weiderich; Purpur Weiderich, Ger.; Partyke, Dut.; Plakun, Rus.*

THIS species of Willow-herb, or Loosestrife, is a common plant, being extensively diffused throughout Europe in ditches, and on the margins of ponds and rivers, which it ornaments with its beautiful spikes of purple flowers. It occurs native in most parts of Britain, and grows abundantly in several places near London, especially in the swampy grounds, near the Red House, Battersea; flowering from July to September.\*

\* For the convenience of medical students and others, attending lectures on Botany, in London, we have been induced to subjoin the following catalogue of plants growing wild in the immediate vicinity of Battersea, Surrey.

Hippuris vulgaris.	Valeriana dioica.	Agrostis spica venti.
Callitriche verna.	—— officinalis.	—— canina.
Veronica serpyllifolia.	Iris Pseud-acorus.	—— alba.
—— anagallis.	Scirpus triqueter.	Digitaria Sanguinalis.
—— Chamædrys.	—— carinatus.	Panicum verticillatum.
—— hederifolia.	—— palustris.	—— viride.
—— agrestis.	Phalaris canariensis.	—— Crus-galli.
Lemna minor.	Phleum pratense.	Holcus lanatus.
Lycopus europæus.	Alopecurus pratensis.	—— avenaceus.
Anthoxanthum odoratum.	Agrostis vulgaris.	



The root is perennial, woody, and furnished with numerous blackish fibres; sending up several erect, leafy, slender, reddish, wand-like stems, three or four feet high, quadrangular, and sometimes hexagonous near the root. The whole plant is gene-

Holcus mollis.	Chærophyllum sylvestre.	Rubus fruticosus.
Glyceria aquatica.	Bunium flexuosum.	—— corylifolius.
—— fluitans.	Sium angustifolium.	Potentilla anserina.
Poa trivialis.	—— nodiflorum.	—— reptans.
—— pratensis.	—— repens.	Geum urbanum.
—— annua.	—— latifolium.	Papaver hybridum.
Briza media.	Æthusa Cynapium.	—— Rhceas.
Dactylus glomerata.	Conium maculatum.	Thalictrum flavum.
Cynosurus cristatus.	Coriandrum sativum.	Ranunculus ficaria.
Festuca loliacea.	Œnanthe fistulosa.	—— sceleratus.
—— pratensis.	—— crocata.	—— bulbosus.
—— elatior.	Phellandrium aquaticum.	—— repens.
Bromus secalinus.	Ægopodium Podagraria.	—— acris.
—— mollis.	Angelica sylvestris.	—— aquatilis.
—— racemosus.	Heracleum Spondylium.	Caitha palustris.
—— sterilis.	Sambucus nigra.	Ajuga reptans.
Arundo Phragmites.	Juncus glomeratus.	Mentha hirsuta.
Lolium perenne.	—— effusus.	Glechoma hederacea.
—— temulentum.	Luciola campestris.	Lamium album.
—— arvense.	Rumex crispus.	—— purpureum.
Hordeum murinum.	—— obtusifolius.	—— amplexicaule.
—— pratense.	—— Acetosa.	Galeopsis tetrahit.
Triticum repens.	—— Acetosella.	Stachys sylvatica.
—— caninum.	Triglochin palustre.	Ballota nigra.
Scabiosa arvensis.	Alisma Plantago.	Scutellaria galericulata.
Galium palustre.	Epilobium hirsutum.	Prunella vulgaris.
—— verum.	—— parviflorum.	Rhinanthus Crista galli.
—— aparine.	—— tetragonum.	Pedicularis palustris.
Plantago major.	Polygonum Persicaria.	Antirrhinum Cymbalaria.
—— lanceolata.	—— Hydropiper.	—— Orontium.
Parietaria officinalis.	—— lapathifolium.	Scrophularia aquatica.
Potamogeton crispum.	—— Bistorta.	Thlaspi Bursa pastoris.
—— perfoliatum.	—— aviculare.	Cochlearia Armoracia.
Sagina procumbens.	—— Convolvulus.	Senebiera Coronopus.
Myosotis palustris.	Butomus umbellatus.	Cardamine pratensis.
Lithospermum arvense.	Saxifraga granulata.	Nasturtium officinale.
Symphytum officinale.	—— tridactylites.	—— sylvestre.
Hottonia palustris.	Silene inflata.	—— terrestre.
Lysimachia vulgaris.	Stellaria media.	—— Irio.
Anagallis arvensis.	—— holostea.	—— Sophia.
Convolvulus arvensis.	Arenaria serpyllifolia.	Barbarea vulgaris.
—— sepium.	—— rubra.	Erysimum Alliaria.
Campanula rotundifolia.	Sedum acre.	Brassica campestris.
Solanum Dulcamara.	—— reflexum.	Sinapis arvensis.
—— nigrum.	Agrostema Githago.	Raphanus Raphanistrum.
Chenopodium Bonus Hen-	Lychnis Flos Cuculi.	Erodium cicutarium.
—— ricus.	—— dioica.	Geranium pyrenaicum.
—— urbicum.	Cerastium vulgatum.	—— molle.
—— rubrum.	—— semidecandrum.	—— dissectum.
—— hybridum.	—— aquaticum.	Malva sylvestris.
—— album.	Spergula arvensis.	Fumaria officinalis.
Ulmus campestris.	—— nodosa.	Lathyrus pratensis.
Torilis infesta.	Mespilus Oxyacantha.	—— repens.
Scandix Pecten-Veneris.	Spiræa ulmaria.	—— arvense.
—— anthriscus.	Rosa canina.	—— procumbens.



rally smooth, and of a dark green colour, but in dry situations it becomes hoary, as well as more dwarf in stature. The leaves are mostly opposite, sessile, lanceolate, pointed, entire, and various in length, the upper ones diminishing to bracteas. The flowers terminate the stem in numerous axillary whorls, six in each, of a bright crimson, or purple colour, forming long, leafy spikes of great beauty and elegance, but without smell. The calyx is inferior, cylindrical, striated, downy, or hairy, with twelve marginal teeth, six of which are long, awl-shaped, erect, and reddish, the others minute, ovate, concave, and bent inwards. The petals are six, elliptic-oblong, equal, wavy, and of a variable crimson, or purple colour. The filaments are twelve, thread-shaped, the six alternate ones shortest, all inflected while young, and bearing roundish anthers. The germen is ovate-oblong, with a simple style, and capitate stigma. The capsule is small, elliptical, 2-celled, and inclosed in the tube of the calyx. Fig. (a) represents a flower cut open; (b) the calyx; (c) the same cut open; (d) the germen and style; (e) a seed.

QUALITIES.—The dried herb is inodorous, and has an herbaceous, sub-astringent taste. Its active matter is dissolved equally by water and alcohol; hence it appears to consist of extractive matter, with a small portion of tannin, as it strikes a black colour with the sulphate of iron.

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Lathyrus filiforme.	Chrysanthemum Leucanthemum.	Carex paludosa
Medicago lupulina.	————— segetum.	—— riparia.
Picris echioides.	Pyrethrum Parthenium.	—— vesicaria.
Sonchus arvensis.	————— inodorum.	Urtica urens.
———— oleraceus.	Matricaria Chamomilla.	———— dioica.
Leontodon Taraxacum.	Anthemis Cotula.	Amaranthus Blitum.
Hieracium pilosella.	Achillea Ptarmica.	Bryonia dioica.
Lapsana communis.	———— Millefolium.	Sagittaria sagittifolia.
Cichorium Intybus.	Centaurea nigra.	Arum maculatum.
Arctium Lappa.	———— Cyanus.	Salix fragilis.
Cnicus lanceolatus.	———— Scabiosa.	—— alba.
Carduus acanthoides.	Orchis mascula.	—— cærulea.
Bidens cernua.	Zannichellia palustris.	—— triandra.
———— tripartita.	Euphorbia helioscopia.	—— amygdalina.
Artemisia vulgaris.	———— Peplus.	—— viminalis.
———— Absinthium.	Sparganium nodosum.	Humulus Lupulus.
Tussilago Farfara.	———— simplex.	Mercurialis perennis.
———— Petasites.	———— ramosum.	———— annua.
Senecio vulgaris.	Carex vulpina.	Hydrocharis Morsus ranæ.
———— aquaticus.	—— flava.	Atriplex angustifolia.
Bellis perennis.		———— erecta.



**MEDICAL PROPERTIES AND USES.**—Loosestrife is astringent and tonic, and has been recommended by De Haen, and several other continental physicians as a remedy in intermittent fever, chronic dysentery, and diarrhœa. Though it has long been celebrated in Ireland, it is seldom prescribed in regular practice. It has been given generally in the form of decoction, made by boiling, one ounce of the dried herb, in a pint of water, down to half a pint. Of this the dose may be three or four ounces twice a day.





*Boswellia serrata.*

G. Reid. del.

Weddell sc.

London. Published for the Authors. Jan. 1. 1830.



## CXLVII

### BOSWELLIA SERRATA.

*Olibanum-yielding Boswellia.*

Class X. DECANDRIA.—Order I. MONOGYNIA.

Nat. Ord. MELIIS, Juss.

GEN. CHAR. *Calyx* inferior, 5-toothed. *Petals* five.

*Nectary* a crenate ring, surrounding the base of the germen. *Capsule* triangular, 3-valved, 3-celled. *Seeds* solitary, winged.

SPEC. CHAR. *Leaves* pinnate; leaflets serrated, downy.

*Racemes* simple, axillary. *Petals* ovate. *Filaments* inserted on the exterior margin of the nectary.

*Syn.*—*Libanotis thurifera*. Colebrooke in *Asiat. Res.* v. 9. p. 377.

*Boswellia serrata*. Roxb. *Corom.* v. 5. 3, 4.

It was formerly conjectured, on the authority of Linneus, that the Olibanum of commerce was the product of the *Juniperus Lycia*, but this opinion appears to be erroneous; for this species of Juniper is a native of the south of France, and the French botanists deny that it yields the resinous gum in question. It is now generally supposed that it is the product of different trees; Lamarck ascribing it to the *Amyris gileadensis*; Forskal and Sprengel to the *Amyris kataf*,\* while Mr. Colebrooke has satisfactorily proved that the *Boswellia serrata* affords that which comes from India.

This species of *Boswellia*, so named by Dr. Roxburgh in memory of the late Dr. John Boswell, of Edinburgh, is indigenous to the mountains of Central India, where it is known under the vulgar name of *Sali*. It is a lofty tree, with the foliage crowded at the extremities of the branches; and is frequent in the forests between the Sone and Nagpur, on the rout to Berar. The leaves are pinnate, consisting of about ten pair of obliquely ovate-oblong, obtuse, serrated, villous leaflets, with a terminal one, about an inch and a half in length, sometimes opposite, sometimes alternate, and supported on short, round, downy petioles. The flowers, which are produced in simple axillary racemes,

\* Forsk. *Descrip. Plant. cent.* iii. p. 80.



shorter than the leaves, are numerous, small, of a pale pink colour, accompanied with minute bracteas. The calyx is monophyllous, 5-toothed and downy; the corolla consists of five oblong, spreading petals, downy on the outside, and considerably larger than the stamens. The nectary is a fleshy, crenate ring, surrounding the lower two-thirds of the germen. The filaments are ten, alternately shorter, inserted on the exterior margin of the nectary, and supporting oblong anthers. The germen is superior, ovate, with a cylindrical style, and 3-lobed stigma. The capsule is oblong, triangular, smooth, 3-celled and 3-valved, each cell containing a single seed, which is broad-cordate at the base, deeply emarginate, with a long and slender point. Fig. (a) represents a flower somewhat magnified; (b) the capsule; (c) a transverse section of the same; (d) the seed.

Olibanum is chiefly collected in India; but it is also imported in casks and chests from the Levant. It distils from incisions made in the bark of the tree, during the summer months. It is the frankincense of the ancients, the *thus* of the Romans, and the *Λιβανος* of Theophrastus and Dioscorides. The latter writer mentions it as procured from India; and Theophrastus, *Hist. Pl. lib. ix. c. 4*, says, *Γίνεται μὲν οὖν ὁ λιβανός ἐν τῇ πῶν Ἀραβῶν χώρα μεσση περὶ τοῦ Σαβα καὶ Ἀδραμίττα, καὶ Κιταβαίνα*. The same observation is made by Strabo, *l. xvi. p. 778*; Plin. *Nat. Hist. lib. vi. c. 28*; and Virgil, *Geor. i. v. 58*.

**QUALITIES.**—Olibanum is in the form of semitransparent masses or tears, of a pale yellowish, or pink colour, solid, hard, and brittle. It has a bitterish acrid taste, and when chewed, sticks to the teeth, and renders the saliva milky. When heated, it burns brilliantly, and diffuses an agreeable odour. Alcohol dissolves three-fourths of it, and water about three-eighths. On distillation alone, it affords a yellowish, fragrant, essential oil. From the analysis of Braconnot, it appears, that 100 parts of Olibanum is composed of 8 essential oil, 56 of resin, 30 of gum, and 5.2 of a matter resembling gum, but insoluble in water and alcohol.\*

**MEDICAL PROPERTIES AND USES.**—The virtues of Olibanum are merely those of a stimulant and diaphoretic. It was formerly much used as a remedy in various diseases of the head and chest, in vomitings, diarrhœa and dysentery; and externally, as a vulnerary. Riverrius recommends it in pleurisies; and Geoffroy professes to have experienced its success in those diseases, especially after venesection. The dose was from ℞j to ℥j. At the present day it is seldom employed, except as a perfume in the rooms of the sick, and is scarcely entitled to a place in the materia medica.

In the early ages, it was much used as incense in sacrifices; and in modern times, the Greek and Romish churches still retain the use of frankincense in some of their ceremonies.

\* *Ann. de Chim.* lxxviii. 60.





*Saccharum officinarum.*

GReid del.

Weddell sc

London. Published for the Authors. January. 1<sup>st</sup> 1830.



## CXLVIII

### SACCHARUM OFFICINARUM.

*Common Sugar-cane.*

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*Class III. TRIANDRIA.—Order II. DIGYNIA.*

*Nat. Ord. GRAMINA.*

GEN. CHAR. *Calyx* 2-valved, 2-flowered, enveloped in long wool. *Lower floret* neuter with one *palea*, upper hermaphrodite with two *paleæ*, the upper of which is very small or obsolete.

SPEC. CHAR. *Leaves* flat, entire, smooth. *Panicle* loose, with long, simple, slightly zigzag, verticillated spikes. *Calyx* lanceolate, naked, except at the base.

Syn.—*Arundo saccharifera*. *Bauh. Pin.* p. 18; *Park.* p. 1210; *Raii Hist.* 1278; *Sloane Jam.* v. 1. p. 108. t. 66; *Rumph. Amb.* v. 1. p. 186. t. 74. f. 1. *Hughes Barbado.* p. 244. t. 23. f. 1.

*Saccharum officinarum*. *Lin. Sp. Pl.* 79; *Willd.* v. 1. p. 381; *Humb. et Kunth Nov. Gen.* v. 1. p. 146; *Spreng. Syst. Veget.* v. 1. p. 281; *Tussac Fl. des Antilles*, v. 1. p. 151. t. 23; *Hook. Bot. Miscell.* part 2. p. 95. t. 26.

FOREIGN.—*Canne a sucre*, Fr.; *Cana de Azucar*, Sp.; *Cana de Assucar*, Port.; *Sukkerohr*, Ger.; *Sukkerrör*, Dan.; *Sokerror*, Swed.; *Can che*, Chin.; *Kaansia*, Jap.; *Viba*, Bras.

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THE Sugar-cane, which is supposed to be a native of the East Indies, though now introduced into the tropical parts of the western continent, and the West India islands, is one of the most valuable in a commercial point of view, as well as beautiful productions of the vegetable kingdom. The Chinese date the cultivation of this precious plant to periods of the most remote antiquity: but Dr. Roxburgh ascertained that the sugar-cane of China, was different from *S. officinarum*, and he has published it as the *S. sinense*. That the sugar-cane is indigenous to the south-eastern parts of Asia, we have the strongest reason to believe, for Marco Polo, a noble Venetian, who travelled in the East, about the year 1250, found sugar in abundance in Bengal. Vasco de Gama, who doubled the Cape of Good Hope in 1497, relates that a considerable trade in sugar was then



carried on in Calicut. From the East Indies, the sugar-cane was carried towards the close of the thirteenth century, to Arabia, whence the cultivation of it soon extended to Nubia, Egypt, and Æthiopia. Mr. Bruce found it in Upper Egypt; and John Lioni says, that a considerable trade was carried on in sugar in Nubia, in 1500; it abounded also at Thebes, on the banks of the Nile, and in the northern parts of Africa about the same period. From Africa it migrated into Italy, and the Moors introduced it into Spain. In Spain, the sugar-cane was first planted in Valencia, and afterwards in Granada and Murcia. From these provinces the culture and manufacture of sugar was carried by the Spaniards to the Canary islands, in the fifteenth century. But prior to this period the Portuguese in 1420 carried it from Sicily to the island of Madeira. In 1506, according to Antonio Herrera, the sugar-cane was conveyed by the Spaniards to St. Domingo, and thence extended to the West India islands, and the Brazils; in the former of which it now forms one of the staple articles of trade. An interesting account of the natural history of the sugar-cane, with remarks on its cultivation, may be found in the second number of Dr. Hooker's "Botanical Miscellany," written by Dr. Macfayden of Jamaica.

The root of the sugar-cane is perennial, jointed, solid, and fibrous; sending up several simple, erect, round, smooth, leafy, jointed stems, to the height of ten or twelve feet. At each articulation of the stem is a double or triple row of deep greenish punctures. The leaves are three or four feet long, and three inches broad, linear-lanceolate, and arise singly from the joints, embracing the stem at the base to the next joint above their insertion: they are smooth, spreading, entire, flat; with the midrib prominent on the under side, the edges sharply toothed, and ciliated near the base with rigid white hairs. The flowers are small, and produced in a terminal loose panicle, about two feet in length, composed of numerous subdivided whorled spikes, with long flexuose down which conceals the flowers, and gives to the plant, a very elegant appearance.\* The flowers are all

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\* In the West Indies, the planters commonly assert that the sugar-cane never blossoms; their observations being made on plants cultivated in a most luxuriant soil, where they increase much by root, and are cut before they produce flowers.



hermaphrodite, one of them stalked, and stand in pairs, at the joints of the smaller divisions of the panicle. The calyx is 2-flowered, consisting of two oblong-lanceolate, pointed, erect, concave, nearly equal beardless glumes, enveloped in long hairs from the base. The corolla is shorter than the calyx, and composed of two very minute, pellucid valves, the innermost very slender. The filaments are three, capillary, longer than the corolla, and bear oblong, yellowish anthers. The germen is ovate, bearing two styles, terminated by brownish feathery stigmas. Fig. (a) is intended to represent the entire plant reduced; (b) a flower magnified; (c) the same closed; (d) a portion of the panicle, with the flowers of the natural size.

It is a remarkable fact, that the sugar-cane in the West Indies never perfects its seeds; the plant being propagated always by cuttings from the roots. Dr. Roxburgh, who resided many years in India, never saw the seed of this plant.

The oldest stock of canes cultivated in the West India islands, is said to have been brought from Spain. "There cannot be a doubt indeed," says Dr. Macfayden, "but that the sugar-cane is not indigenous to any part of the New World. We are, it is true, informed by the early voyagers and travellers, that canes were found growing wild on the banks of the Mississippi, and other rivers of continental America; and Labat mentions that the first French settlers met with them in Martinique and some of the other islands. It is most probable that they mistook for them some other of the reedy grasses, such as the wild, *Arundo sagittata*, or some species of the genus *Arundinaria*—all of which are common on the banks of rivers in these latitudes, and all, by their appearance and manner of flowering, might readily deceive an inexperienced eye. Besides, were the sugar-cane a native, it would be difficult to account for its being at present found no where in a state of nature."

There are several varieties of the common sugar-cane. Louriero mentions three sorts, differing in the culm, viz. the white sugar-cane, the red sugar-cane, and the elephantine sugar-cane. In Ceylon, there are three varieties, the common, white, and purple. In



the Mysore, two kinds of cane are chiefly cultivated, the *restali* and *putta putti*. In the West Indies, the oldest variety is commonly known by the name of the *Country Cane*. It is readily distinguished by its diminutive size, its spindling stem, approximate joints, and narrow grass-like leaves. The *Ribbon Cane*, is a variety of inferior quality, and is known by its strong stem and distant joints, marked with longitudinal stripes of purple and yellow. The *Bourbon*, sometimes called the Otaheite Cane, which was first imported into the French islands of Guadaloupe and Martinique, surpasses all other varieties in the thickness of its stem, and is very generally cultivated on account of the greater quantity of sugar which it affords. It is much taller, and yields one-third more sugar than the country cane; but the sugar is not of such a compact grain. The *Violet Cane*, or as it is called in the French islands, the *Batavian Cane*, which has a purple-coloured stem and luxuriant foliage, has been considered by Roëmer and Schultes, as a distant species, under the name of *S. violaceum*.

“The Cane,” remarks Dr. Macfayden, “requires a fertile soil. We have an example of a soil of this description in the parish of Vere, which with all its disadvantages of climate, must ever rank, in proportion to its size, as the most productive sugar district in the island. On examination, it will be found to contain all the ingredients set down by Sir H. Davy as necessary to constitute a fertile soil. It is composed of alluvial matter, mixed with clay and sand, together with calcareous matter, washed down from the neighbouring hills. Plantain Garden River, on the other hand, which holds only a secondary rank as a sugar district, is composed principally of alluvial matter, mixed with clay and finely-divided gravel, there being very little traces of lime.”

Sugar was formerly manufactured in the southern parts of Europe, and from an extract given by Mr. Loudon, p. 111, of his “*Encyclopedia of Agriculture*,” from an Arabian writer, it appears that it has been cultivated upwards of seven hundred years in Spain, and probably two or three centuries before. At



present, almost the whole of our sugar is produced in the East and West Indies.

Besides our officinal plant, many others contain sugar, though not in such abundance. In North America, however, it is extracted from the *Acer saccharinum*, or Sugar Maple, but in two small quantities for exportation. During the last protracted war, when France had lost her colonies, sugar was manufactured at Bruges from white-beet root, and with such success, that when the produce of the West Indies sold for five shillings a pound, it could be produced on the spot from *mangold-wurzel*, at less than one shilling; and to such perfection had the process arrived, that the prefect, mayor, and some of the chief inhabitants of Bruges were invited by a manufacturer to witness the result of his experiments, allowed the specimen which he produced to exceed those of the foreign sugar. Sugar has also been prepared from grapes, from the carrot, and from various other fruits and roots: it is formed largely during malting; and starch may easily be converted into sugar by digesting it in dilute sulphuric acid. Sugar may likewise be regarded as an animal product, for it exists in very notable proportion in milk, and is found in considerable quantity in patients labouring under diabetes.

The method of making sugar from the juice of the common sugar-cane in Hindostan is exceedingly simple, and requires little or no expensive apparatus; while to the philanthropist it is doubly sweet, being produced by the efforts of free agents, whose backs are never scored with whips, and who return after the labour of the day to their domestic fire-sides, in the happy enjoyment of liberty. The soil chosen is a rich vegetable mould, so situated as to be easily watered from a river. About the end of May, when the soil is reduced to soft mud, either by rain or artificial watering, slips of the cane, containing one or two joints, are placed in rows about four feet from row to row, and eighteen inches asunder in the rows. When they are grown to the height of two or three inches, the earth around them is loosened. In August small trenches are cut through the field to drain off the rain, if the season prove



too rainy, and to water the plants if the season be too dry. From three to six canes spring from each slip that is set. When they are about three feet high, the lower leaves of each cane are carefully wrapped round it; and then the whole belonging to each slip are tied to a strong bamboo eight or ten feet high, and stuck into the earth in the middle of them. They are cut in January and February, about nine months after the time of planting them. They have now reached the height of eight or ten feet, and the naked cane is from an inch to an inch and a quarter in diameter. They have not flowered, otherwise, when this happens, the juice loses much of its sweetness. The newly cut canes are put through the rollers of a mill, and the juice collected into large iron boilers, where it is boiled down smartly to a proper consistence, the scum being carefully taken off. The fire is then withdrawn, and the liquid by cooling becomes thick. It is then stirred about with sticks till it begins to take the form of sugar, when it is put in mats made of the leaves of the *Borassus flabelliformis*, and the stirring is continued till cold. This process yields a *raw* or *powdered* sugar; but it is clammy, and apt to attract moisture from the atmosphere, because the acids in the juice have not been removed. By the addition of quick lime to the juice in the proportion of about three spoonsful to every fourteen gallons, the sugar loses this property. From an acre of ground about five thousand pounds of sugar is obtained.

In the West India islands the raising of sugar is much more expensive, and the produce much less, owing to the high price of labour; or, which is the same thing, to the nature of the labourers, and to the inferiority of the soil. The ground being cleared and worked a foot or more in depth, the sets or cuttings of cane are planted in rows, generally five feet distant, and from two to five feet apart in the row, according to the quantity of the soil; more plants being allowed for a poor than a rich one. The ground is kept clear from weeds, is frequently stirred and some earth drawn up to the plants. Cane plantations are made twice a year, in May and June, or December and January; these being the rainy seasons. The first cutting of the cane does not



take place till a year after planting; but an established plantation is cut every six months. In good soil, the plants will last twenty years; in inferior soils not more than half that time.

The sugar-cane is propagated by cuttings of the stalk, taken near the top, and laid horizontally in the ground. In Jamaica and the other West India islands, the canes are usually cut for the purpose of making sugar, immediately after the autumnal rains, when the plant has acquired from eight to twelve feet in height. The arrowing of the cane is a sign of its attaining its full growth; and it is desirable, that it should be cut as early after this as possible. As soon as they are cut, the canes are stripped of their leaves and crushed between iron cylinders, to express the juice, which is received into a large copper vessel, called the *clarifier*, where it is mixed with lime, in the proportion of one pint to 100 gallons of juice, and heated to the temperature of 140°. A thick scum soon collects on the surface, which is left unbroken, and the clear liquor drawn from below, and introduced into a large boiler. Here it is boiled briskly, till the bulk of the liquor is considerably diminished, the scum as it forms being constantly removed. From this first boiler it is passed into a second, from that to a third and fourth, in each of which the boiling is continued. When sufficiently concentrated, it is poured into a large wooden vessel called the *cooler*, where it crystallizes or *grains* as it cools. The mass is then put into empty hogsheads, having a hole in the bottom, into which the stalk of a plantain leaf is thrust. Through these holes the *molasses* drain into a receiver, and the sugar thus cleared is brought to this country under the name of *muscovado* or *raw sugar*. The thick black syrup which remains mixed with it, well known by the name of *molasses*, is usually separated by draining. A gallon of raw juice yields on an average about a pound of raw sugar.

The raw sugar imported into Europe is still farther purified. It is dissolved in lime-water, and boiled along with a small quantity of blood. The lime abstracts any portion of acid that may still remain, and the blood coagulates and entangles all the



impurities, which are thus easily removed, by scumming the liquor as they rise to the top. When the liquor is boiled down to a proper consistence, it is poured into inverted conical moulds made of clay, where it consolidates, and any syrup which may remain is removed by allowing a little water to drain through it. The sugar-loaf is then thoroughly dried in an oven. The sugar thus purified is called *loaf-sugar*. When redissolved and heated in the same way a second time, it is called *refined sugar*. This process is said to have been first practised by the Venetians.

In the East Indies, where they make a very fine sugar, their process is simple and economical, but tedious. An account of the process, written by Mr. Anderson, may be found in the *Philosophical Magazine*, v. xxi. p. 272.

In North America, the farmers procure sugar for their own use, by boring the trunk of the *Acer saccharinum*, before referred to. It reaches maturity in about twenty years, and is then from two to three feet in diameter. In February, March, and April, the operation is performed with an auger to the depth of about three-fourths of an inch, and in an ascending direction. The hole is then deepened to two inches. A wooden spout is introduced into it to direct the juice as it flows. The sap flows from four to six weeks. When it ceases on the south side, the north side is bored. This process instead of injuring the tree improves it. An ordinary tree yields, in good seasons, from twenty to thirty gallons of sap, from which are made from five to six pounds of sugar. After being strained through a cloth, it is put into large flat kettles, usually mixed with quick lime, white of egg, and new milk. A spoonful of slacked lime is sufficient for fifteen gallons of sap; a little butter is added to prevent it from boiling over. When boiled down sufficiently, it is allowed to *grain*, or form small crystals, which constitute raw sugar.

**QUALITIES AND CHEMICAL PROPERTIES.**—Sugar procured pure by the preceding methods, has a strong sweet taste, but no smell. Its colour is white, and when crystallized, it is somewhat transparent. It has often a considerable degree of hardness; but it is always brittle, so as easily to be reduced to powder. When two pieces are rubbed together in



the dark, a green phosphorescent light is visible. Sugar is soluble in its own weight of cold water, and in a very small quantity of boiling water, forming a solution commonly called syrup. Sugar is likewise soluble in alcohol, and the solution affords crystals on evaporation; the form of the crystals is a four or six-sided prism, bevelled at each extremity, or sometimes acuminated by three planes. The specific gravity of sugar, according to Thompson, is 1.5629. Neither oxygen, azotic gas, nor the metals, have any sensible action on it. The sulphuric and muriatic acids decompose it, and form a black precipitate; nitric acid dissolves it and converts it into oxalic acid: many of the vegetable acids prevent it in a great measure from crystallizing. When lime is added to a solution of sugar, and the mixture boiled for some time, a combination takes place; the liquor retains its sweet taste, but acquires also a bitter and astringent one, and the sugar is disengaged, unchanged by the mineral acids. Sugar facilitates and increases the solubility of lime and strontian, and forms combinations with them. The fixed alkalis combine with sugar, and form compounds not unlike those which have just been described. Oils readily combine with sugar, and the mixture is miscible with water. The hydrosulphurets, sulphurets, and phosphurets of alkalies and alkaline earths decompose sugar, and convert it into a substance bearing a great resemblance to gum. When it is exposed to heat it melts, swells, and becomes brownish-black, emits air bubbles, and exhales a peculiar odour, known in French by the name *caromel*. At a red heat it bursts into flame, with a kind of explosion; it is completely decomposed; acetic and carbonic acids, carburetted hydrogen, and an empyreumatic oil, are disengaged, while a carbonaceous substance remains. When sugar is boiled with several of the metallic oxides, it reduces them to a lower state of oxidation; it also decomposes some of the metallic salts. The ultimate constituents of sugar, according to Gay Lussac, Thenard, and Berzelius, are as follows:—

	Gay Lussac and Thenard.		Berzelius.			
Oxygen	50.63	..	51.47	..	49.015	.. 49.083
Carbon	42.47	..	41.48	..	44.200	.. 44.115
Hydrogen	6.90	..	7.05	..	6.785	.. 6.802
	<hr/>		<hr/>		<hr/>	<hr/>
	100		100		100	100



**MEDICAL PROPERTIES AND USES.**—Sugar was known to the ancients, but was not used among them as it is at the present day with us. Paulus of Ægina, one of the last Greek writers, who flourished about the middle of the sixth century, is the first author who expressly mentions sugar; it was originally called *mel arundinaceum*, viz. reed or cane honey. Lucan, enumerating the eastern auxiliaries of Pompey, describes a people who used the juice of the sugar-cane as a common drink:

“ Qui bibunt tenerâ dulces ab arundine succos.”

The fresh juice of the sugar-cane is extremely nutritious, antiseptic, and laxative. Raw sugar and molasses coincide in medical and alimentary properties with the expressed juice of the cane; and refined sugar externally applied, is escharotic. In moderate quantities sugar is a wholesome condiment, and the slaves, when abundantly supplied with it, it has been observed in the West Indies, become fat and vigorous during the sugar harvest. When taken in excess, however, it is extremely apt to disagree with the stomach, producing nausea, loathing, thirst, diarrhœa, and general disorder of the primæ viæ. By some it has been asserted, that sugar is injurious to the teeth; but many instances are recorded of persons who have indulged largely in the use of this luxury without experiencing any inconvenience from it in that respect. Dr. Rush affirms that the plentiful use of sugar is one of the best preventatives against worms. It is also beneficial in scurvy and some chronic diseases of the skin; but its too liberal use is contraindicated in calculous disorders, and in hypochondriacal and dyspeptic habits. Sugar taken in large quantities both in a solid and soluble form, acts chemically on verdigris, while it increases the action of the bowels; it is, therefore, a valuable antidote to that violent poison. Externally it is sometimes applied to fungous ulcers. It has the property of preserving a number of animal and vegetable substances from decay or putrefaction, and is commonly employed for those purposes. To it we are indebted for the base of our conserves, and our medicated syrups form a useful appendage to the surgery.

**OFF. PREP.**—Syrupi omnes, L. E. D. Trochisci omnes, E. Confectiones omnes, L.





*Bonplandia trifoliata*

G. Reid del.

Weddell sc.

London. Published for the Author. Feb. 1830.



## BONPLANDIA TRIFOLIATA.

*Three-leaved Bonplandia.**Class V. PENTANDRIA.—Order I. MONOGYNIA.**Nat. Ord. QUASSIÆ, Juss. SIMARUBEÆ, Decand.*

GEN. CHAR. *Calyx* monophyllous, bell-shaped, 5-toothed. *Corolla* of 5 petals, cohering near the base, funnel-shaped. *Nectaries* 5, covering the germen.

*Syn.*—*Cusparia febrifuga.* Humboldt, *Geogr. des Plantes.*

*Bonplandia Angostura.* Rich. *Mem. de l'Institut. an. 1811. p. 82. t. 10.*

*Bonplandia a trois Feuilles.* Roq. *Phytogr. Medic. v. 2. t. 143.*

*Galipea officinalis.* Hancock in *Trans. of Med. Bot. Soc. v. 1. t. 2. ?*

*Bonplandia trifoliata,* Willd. *Act. Berol. an. 1802, p. 24; Humboldt et Bonpl. Pl. Equinoct. v. 2. p. 59. t. 97.*

FOREIGN.—*Angusture.* Fr.; *Angustura,* It.; *Angusturarinde,* Ger.

THIS tree, which affords the bark known in the Pharmacopœias under the name of *Angustura* or *Cusparia*, is a native of South America, growing abundantly in the woods, near the eastern bank of the Carony, at the foot of the hills that surround the missions of Capassui, Upata, and Alta Græcia. It also grows in the neighbourhood of Santa Fee de Cumana and Neuva Barcelona; and was called *Angustura* because it came from Neuva Guyana, or *Angostura*. The bark was originally brought from St. Domingo, about the year 1778, and was supposed to be derived from a tree indigenous to Africa, or to the Spanish West Indies; but this account appears to be incorrect, and MM. Humboldt and Bonpland have discovered it to be the produce of a tree not previously known, of Jussieus's natural order of the *Quassiæ*, to which Willdenow has given the name of *Bonplandia*, in honour of Baron Humboldt's companion. This name was subsequently adopted by Humboldt and Bonpland, in their splendid work on Equinoctial plants, though the former had



previously given it the name of *Cusparia febrifuga*. Our figure, which represents a raceme or spike of flowers of the *Bonplandia*, with a leaf in outline considerably reduced in size, was taken from the abovementioned work.

The *Bonplandia trifoliata* is an elegant evergreen, rising to the height of from sixty to eighty feet, having a cylindrical trunk, covered with a grey bark, and branching towards the summit. The wood is bright yellow, resembling box, and is susceptible of a high polish. The branches are numerous, alternate, the upper ones spreading nearly horizontally. The younger branches are covered with a smooth bark, of a bright-green colour, and studded with small greyish tubercles. The leaves, which are arranged alternately on the branches, are about two feet long, independent of the petiole, and composed of three oblong ovate leaflets, pointed at each extremity, and attached to a common petiole, from ten to twelve inches in length. The flowers are produced in a terminal raceme, composed of alternate peduncles, bearing from three to six flowers each. The calyx is inferior, persistent, five-toothed, and tomentose. The corolla funnel-shaped, and composed of five petals, so united below as to appear as one tube, with a five-cleft spreading tube. The nectary consists of five oblong glandular bodies, covering the base of the germen. The stamens are shorter than the petals, have white filaments inserted below the base of the petals, and furnished with oblong yellow anthers. The germen is superior, and composed of five ovate, hairy ovaries, with a single style, and five oblong, blunt, fleshy, green stigmas. The capsule consists of five oval, bivalve capsules, each enclosing a single seed.— Fig. (a) exhibits a flower spread open; (b) the calyx and style; (c) an anther; (d) the pistil with the nectary removed, showing the form of the germen; (e) pistil with the nectary; (f) the style.

**QUALITIES AND CHEMICAL PROPERTIES.**—*Cusparia* or *Angustura* bark is brought to England packed in casks. It varies in length, while some pieces are flat others are in quills of different dimensions. It has a disagreeable smell, somewhat resembling that of *Chenopodium olidum*. Its taste is bitter



and slightly aromatic. Externally it has a rough grey appearance, and is covered with a prodigious number of lichens,\* while the *Opegrapha Pellétiere* and *Pyrenula nitida*, are the only ones that have been observed on the *false* Angustura, a highly poisonous bark. Internally the true *Cusparia* is of a yellowish brown colour; and powdered, it is a pale yellow. It breaks with a compact, resinous fracture, and the intermediate substance is a mottled fawn colour. Prof. A. T. Thompson found it yield its active matter to cold and hot water in infusion, that it is not injured by boiling, and that alcohol precipitates part of the extractive. The alcoholic tincture reddens litmus paper, and becomes milky on the addition of water. The watery infusion precipitates infusion of galls, and of yellow cinchona, but not gelatine. It also precipitates sulphate of iron, tartarized antimony, sulphate of copper, acetate and superacetate of lead, oxymuriate of mercury, and pure potass, yellow. Nitrate of silver also precipitates it yellow, but assumes a violet colour after some time. Ammonia deepens the colour, but is not precipitated. Sulphuric acid gives the infusion a brown colour, and a lemon-colour precipitate is gradually deposited; whilst nitric acid deepens the colour to blood-red, and after some time affords a lemon yellow precipitate. Muriatic acid does not affect it. Sulphuric ether takes up one part from ten of the powder, and when evaporated on water leaves a greenish yellow, very acrid resin, and renders the water milky. By distillation with water, the bark yields a small portion of a white essential oil. These experiments ascertain the substances which are incompatible with the infusion, or tincture of *Cusparia* bark; and show that it contains *cinchonia*, *resin*, a peculiar variety of *extractive*, *carbonate of ammonia*, and *essential oil*.

On examining attentively the true and false Angustura barks, several striking differences will present themselves. The *true* bark appears to be removed with a sharp tool, which will be seen by examining the edges, while the *false* is evidently stripped from the tree, being entire as if obtained during the ascension of the sap. The plant which affords the false Angustura is not yet ascertained. At one time it was supposed to be the produce of the

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\* See Féés *Essai sur les Cryptogames des écorces officinales*.



*Brucea ferruginea*, a common tree in Abyssinia: this however is not true, as instead of coming from the neighbourhood of the Red Sea, it is brought from South America. In consequence of its yielding *strychnine*, besides a new alkali called *brucine*, it has been conjectured to be one of the *Strychnos* family; and with less probability perhaps, though a more recent opinion, it has been thought to be yielded by the *Solanum pseudo-quina* or *Quina do campo* of the Brazilians. The peculiarities of the two barks are also contrasted in the subjoined table:—

TRUE ANGUSTURA.	FALSE ANGUSTURA.
<i>Smell</i> , strong and disagreeable.	<i>Smell</i> , none.
<i>Taste</i> , bitter, not lasting.	<i>Taste</i> , insupportably bitter, and very lasting.
<i>Epidermis</i> , covered with lichens.	<i>Epidermis</i> , almost entirely free from lichens.
Put into water it soon becomes dry, and imbibes it readily.	Put into water it still remains hard.
Fragile when dry.	Exceedingly hard and difficult to break.
Very light, and of a rather spongy texture.	Very heavy, and of a compact texture.
<i>Fracture</i> , resinous and brilliant.	<i>Fracture</i> , unpolished and somewhat black.
Internally of a yellowish-brown colour, and capable of being detached in <i>laminæ</i> .	Internally nearly black, smooth, and not to be detached in <i>laminæ</i> .
Easily acted on with sharp tools.	Cut with difficulty.

M. Orfila ranks the false Angustura bark amongst the most energetic of the vegetable poisons, and by referring to his system of Toxicology, it will be seen that his experiments with it on animals fully bear out the assertion. It acts like *nuxvomica* and the other *strychnos*. For the methods of obtaining *brucine*, and for an account of its properties and action on the animal system we must refer our readers to a copious detail under ART. *Strychnos Nux-vomica*.

**MEDICAL PROPERTIES AND USES.**—True Angustura Bark is a valuable tonic, and has been considered more powerful in many diseases than the Peruvian bark, especially in simple debilities of the stomach and intestinal canal, in chronic diarrhæa, and in the last stages of dysentery. It was originally introduced as a remedy for intermittent fever; but its febrifuge virtues have been found, in this country at least, greatly inferior to that celebrated medicine. Dr. Hancock says, “I am fully convinced, from ample experience of the virtues of this bark, that it is one of the most valuable febrifuges we possess, being adapted to the worst and most malignant bilious fevers, while the fevers in which *cinchona* is chiefly administered, are simple intermittents, for the most part unattended with danger.” It is best given in powder, or infusion; of the former the dose may be from ℞j to ʒj.





*Croton Eleuteria.*

*G. Reid. del.*

*Weddell. sc.*

*London. Published for the Authors. Feb. 1830.*



## CROTON ELUTERIA.

*Elutheria, or Cascarilla-Bark Tree.*

SPEC. CHAR. *Leaves* ovate-acuminate, entire, smooth, silvery with orbicular scales beneath. *Racemes* axillary or terminal. *Stem* arborescent.

*Syn.*—Clusia Eluteria, foliis cordato-lanceolatis. *Lin. Sp. Pl.* 1476; *Amœn. Acad.* v. 5. p. 411.

Croton fruticosum erectum subvillosum, foliis cordatis acuminatis, spicis terminalibus. *Brown Jam.* 347.

Mali folio arbor artemisiæ odore et flore. *Sloan. Hist.* v. 2. t. 174. f. 2.

Croton Eluteria. *Willd. Sp., Pl.* v. 4. p. 545; *Swartz Prodr.* 100; *Fl. Ind. Occid.* 2. p. 1183; *Stokes Bot. Mat. Med.* v. 4. p. 444; *Woodv. Suppl.* p. 2. t. 211.

ALTHOUGH the London College has designated the plant which yields the Cascarilla bark, by the name of Croton *Cascarilla*, there is reason to believe that the tree or shrub to which this name was given by Linneus, does not furnish the bark that we use in medicine, but that it is obtained from the Clusia *Eleuteria* of that author. It is the Croton *Eluteria* of Swartz and Willdenow; and Europe is supplied with the bark exclusively from the Bahama islands, where the plant grows in great abundance. It is also said to be a native of Jamaica, and grows in St. Domingo, in dry, stony places, about the Port de la Paix, from whence it is called *Sauge du Port de Paix*. "Among other circumstances," says Dr. Woodville, to whose work we are indebted for the accompanying figure and description, "which tended to involve the parental source of Cascarilla long in uncertainty, was the assertion of some authors, that it was a native of the Spanish Main, and was thence imported into Europe: thus founding a presumption that the Cascarilla and Eleuteria barks were different, and the latter only was the pro-



duce of the Bahama islands.\* But this assertion we have discovered to be contrary to facts; for upon inquiry we do not find that this drug was ever imported from Spanish America; but that the Bahamas have constantly supplied the European markets with Cascarilla bark, a parcel of which was sent here from one of those islands, along with specimens of the tree producing it; of which the figure here given is a faithful representation, as may be seen by comparing it with the original in the herbarium of Sir Joseph Banks. But it will be necessary to observe here, that Dr. Wright, in his account of the medicinal plants growing in Jamaica, gives the name *Croton Eleutheria* to a tree, the bark of which, he says, is the same as the Cascarilla or *Eleutheria* of the shops.”†

The *Elutheria* is a small tree, seldom exceeding twenty feet in height, and sending off numerous branches especially towards the top; the bark which covers the branches is brown and smooth; but that of the trunk is externally more white and rough. The branches are brittle, and, when broken, ooze out a thick balsamic juice. The leaves are entire, ovate-lanceolate, somewhat cordate, and elongated towards the apex, which is blunt, and placed alternately on short petioles. The upper surface is studded with small orbicular scales; the under is whitish, shining, and silvery. The flowers are in axillary and terminal spikes, and are composed of a calyx divided into five ovate leaflets, and an equal number of small whitish, oblong, obtuse petals. The male flower has ten awl-shaped filaments, bearing erect, compressed anthers. The female produces a roundish germen, supporting three bifid spreading styles, with obtuse stigmas. The capsule is oblong, marked with six furrows, and divided into three cells, each containing a solitary, oval, shining seed.

QUALITIES AND CHEMICAL PROPERTIES.—This bark is brought to us in chests and bales. It is either in curled pieces, or in short quills of a greyish colour on the outside, and a

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\* See Boulduc, *Hist. de l'Acad. des Scien. an. 1719. p. 14.* Spielman, *MM. p. 249.*

† See *Medical Journal, v. 8. for 1787, p. 249.*



brownish-red on the inner. It is covered with a great variety of lichens.\* It has an aromatic agreeable odour, and when burnt emits a smell resembling that of musk. To the taste it is warm, bitter, and aromatic; and breaks with a resinous fracture. The powder is of a greyish brown colour. It yields its virtues partially to alcohol and to water; completely to proof spirit. According to an analysis of Trommsdorf, 4696 parts of it yielded,

Mucilage and bitter principle	. 864
Resin	. 688
Volatile oil	. 72
Water	. 48
Woody fibre	. 3024
	4696

Ann. de Chim. xxij. 219.

**MEDICAL PROPERTIES AND USES.**—Cascarilla or Elutheria bark appears to have been first introduced into practice by J. And. Stisser, doctor in medicine, and professor in the university of Juliers, who, in his *Specimen Actor. Laboratorii Chymici*, published at Helmstadt in 1693, relates that he had some of it given him by a person of distinction, at that time just returned from England, who told him that it was then the custom in that country to mix it with tobacco, in order to render it more agreeable for smoking. It was afterwards sold in the public markets at Brunswick for Peruvian bark, and in his hands it proved carminative and diuretic, and was useful in arthritic and

\* The subjoined enumeration is to be found in a work by M. Fée, entitled "*Essai des Cryptogames des écorces exotiques officinales.*"

Opegrapha abbreviata.	Fissurina lactea.	Pyrenula leucostoma.
———— Comma.	Arthonia divergens.	———— leucostoma.
———— calcea.	———— polymorpha.	———— endoleuca.
———— heterocarpa.	———— dilatata.	Porina americana.
———— myriocarpa.	Sarcographa tigrina.	Verrucaria epidermis.
Graphis exilis.	———— Cascarillæ.	———— planorbis.
———— tortuosa.	Chiodecton paradoxum.	———— caduca.
———— pachnodes.	Trypethelium Sprengelii.	———— serialis.
———— Cascarillæ.	———— crassum.	———— Gandichalda.
———— lineola.	———— lageniferum.	Thelotrema lepadium.
———— serpentina.	———— Scoria.	Coniocarpon myriadeum.
———— caribæa.	———— porosum.	———— Cascarillæ.
———— Afzelii.	Parmentaria astroidea.	Lecidea? arthonoides.
———— endocarpa.	Pyrenula nitida.	Parmelia perlata.
Glyphis favulosa.	———— pinguis.	



scorbutic cases. From an historical account of an epidemic fever of the intermittent form, accompanied with *petechiæ*, which raged at Nurenburch, in the year 1694, the usual remedies proving ineffectual, J. Ludovicus Apinus, a physician of Herspruch, was induced to add to them the powder of cascarilla, which not only proved successful, but also relieved the dysentery which succeeded the fever. He states further, that copious perspirations were produced, without reducing the patient's strength; the bowels were also kept open, and those who did not sweat had generally three or four alvine evacuations daily. Where menstrual or hæmorrhoidal fluxes had been suppressed at the beginning of the disorder, they generally reappeared on the use of this medicine.\* In 1719 an epidemic dysentery raged in France,† which appears to have yielded more readily to cascarilla than to any other remedy; and it was observed to support the strength and promote appetite, when lowness of spirits and debility of stomach followed the complaint.

It was soon after much used all over Germany, as a substitute for Cinchona bark; and although its virtues were too highly extolled in that country, it is still employed with considerable success. In England its real merits are pretty well appreciated, being considered a useful, warm, aromatic bitter, and as such employed as an efficacious stomachic; for flatulent cholick, chronic dysentery, and the diarrhœa of acute fevers: and although we do not depend on it alone in ague, we often combine it with cinchona bark, by which the stomach is enabled to bear larger quantities of the latter than it otherwise would. By the late Dr. Underwood it was highly esteemed as a remedy for the gangrenous thrush which sometimes affects children.

**DOSE.**—From ten to thirty grains of the powder three or four times a day.

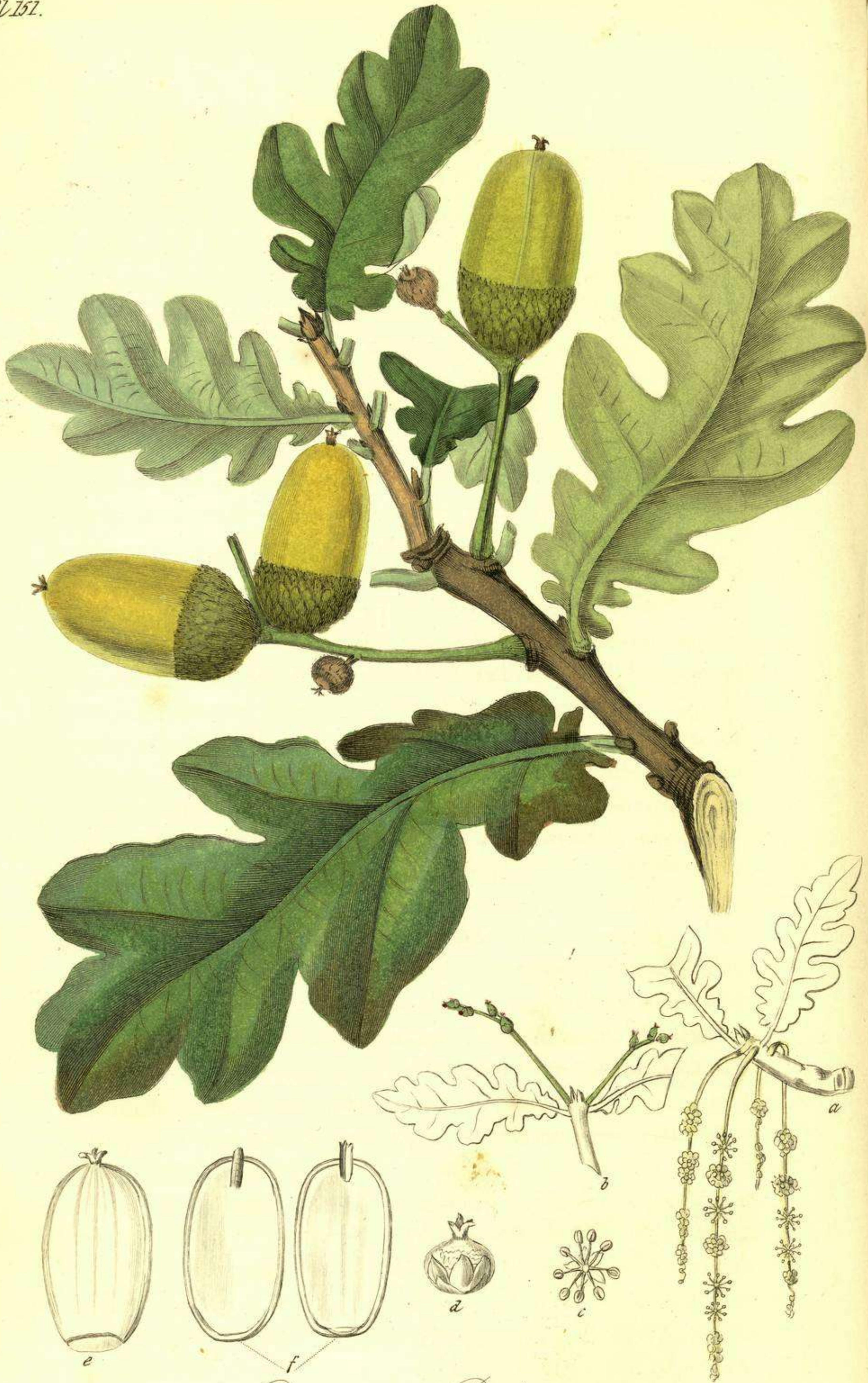
**OFF. PREP.**—*Infusum Cascarillæ*, L.  
*Tinctura Cascarillæ*, L. D.  
*Extractum Cascarillæ*, D.

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\* *Historica relatio febris epidemicæ*, 1697.

† *Hist. de l' Acad. Royale des Sciences*, 1719.





*Quercus Robur.*

G. Reid. del.

Weddell. sc.

London. Published for the Authors. Feb. 1830.



QUERCUS ROBUR.

*Common British Oak.*

*Class XXI. MONŒCIA—Order VII. POLYANDRIA.*

*Nat. Ord. AMENTACEÆ, Lin. 50. Juss. 99.*

GEN. CHAR. Male flowers in a *catkin*. *Calyx* in several segments, *Corolla* none. *Stamens* 5 to 10.

Female. *Calyx* double; *outer* inferior, scaly, undivided; *inner* superior, in 6 deep segments. *Corolla* 0. *Style* 1. *Nut* coriaceous, surrounded at the base with the persistent outer calyx.

*Syn.*—*Quercus latifolia*. *Raii. Syn.* 440.

*Quercus vulgaris*. *Ger. Em.* 1339. 1340. *f. f.*

*Quercus cum longo pediculo*. *Bauh. Pin.* 420; *Duham. Arb. v. 2.* 202. *t. 47.*

*Quercus*. *Trag. Hist.* 1102. *f.*; *Fuchs. Hist.* 229. *f.*; *Matth. Valgr. v. 1.* 184. *f. Camer. Epit.* 111. *f.*

*Quercus pedunculata*. *Willd. Sp. Pl. v. 4.* 450.; *Ait. Hort. Kew. v. 5.* 294.; *Ehrh. Pl. Off.* 168.

*Quercus Robur*. *Lin. Sp. Pl.* 1414; *Fl. Brit.* 1026; *Eng. Bot. v. 19.* *t.* 1342. *Hook. Scot.* 373; *Mart. Rust. t.* 10. *Woodv. t.* 126.

FOREIGN.—*Chêne commun à longo pedoncules*, Fr.; *Quercia*, *Rovera*; It.; *Roble*; *Carballo*, Sp.; *Carvahlo*, Port.; *Gemeine Eich*, Ger.; *Eeg*, Dan.; *Ek*. Swed.; *Dub.*; *Quercetum Dubrowa*, Rus.; *Dab. Pol.*; *Mesche*, Turk.; *Pélut*, Pers.; *Kara Nugi*, Jap.

OF this genus, so valuable for its economical uses, there are only fourteen species described by Linneus. The discoveries of Thunberg, Humboldt, and other distinguished travellers, have so greatly enriched the subject, during the last fifty years, that Willdenow, who wrote in 1805, describes seventy-six, and Persoon, about the same period, enumerates eighty-two species. Twenty-six species were discovered in North America, by two indefatigable naturalists, father and son, named Michaux; and Humboldt and Bonpland have mentioned twenty-four others, which they found in the course of their travels in South America. Of the one hundred and forty species known at the



present day, more than one half belong to America. The various species of oak are mostly large trees; some are evergreens, and others are deciduous, or lose their leaves during the winter. In this country we have two distinct species of oak, the *Quercus Robur*, and the *Quercus sessiliflora*; the former of which affords the best timber, and is by far the most common in the woods and hedges of Britain; flowering in April.

The British Oak, it is well known, is a majestic forest tree, distinguished above all others for the slowness of its growth, its great size, longevity, and use. In woods, as Professor Martyn justly observes, it rises to a considerable height; but singly, it is rather a spreading tree, sending off horizontally immense branches, which are much divided, more or less wavy, and covered with a rough brown bark. The leaves are deciduous, alternate, nearly sessile, or on very short footstalks, obovate, oblong, smooth, irregularly sinuated, with obtuse, rounded, entire marginal lobes; their upper surface of a rich shining green, paler, and slightly glaucous underneath. The *male* or barren flowers are in numerous, pendulous, stalked, yellowish, downy catkins, two inches long, from scaly buds; the *female* on axillary, simple stalks, few, scattered, sessile, small, and greenish tinged with brown. The calyx of the male flower is a scale of one leaf, bell-shaped, and generally five-cleft; that of the female is double; the outer one coriaceous, entire, becoming subsequently enlarged, and constituting the hard, tubercled, woody cup of the nut or acorn; the inner of one leaf and divided into six pointed, downy segments, closely surrounding the base of the germen. The filaments are about ten, longer than the calyx, and supporting roundish 2-lobed anthers. The germen is ovate, crowned with a short conical style, and three obtuse recurved stigmas. The fruit is an oval, coriaceous, smooth nut, fixed to the inside of the outer calyx, as in a shallow cup, and dropping from it when the nut ripens in autumn. Fig. (*a*) represents a sprig with the male catkins; (*b*) the same with the female flowers; (*c*) a male flower magnified; (*d*) a female flower magnified; (*e*) the nut or acorn; (*f*) the same divided longitudinally.



The knotty Oak of England, the "unwedgeable and gnarled oak," as Shakespeare called it, affords the strongest and most durable timber known. The oak timber imported from America, and that which is grown in the central parts of continental Europe, is greatly inferior to that of the true British Oak, especially in closeness of grain, hardness, and resistance of cleavage. It has, indeed, been supposed, that the inferiority of some of our more recently built ships, and the ravages which the dry-rot is making among them, have arisen from the substitution of foreign oak for that of native growth. It is a fact well known to botanists, but of which our planters and purveyors of timber appear to have no suspicion, that there are two distinct species of Oak in England, the *Quercus Robur*, and the *Q. sessiliflora*, the former of which affords a valuable wood, little liable to rot; the other a wood of inferior quality, very apt to decay, and not half so durable. It is therefore a subject of national importance to distinguish them, especially when the timber is to be applied to the purposes of naval architecture. The sessile-fruited Oak (*Mart. Rust. t. 12.*) is less common than the species here figured, but it occurs frequently in the New Forest and other parts of Hampshire, in many parts of Norfolk, and about London. It may readily be discriminated from the British Oak, by having its petioles or acorn-stalks short, and the leaf-stalks long; whereas the *Robur* has the acorn-stalks long, and the leaf-stalks short. Professor Martyn, who has given some interesting remarks on this subject says, "The Durmast Oak differs very widely from the true British species, not only in the essential characteristics of the petioled leaves and sessile clustered acorns, but in several other remarkable circumstances. The whole tree has much the air of the chesnut, and is of a freer growth than the true Oak; the bark is of a lighter colour and smoother, the wood not so strong or of so firm a texture; the leaves are rather serrate than sinuate about the edge, with five, six, or seven sharp indentures on each side; whereas in the common oak there are only three or four, forming wide sinuses, blunt at the end; they are of a yellow green on the upper side, and a pale green on the under. In the specimens which we received in October, the under surface was of a hoary grey colour, with the ribs inclining to purple; an appearance which the leaves of the common Oak never put on. These, together with the flowers and fruit, are said to appear later in the season than those of the first sort; and the leaves continue longer on the trees, sometimes the whole winter. Now if it should appear from experience," continues the learned Professor, "that the characters here delivered are permanent; and that Oak trees which bear sessile leaves, with the acorns or fruit-stalks, are of a superior quality as to their timber, to those which have the leaves or foot-stalks with sessile fruits; then we shall have an easy clue to direct us in our choice of trees for planting: for although it will be many years before the trees will be known by their fruit, yet they may from the first be distinguished by their leaves; and when planters become better acquainted with them, they will see the difference immediately by their air and habit."

With respect to age, the Oak exceeds any other tree, except perhaps the yew; even the timber is useless for purposes of art till it has grown



from fifty to seventy years. The age to which it can continue to vegetate has commonly been estimated at three hundred years; but tradition carries some trees which have escaped the axe to a period much more remote. In the New Forest, Evelyn counted, in the sections of some trees, three or four hundred concentric rings or layers of wood, each of which is supposed to record a year's growth. Not many years ago, the oak in Torwood Forest, in Stirlingshire, supposed to be the largest tree in Scotland, under the shadow of which Sir William Wallace used to assemble his army to oppose the tyranny of Edward, is said to have been still standing. Mr. Gilpin, in his work on Forest Scenery, speaks of a "few venerable oaks in the New Forest, that chronicle upon their furrowed trunks ages before the conquest."

The oak attains a very great size, and, when it stands alone, specimens are sometimes met with whose trunks exceed forty feet in circumference. An oak, figured in the second edition of Evelyn's *Silva*, was felled at Withy Park, Shropshire, in 1697, which was nine feet in diameter, without the bark; there were twenty-eight tons of timber in the body alone; and the spread of the top, from bough to bough, was one hundred and forty-four feet. The Greendale Oak, in Welbeck Park, is supposed to be about seven hundred years old; and measures thirty-five feet three inches in circumference near the base. The Framlingham Oak (Suffolk), used in the construction of the Royal Sovereign, was four feet nine inches square, and yielded four square beams, each forty-four feet in length. Dr. Plott mentions an oak at Norbury, which was of the enormous circumference of forty-five feet; and the same author mentions another at Keicot, under the shade of which four thousand three hundred and seventy-four men had sufficient room to stand. The Boddington Oak, in the vale of Gloucester, in 1783, was fifty-four feet in circumference at the base; and the hollow cavity was sixteen feet in its largest diameter, with the top formed into a regular dome. The Fairlop Oak, in Hainault Forest, in Essex, though inferior in dimensions to the last mentioned, was a tree of immense size; the tradition of the country traces it half way up the Christian æra. A few years ago its branches overspread an area of nearly three hundred feet; it is now entirely destroyed, but it is still customary, on the first Friday in July, to hold a fair on the spot where it formerly stood. Damorys' oak, in Dorsetshire, was the largest oak of which mention is made. Its circumference was sixty-eight feet; and the cavity of it, which was sixteen feet long and twenty feet high, was, about the time of the Commonwealth, used by an old man for the entertainment of travellers. The dreadful storm in the third year of the last century shattered this majestic tree; and in 1755 the last vestiges of it were sold as firewood. On the north-west prospect of Whinfield Forest, near Appleby, in Westmoreland, stood an oak, not many years ago, called the "Three-brethren tree," whose circumference was forty-two feet near the base; and we are informed that in Lowther woods, in the same county, there are oaks of still greater dimensions.

From Domesday Book, it appears that in the time of William the Conqueror the Oak was chiefly prized for its acorns, and the value of the woods in several places is ascertained by the number of hogs they



would fatten. During the time when the Saxons held sway in this country, the fattening of hogs upon acorns was accounted so important a branch of domestic economy, that, about the close of the seventh century, King Ina enacted the *panage laws* for its regulation. It is not recorded that acorns were ever used as human food in this country, but they are still said to be so used by the poorer peasants in the south of Europe. Pliny informs us, that in his time acorns were brought to table in Spain for the dessert; and Cervantes, in his romance of Don Quixote, not only sets them before the goatherds as a dainty, but picks out the choicest for the countess herself. The oaks with edible acorns are not however of the same species as the British Oak. The Italian Oak, which Virgil represents as the monarch of the forest, and of which he has given such a splendid description in the second book of his Georgics, bore fruit which was used as food. The *Quercus ilex*, the common Evergreen Oak, or Holm Oak, which occurs in various parts of the south of Europe, and north of Africa, bears fruit, which in its flavour is said to resemble that of our sweet chesnut. There is another large handsome evergreen Oak, *Quercus Ballota*, or sweet-acorn Oak, a native of Barbary and Spain, of which the acorns are eatable and very palatable, either raw or roasted. During the late war in Spain, the French armies, were very fortunate in finding subsistence upon the ballota acorns, in the woods of Salamanca. The *Quercus castanea*, the yellow Oak, which is found in all the fertile countries to the west of the Allegany mountains, and on the banks of the Delaware, yields abundance of acorns, which are sweet, and very palatable. Another American species *Q. bicolor*, or swamp white Oak, also produces acorns, which are sweet and edible, like those of the *ballota*, *Prinus*, *cuspidata*, *Esculus*, and several others.

**QUALITIES AND CHEMICAL PROPERTIES.**—Oak bark has no smell, but a rough astringent taste, which it yields to alcohol and water. The infusion contains both gallic acid and tannin, the latter in considerable quantity. An ounce of bark afforded, in Sir H. Davy's experiments, one hundred and eleven grains of solid matter by lixiviation, of which seventy-seven were tannin; but the proportions vary in quantity according to season and the age of the tree which yields the bark. Cut in the spring, it will be found to contain four times as much tannin as when obtained in winter.

**MEDICAL PROPERTIES AND USES.**—Oak bark is a powerful astringent and tonic, and united with bitters and aromatics has been recommended in intermittents. When Cinchona bark cannot be obtained, and the stomach rejects its preparations, oak bark may be found of service, but the former is so superior to all its competitors, that oak bark is but a poor substitute. It

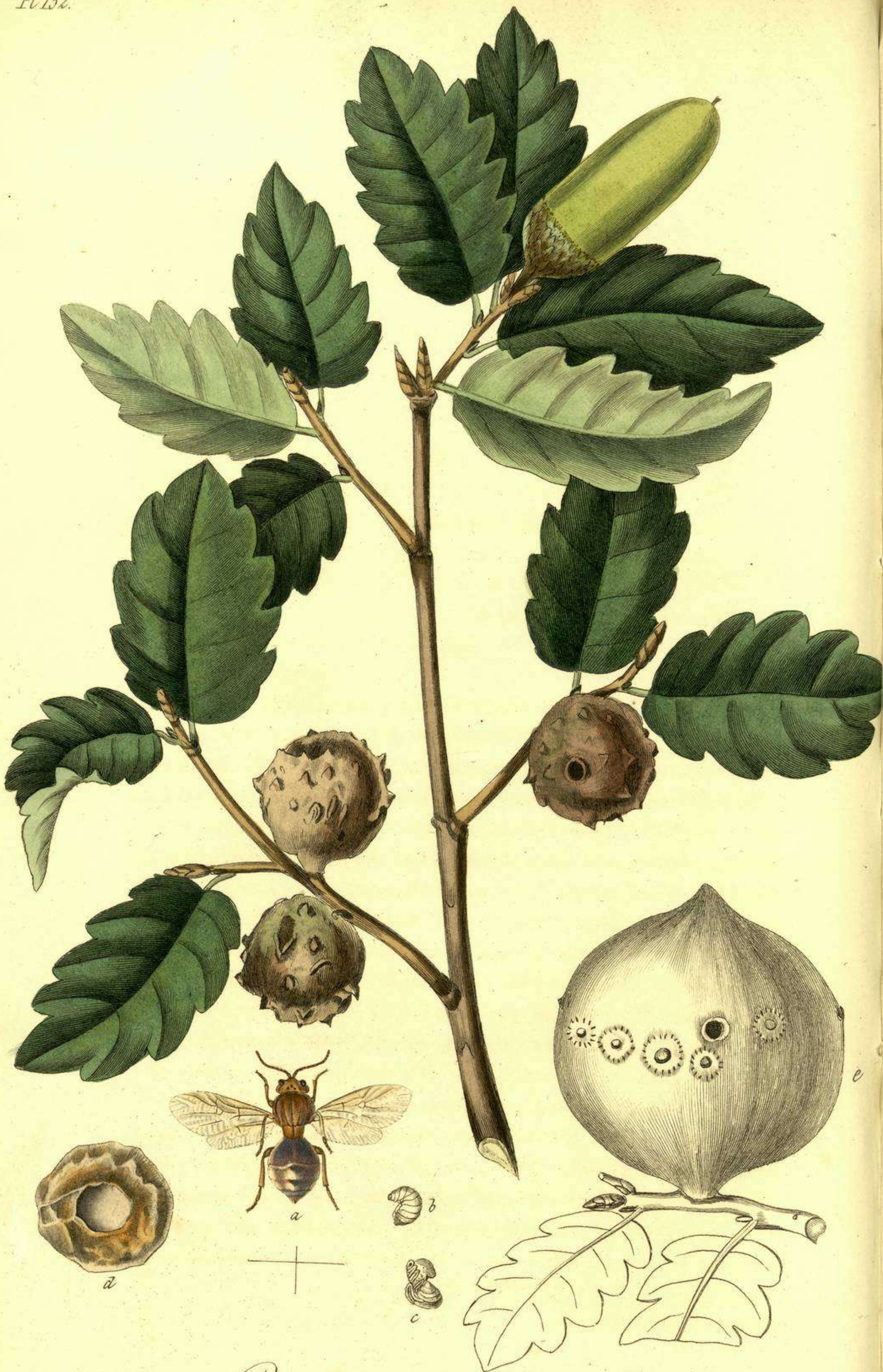


is more useful in internal passive hæmorrhages and diarrhœa, and may be given in doses of from fifteen to thirty grains every six hours. A strong infusion or decoction is often employed as an astringent gargle for cynanche and relaxation of the uvula ; as an efficacious injection in prolapsus uteri, leucorrhœa and profuse menorrhagia ; and as a fomentation in prolapsus ani and hæmorrhoidal affections.

OFF. PREP.—Decoctum Quercus, L. E.

Extractum Corticis Quercus, D.





*Quercus infectoria.*

G. Reid. & C. M. Gortis. del.

Waddell sc.

London. Published for the Authors. Feb. 1. 1830.



## QUERCUS INFECTORIA.

*Oriental Gall Oak.*

SPEC. CHAR. *Leaves* ovate-oblong, smooth on both sides, deeply toothed, somewhat sinuated, deciduous. *Calyx*, tessellated. *Fruit*, sessile. *Nut*, elongated, nearly cylindrical.

Syn—*Quercus infectoria*. Olivier *Voy. dans L'Empire Othoman. Atl. t. 14, 15* ;  
Willd. *Sp. Pl. v. 4. p. 436.*  
Farber *Eiche. Nom. Triv. Willd.*

OLIVIER appears to have been the first who clearly pointed out this species as being the tree which produces the nut-galls of commerce, although *Quercus cerris* is still retained by the Edinburgh college. The gall-oak, according to this distinguished traveller, is scattered throughout all Asia Minor, from the Bosphorus as far as Syria, and from the coasts of the Archipelago, as far as the frontiers of Persia.\* Captain Kinneir says that the tree is common in Kurdistan and Armenia ;† and General Hardwicke, in the narrative of his journey to Sirinagur, asserts that he found this *Quercus* growing in the neighbourhood of Adwaanie ;‡ the greater part, however, of the galls found in the Indian Bazaars are supposed to be the product of Persia, from whence they are brought by the Arab merchants. This oak seldom exceeds the height of six feet, and the stem is crooked, with the habit of a shrub rather than a tree. The leaves are an inch and a half long, on short petioles, deciduous, of a bright green colour, and smooth on both sides, but paler beneath ; with their serratures deep and broad, not acutely pointed. The fruit is solitary, and

\* See *Olivier's Travels, (translation,) p. 41.*

† *Geographical Memoir of the Persian Empire, p. 258.*

‡ *Asiatic Researches, v. 6. p. 376.*



nearly sessile. The acorn is smooth, cylindrical, and two or three times longer than the cup, which is slightly downy, with indistinct scales. The galls are produced on the young branches, from the puncture of a small hymenopterous insect of the Linnaean genus *Cynips*, but which was first described by Olivier in the *Encyclopedie Methodique*, under the name of *Diplolepis gallæ tinctoriæ*. The insect punctures the tender shoot with its curious spiral sting, and deposits its egg in the puncture. In a few hours the cellular tissue swells, a tumour is produced, and the egg becomes inclosed in a fleshy chamber, which not only serves for shelter and defence, but also for food; the larvæ feeding upon its interior, and there undergoing its metamorphosis. The oak-apple is an excrescence of the same nature, though effected by a different species of insect. "No productions of nature," says a celebrated entomologist, "seem to have puzzled the ancient philosophers more than galls. The commentator on Dioscorides, Matthiolus, who, agreeably to the doctrine of those days, ascribed their origin to spontaneous generation, gravely informs us that weighty prognostications as to the events of the ensuing year may be deduced from ascertaining whether they contain spiders, worms or flies. Other philosophers, who knew, that excepting by rare accident, no other animals are to be found in galls, besides grubs of different kinds, which they rationally conceived to spring from eggs, were chiefly at a loss to account for the conveyance of these eggs into the middle of a substance in which they could find no external orifice. They therefore inferred that they were the eggs of insects deposited in the earth, which had been drawn up with the roots of trees along with the sap, and after passing through different vessels had stopped, some in the leaves, others in the twigs, and had there hatched and produced galls. Bede's solution of the difficulty was even more extraordinary. This philosopher, who had so triumphantly combated the absurdities of spontaneous generation, fell himself into greater. Not having been able to witness the deposition of eggs and the parent flies in the plants that produce galls, he took it for granted that the grubs which he found within them could spring from eggs; and he was unwilling to admit their origin



## FICUS CARICA.

*Common Fig-tree.*

Class XXIII. POLYGAMIA.—Order III. TRIÆCIA.

Nat. Ord. SCABRIDÆ, Lin. URTICÆ, Juss.

GEN. CHAR. *Flowers* on the inside of a fleshy turbinate receptacle, nearly closed at the mouth.

Male. *Calyx* 3-cleft. *Corolla* 0. *Stamens* three.

Female. *Calyx* inferior 5-cleft. *Corolla* 0. *Pistil* 1.

*Seeds* roundish, compressed.

SPEC. CHAR. *Leaves* 3 or 5-lobed, scabrous, bluntish, wavy or somewhat toothed. *Fruit* top-shaped, umbilicated, smooth.

Syn.—Ficus. *Raii Hist.* 2. 1431; *Bauh. Hist.* 1. 128; *Matth. Vulgr.* V. 1. 261. f.; *Dod. Pempt.* 812.

Ficus et Chamæficus. *Ger. Em.* 1510.

Ficus foliis palmatis. n. 1607. *Hall. Hist.* v. 2. 280; *Hort. Cliff.* 471; *Trew. Errht. t.* 73. 74; *Gouan Hort.* 521; *Scop. Carn.* 1251.

Ficus carica. *Lin. Sp. Pl.* 1513; *Willd. v.* 4. 1131; *Vahl. Enum.* 2. 204; *Hort. Kew,* 3. 449; *Stokes,* 4. 361; *Woodv. v.* 2. t. 130.

FOREIGN.—*Figuier commun,* Fr.; *Higuera mucho,* Sp.; *Figuera brava,* Port.; *Feigenbaum,* Ger.; *Mao hoa qua,* Chin,

THE Fig-tree is considered as a native of Asia; but has been cultivated in the south of Europe from the most remote antiquity. "It was probable," says a late writer, "known to the people of the East before the Cerealia; and stood in the same relation to men living in the primitive condition of society, as the banana does to the Indian tribes of South America, at the present day. With little trouble or cultivation it supplied their necessities; and offered, not an article of occasional luxury, but of constant food, whether in a fresh or a dried state. As we proceed to a more advanced period of the history of the species, we still find the fig an object of general attention.



The want of blossom on the fig-tree was considered as one of the most grievous calamities by the Jews. Cakes of figs were included in the presents of provisions by which the widow of Nabal appeased the wrath of David.\* In Greece, when Lycurgus decreed that the Spartan men should dine in a common hall, flour, wine, cheese, and figs, were the principal contributions of each individual to the general stock. The Athenians considered figs an article of such necessity, that their exportation from Attica was prohibited. At Rome, the fig was carried next to the wine in the processions in honour of Bacchus, as the patron of plenty and joy; and Bacchus was supposed to have derived his corpulency and vigour, not from the wine, but from the fig. All these circumstances indicate that the fig contributed very largely to the support of man; and we may reasonably account for this from the facility with which it is cultivated in climates of moderate temperature. Like the cerealia, it appears to flourish in a very considerable range of latitude; and in our country frequently produces fine fruit, without much difficulty, in the open air."† The fig is said to have been first introduced into this country, in 1525, by Cardinal Pole; and two trees which were brought from Italy, are still in the Archbishop's garden at Lambeth. They are of the white Marseilles kind, and bear excellent fruit. They are of extraordinary size, the trunk of one being twenty-eight, and the other twenty-one inches in circumference. In this country, fig-trees require good walls, with a south or south-east aspect; but in some parts of England, as about Worthing in Sussex, they are trained as standard trees, and produce abundance of fruit, which ripens in August and September.

The stem seldom exceeds fifteen feet in height; is branched from the bottom, and exudes, when wounded or broken, a milky juice. The branches are long, twisted, round, pliant, rough when young, and covered with an ash coloured bark. The leaves are deciduous, nearly a span in length, rough on the upper surface, petioled, and irregularly divided into three or five

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\* *Library of Entertaining Knowledge*, v. ii. part 2. p. 242.

† 1 Samuel xxv. 18.



from spontaneous generation,—an admission which would have been fatal to his own brilliant discoveries. He therefore cut the knot, by supposing that to the same *vegetative soul* by which fruits and plants are produced, is committed the charge of creating the larvæ found in galls.” On the plate we have given an accurate figure of the nut-gall insect, drawn by Mr. Charles Curtis, and have drawn up the subjoined description for the information of entomologists.\*

QUALITIES AND CHEMICAL PROPERTIES.—Two kinds of gall-nuts are met with in commerce. The first being the produce of the first gathering, before the fly has issued from the gall; they are of a blackish blue, or deep olive colour, unequal, warty on their surface, hard to break, heavy, and of a close compact texture, are named *yerli* by the natives, and known in trade by the names *black* or *blue galls*, and *green galls*. The others being gathered afterwards and pierced by the insect, are of superior quality and denominated *white galls*. They are of a pale brown or whitish colour, smooth, round, easily broken, less compact, and of a larger size. Another sort of gall (fig. *e*) is said by Olivier to be found on the same oak. It is much larger than either of the others, spongy, very light, of a brownish red colour, covered with a resinous coat, and furnished with a circular row of tubercles placed nearly towards the most prominent part. The best galls come from Aleppo, in bags and cases.

With the assistance of heat, galls are nearly entirely soluble in water: the decoction precipitates the oxides of iron of a deep

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\* DIPLOLEPIS GALLÆ TINCTORIÆ.

ORDER Hymenoptera.

FAM. Diplolepidæ, Latr.

Genus CYNIPS. Lin. Fabricius.—DIPLOLEPIS. Oliv. *Ency. Method.*—Latreille. *Hist. Nat. des Crust. et des Insect.* v. 13. p. 206.

This insect (fig. *a* pl. 152.) is about one-fourth of an inch long, and more than half an inch in expanse from the tips of the wings. It is pale testaceous, clothed with a very short silky pubescence; the *head* is small, the *eyes* and *ocelli* black; the *antennæ* are as long as the thorax, slender, filiform, and composed of 14 joints; the *palpi* are very short: the *thorax* is large and globose, with two or three impressed longitudinal lines or channels on either side; the *scutellum* is globose, and prominent; the *abdomen* is not longer than the thorax, sub-globose, compressed, shining, vitreous, and blackish at the base; the *ovipositor* is exerted in the female. The superior *wings* are much larger than the inferior, and have a few nerveurs at the costa and base. The *legs*, which are six in number, are rather short. The *larva* (*b*) is naked, and changes into a *chrysalis*, or *pupa* inclosed in a crustaceous covering (*obtecta*). Fig. (*d*) represents a gall broken transversely, to shew the cavity from whence the insect had escaped.



black colour, and forms the well-known substance, ink. The infusion reddens the vegetable colours from the action of the gallic acid, which may be obtained from it in considerable quantity, merely by sublimation. The solution contains a large quantity of tannin, as it gives a very copious precipitate with solution of gelatin. It has also been supposed to hold dissolved extract and mucilage: the existence of the former is doubtful, and Dr. Bostock's experiments prove that there is no sensible portion of the latter. The strongest infusion Sir H. Davy could obtain at 56° Fahr., by repeated infusion in distilled water, of the best Aleppo galls, broken into small pieces, was of the specific gravity of 1.068. Four hundred grains afforded by lixiviation 185 grains of dry solid matter, of which 130 were tannin, 31 gallic acid, 12 saline and earthy matter, and 12 *supposed* to be mucilage and extractive matter. According to Prof. Branchi, galls by distillation with water afford a concrete vegetable oil, and M. Chevereul in 1815 also discovered in them a new acid, which M. Braconnot has absurdly proposed to call *ellagic*, from the word *galle* reversed.

**MEDICAL PROPERTIES AND USES.**—Galls being most powerful astringents, have been occasionally prescribed when such remedies are indicated, as in long protracted and obstinate diarrhæas, intestinal hæmorrhages and intermittents; and when judiciously combined with tonics and aromatics, have been found useful. Much caution is required in administering so powerful a medicine; and the dose should not exceed ten grains or a scruple three times a day. An infusion made with two drachms of bruised galls to twelve ounces of boiling water, may be used as an injection, and in conjunction with a small portion of spirits of wine forms a good gargle for relaxation of the uvula and surrounding parts. One drachm of the powder to eight of lard, constitutes an efficacious application to sore nipples and chronic piles; and to increase its utility in the latter complaint, a little opium is occasionally added. An infusion of galls is the best remedy against an overdose of ipecacuanha, almost immediately rendering it inert.

**OFF. PREP.**—Tinctura Gallarum, E. D.





*Scilla maritima.*

G. Reid. del.

Woodell. sc.

London. Published for the Authors. March. 1830.



## SCILLA MARITIMA.

*Officinal Squill, or Sea Onion.**Class VI. HEXANDRIA—Order I. MONOGYNIA.**Nat. Ord. CORONARIÆ, Lin. ASPHODELI, Juss.*

GEN. CHAR. *Corolla* inferior, of six ovate-oblong petals, spreading, deciduous. *Stamens* thread-shaped.

SPEC. CHAR. *Bulb* coated, pear-shaped, scaly at the top. *Flowers* much earlier than the leaves, in a strong, dense cylindrical cluster. Lower *bractees* elongated at the base.

*Syn.*—*Scilla Hispanica vulgaris.* *Ger. Em.* 171; *Clus. Hist.* 171.

*Scilla rufa magna vulgaris.* *Bauh.* 2. 615. *f.*

*Scilla vulgaris radice rubra.* *Bauh. Pin.* 73.

*Sancrarium.* *Clus. Hisp.* 293.

*Ornithogalum Squilla;* *Bot. Mag.* v. 24. t. 918.

*Ornithogalum maritimum.* *Tourn. Inst.* 381; *Brotero Fl. Lusit.* 1. 583; *Fl. Franc.* 3. 276.

*Scilla maritima.* *Lin. Sp. Pl.* 442; *Willd.* 2. 125; *Ait. Kew.* v. 2. p. 262; *Redout. Liliac.* t. 116; *Woodv.* t. 118.

FOREIGN.—*Scille;* *Orignon marine,* Fr.; *Scilla;* *Cioppollo marina;* *Sancrazio;* It.; *Escilla;* *Cebolla albarana,* Sp.; *Esquilla;* *Cebolla alvarii,* Port.; *Squille;* *Mierswiebel,* Ger.; *Skille,* Dan.; *Skille,* Swed.

THIS valuable article of the vegetable materia medica is a native of the sandy shores of France, Spain, Portugal, Italy, Sicily, Syria, and the Levant. Sometimes it is found far inland; for instance, at the foot of the Estrella mountains; so that, as Link observes, *maritima* is rather a fallacious appellation. It thrives well in this country, in large garden pots, and was cultivated by Parkinson in 1628; but requires protection during winter in a common garden frame. With us, it blossoms in April and May; but in its native soil the flowers are said to be produced in July and August; the leaves appearing in October and November.

The bulb, improperly called the root, is sometimes as large as



a child's head, and often, when fresh imported, throws out the flowering stem while lying in the shop windows. It is oblong, and composed of several fleshy scales, attenuated at both edges, and closely applied one over the other, like the coats of an onion. Its outer coat is either pale and whitish, or of a purplish-red colour. The proper roots, which are slender and whitish, issue from a plate at the base of the bulb, well represented in our figure, but altogether omitted by Redoute, in his pictorial work on Liliaceous plants.\* The leaves appear long after the flowers; are pointed, a foot or eighteen inches long, radical, numerous, large, sword-shaped, ascending, wavy, recurved, and of a deep green colour. The stem is round, smooth succulent, and rises from the centre of the leaves to the height of two or three feet. The flowers are extremely numerous, and produced in a long, close, simple cluster, upon purplish peduncles; accompanied by small linear, twisted, deciduous bracteas. In this, as in other species of Squill, there is no calyx. The corolla consists of six white elliptical, spreading petals, with a reddish mark in the middle of each. The filaments are six, awl-shaped, shorter than the petals, to whose bases they are attached, and furnished with oblong, incumbent, green anthers. The germen is roundish, with a short style, and simple stigma. The capsule is oblong, smooth, marked with three furrows, 3-celled, and contains several roundish, compressed seeds.—Fig. (a) exhibits the petals with the stamens and anthers; (b) a bractea; (c) the germen and style.

**QUALITIES AND CHEMICAL PROPERTIES.**—The bulb of the squill, which consists of concentric layers, of a white or purplish colour, is inodorous. When recent it is extremely bitter, acrid, nauseous, and clammy; dried, it is bitter and less acrid. In France, it is usual to use the intermediate tunics only, the outer ones being dry and without taste, while the middle of the bulb is mucilaginous and nearly insipid. In this country, the whole bulb is generally used; the general practitioner looking

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\* A copy of this work presented as a donation from his Grace the Duke of Northumberland to the Medico-Botanical Society of London, by the ex-director, is said to have cost six-hundred guineas!



more to the low price of his drugs than to their goodness; of which he is almost invariably but an indifferent judge.

Dried Squills have been subjected to chemical examination by Vogel, who states that it owes its properties to a bitter principle which he has named *Scillitin*. Besides *Scillitin* he found it to contain gum, tannin, citrate of lime, sugar, and woody fibre.

*Scillitin* is obtained by the following process. The juice of the bulbs being expressed, is to be boiled for a few minutes, and the citrate of lime that appears is to be separated. Evaporate to dryness, and digest the dry residue in alcohol as long as that liquid will take up any thing. Evaporate the alcoholic solution to dryness, and the residue (*scillitin* and *tannin*) is to be redissolved in water, into which acetate of lead is to be dropped to throw down the tannin. Filter the liquid, and separate the excess of lead by means of a current of sulphuretted hydrogen gas. The liquid being again filtered, evaporate to dryness to drive off the acetic acid from the acetate. The dry mass which is white, transparent, and breaks, with a resinous fracture, is *scillitin*, mixed with a little sugar, from which it cannot be separated.

**MEDICAL PROPERTIES AND USES.**—Squill, according to its dose, is expectorant, diuretic, emetic, and purgative. As an expectorant, it is most generally used when there is an increased secretion of pulmonary mucus, and is supposed by Dr. Murray to operate by promoting absorption, diminishing the quantity of fluid effused, and thus facilitating the expectoration of the remainder. This, like most of the theories that have been broached on the action of medicines appears to us to be very fanciful, and perhaps we may be thought just as visionary, when we state that squills seem to promote expectoration simply by increasing the action of the mucus membrane, whereby its secretion is greater; consequently less viscid, and more readily ejected by coughing. In inflammatory attacks, previously to the abstraction of blood, and the use of other evacuates, squills are generally considered as too stimulant, which effect may be controlled by a judicious combination with nitre, or tartarized antimony. As an expectorant it is particularly useful in hoop-



ing-cough ; and although its effects as an emetic are truly distressing, it is the one usually employed in this obstinate disease. To produce expectoration the syrup or vinegar of squill are generally employed, the dose of the former being a drachm ; of the latter, half that quantity, repeated every four or five hours. When vomiting is required, larger doses, oftener repeated, are required.

As a diuretic, squill is a valuable medicine, and is given in its recent or dried state. The dose of the former is from five to fifteen grains ; of the latter, from one to three : the smaller dose should be begun with, morning and evening, in the form of a pill, and gradually increased in quantity until the diuretic effect is obtained. By some it has been recommended to give it so as to induce some degree of nausea ; but it is very distressing to the patient, and often obliges us to discontinue a medicine of undoubted utility ; for if the stomach once rebels against it, it is seldom that it can be given in such doses again. Combined with mercury its diuretic effects are materially increased, the former appearing to rouse the absorbents, while the latter stimulates the kidneys. This combination is particularly adapted to those cases in which dropsy depends on, or is connected with enlargement, torpor or chronic inflammation of the liver. Of the mercurial preparations the mercurial pill, and calomel, are generally preferred, though Cullen recommends the oxymuriate. When the mercurial preparations induce purging, the diuretic action of the squill will be suspended. This effect must therefore be obviated either by substituting frictions with the ointment, or by corrective medicines.

OFF. PREP.—Acetum Scillæ, L. E. D.

Oxymel Scillæ, L. E. D.

Pilulæ Scillæ, comp. L. E. D.

Pulvis Scillæ, E. D.

Syrupus Scillæ maritimæ, E.

Tinctura Scillæ, L. D.





*Ficus carica.*

Elkeid. del.

Waddell. sc.

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lobes, of which the central one is the largest ; they are of a deep green colour above ; somewhat paler, and rather more downy beneath ; with prominent radiating ribs, one to each lobe, and many transverse reticulated veins. There is no visible flower ; for the fruit in its early stage serves as a common receptacle, containing in its cavity both the male and female florets, each of which has a proper calyx, that becomes pulpy, and invests the seed, as in the mulberry. It is turbinate, fleshy, concave, umbilicate, and nearly closed with numerous small scales near the orifice. The uppermost florets, or those near the orifice, are generally *males*, and the others, more numerous, *females*, all separately stalked. The former has the calyx divided into three segments, rarely more, which are lanceolate, erect, and equal : there is no corolla : the filaments are three, bristle-shaped, the length of the calyx, and furnished with two-lobed anthers : the pistil is a twisted deciduous rudiment only. The calyx of the female flower is divided into five deep, lanceolate, pointed, straight, nearly equal segments : there is no corolla : the germen is oval, with a tapering awl-shaped style, and furnished with pointed, reflexed, unequal stigmas. The calyx, which becomes enlarged and pulpy, contains a roundish compressed seed. The fruit is solitary, on a thick short stalk, tapering at the base, and furnished with a three-leaved involucre. It is generally of a deep purple or reddish green colour, with a fleshy, soft, and fragrant pulp. Fig. (*a*) exhibits a section of the unripe fruit ; (*b*) a section of the ripe fruit ; (*c*) represents a section of the fruit or common receptacle, studded with florets ; (*d*) green fruit, exhibiting the umbilicus ; (*e*) two views of the female florets ; (*f*) the male florets ; (*g*) the seeds, all magnified.

The varieties of the common fig are very numerous. Miller enumerates fourteen sorts as deserving of cultivation in this country ; of these the most esteemed are the Brown Ischia, the Black Ischia, the Black Genoa, the Brunswick, or Madonna, the Brown Italian, the Black Italian, and the Common Blue, or purple fig.

The *Ficus carica* in its wild state is a more humble and distorted shrub, bearing fruit of very inferior quality as to flavour ; but the parts of fructification are very perfect, and the seeds are duly ripened even in France. Such figs as are seen to fall off before they arrive at



maturity, are carefully collected in the Levant, and branches of the tree are suspended by threads, above the fruit, to impregnate the female blossoms of the cultivated fig. As the cultivated fig is mostly found to contain female flowers only, the seeds would not in general be perfected, were it not for an insect, the *Cynips psenes* of Linneus, which conveys the pollen from the wild fig to the cultivated ones, and deposits its eggs within the cavity, seeming to act beneficially, not only by carrying in the fertilizing dust and dispersing it, but also by penetrating the pulp, and occasioning a dispersion of the nutritious juices. By this process, which is termed *caprification*, impregnation is not only more certainly accomplished, but the ripening of the fruit is greatly promoted. In France, caprification is imitated, by inserting straws dipped in olive oil; and in this country it has been proposed to hasten the maturation of figs, by cutting out circles of bark of the tree, thus interrupting or retarding the circulation of the sap, care being taken at the time not to injure the alburnum.

In warm climates two crops are produced annually, one upon the former year's shoots, and another on the shoots of the same year. The last of these crops is the one which is dried, which is done either by the heat of the sun, or by means of an oven. They are then packed very closely in the small chests in which they are imported into this country. In the Levant, the principal port for the exportation of figs is Smyrna. The import of figs to Great Britain alone, which is principally from Turkey, amounts to nine hundred tons annually, subject to a duty of 1*l.* 1*s.* Dried figs form also a very considerable article of commerce in Provence, Italy, and Spain; besides affording, as in the east, a chief article of sustenance to the native population. In Spain the principal exports of dried figs are from the provinces of Andalusia and Valencia; though the fruit grows, more or less, in every province. In the northern parts of France there are many fig-gardens, particularly at Argenteuil near Paris, where the culture of the fig-trees is one of the chief employments of the people.

**QUALITIES, PROPERTIES AND USES.**—Fresh figs, when ripe, are soft, and succulent, and, eaten with moderation, are a digestible, wholesome, and very delicious fruit. If too many be partaken of, they occasion flatulency, and sometimes diarrhœa, attended with pain. The dried fruit is too well known, both in appearance and taste, to render it necessary that we should say more than that figs consist almost entirely of mucilage and sugar.

Figs are used medicinally in what are termed pectoral or demulcent decoctions, which are the common drinks often recommended in inflammation of the first passages, and in affections of the urinary organs. Two ounces boiled in half a pint of water, and strained, form a useful gargle for inflammatory sore throat, when suppuration takes place. They are also occasionally eaten to remove habitual costiveness. The most ancient cataplasm on record, is that which was used by Hezekiah, who lived 260 years before Hippocrates. "And Isaiah said, Take a lump of figs. And they took and laid it on the boil, and he recovered." Roasted and split, they are still employed hot, as applications to gum-boils, and other circumscribed maturing tumours.

**OFF. PREP.**—Decoctum Hordei Comp. L. D. Confectio Sennæ, L. Electuarium Sennæ, Comp. E.





*Cassia fistula.*

G. Reid. del.

Weddell sc.

London. Published. for the Authors. March. 1<sup>st</sup>. 1830.



## CASSIA FISTULA.

*Purging Cassia.*

SPEC. CHAR. *Leaflets* in five pairs, ovate-lanceolate, smooth; petioles without glands.

*Syn.*—*Cassia fistula* Alexandrina. *Bauh. Pin.* 405; *Tourn. Inst.* 69; *Raii Hist.* 1746. *Commel. Hort.* 1. p. 215. t. 110; *Rumph. Amb.* 2. p. 83. t. 21.

*Siliqua* aut *Cassia purgatrix arabum*, *carobiis similis.* *Lob. Jc.* 2. 104.

*Cassia nigra.* *Dod. Pempt.* 787.

*Conna.* *Rheed. Malab.* v. 1. p. 37. t. 22.

*Cassia solutiva.* *Matth. Valg.* v. 1. 45. f.

*Cassia fistula.* *Lin. Sp. Pl.* 540; *Willd.* v. 2. p. 518; *Hort. Kew.* v. 3. p. 27; *Plenck. Icon.* t. 327; *Swartz. Obs.* 59; *Alpin, Ægypt,* p. 2. t. 1; *Hernand. Mexic. Blackw.* t. 381; *Sloan. Jam.* 2. 42; *Woodv.* t. 163; *Stokes,* v. 2. p. 453. *Gærtm.* v. 2. t. 147.

FOREIGN.—*Casse de Contiques,* Fr.; *Cassia Fistola,* It.; *Canasistola,* Sp. and Port.; *Röhremrachtige Cassie, Fistulkassie,* Ger.; *Cassie,* Dan. and Swed.; *Tlai Xiem.* Cochinch.

THIS species of *Cassia* is a native of Egypt and the warmer parts of the East Indies, and is naturalized in the West Indies, and South America. It is the *Cassia solutiva* of the Arab and Greek physicians of the middle ages, as appears from the writings of Avicenna and Myrepsus, and is supposed to have received the same generic appellation as that which from time immemorial has distinguished the oriental aromatic spice, from the circumstance of its agreeable odour; for we are told by Alpinus, when he was in Egypt, in the latter part of the 16th century, that the natives took great delight in walking early in the morning, in the spring season, near plantations of this kind of *Cassia*, regaling themselves with the fragrance of the flowers. The *Cassia fistula* was cultivated in England by Philip Miller, in 1731. Dr. Hasselquist, who observed it on the banks of the Nile, growing among the date trees, near Alexandria, says it flowers in May; and the Arabs call



it *Hearsciambar*. Bruce asserts, that it is a native of Abyssinia.

It rises, when full grown, to the height of thirty or forty feet, and is branched towards the top. The bark, especially upon the trunk, is brownish, or ash-coloured, very much furrowed and cracked. The wood is white and soft. The leaves are alternate, pinnated, composed of five or six pairs of ovate-oblong, pointed, undulated leaflets, of a pale green colour, finely nerved with a prominent midrib underneath, and supported on short footstalks. The flowers are large, odorous, yellow, veined, and produced in long pendant axillary racemes. The calyx consists of five oblong, blunt, greenish, crenated leaves. The corolla is composed of five petals, which are concave, roundish, unequal, spreading, and waved. The germen is slender, cylindrical, and curved into a semicircle. The fruit is a long woody dark brown pod, about an inch in diameter, and nearly two feet in length, cylindrical, with two longitudinal furrows on one side, and one on the other, divided by thin plates or partitions into transverse cells, each containing one smooth, oval, compressed seed, of a dusky yellow colour, imbedded in a soft black pulp.—Fig. (a) represents the pod or legume; (b) a longitudinal section of the same, showing the position of the seeds; (c) two views of a seed.

The pods are said to undergo a kind of fermentation, to prepare them for keeping. In Egypt, according to Hasselquist, they are collected before they are quite ripe, and carried into a very close room, in which has been prepared a bed of palm leaves and straw, six inches deep. On this they lay the pods in a heap; the door is then closely shut, and the next day they sprinkle water on the heap, which is repeated the day following. In this manner the pods lie heaped for forty days, till they become black. Others, says he, dig a hole in the ground to put them in; but this method is greatly inferior to the former.\* Cassia pods are brought to this country principally from the West Indies, packed in casks and cases. The pods of the East India

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\* See Hasselquist's *Voyages and Travels*.



Cassia are smaller, smoother, and afford a blacker, sweeter, and more grateful pulp, than those which are brought from the West Indies, South America, or Egypt.

QUALITIES.—The pulp, which is the part used, is separated from the woody part and seeds, by passing it through a sieve. It has a faint, somewhat nauseous odour, and a sweet mucilaginous taste.

QUALITIES AND CHEMICAL PROPERTIES.—The pods of Cassia which are heaviest, and in which the seeds do not rattle, are the best, as they contain the greatest quantity of pulp, which is the part used in medicine. The best pulp is of a bright, shining black colour, and of sweetish sub-acid taste. According to M. Henry, it contains sugar, gum, a substance resembling tannin, gluten, and colouring matter soluble in ether.—*Journ. Chim. Med.* ii. 376.

MEDICAL PROPERTIES AND USES.—Both the leaves and flowers are purgative, as well as the pulp. The latter is occasionally used as an agreeable laxative for children; but adults require so large a portion of it to produce effect, that it is never employed for them, excepting when combined with more active remedies. Dr. Cullen conceived that it possessed no advantages over the pulp of prunes, in which opinion we readily coincide. It enters into the composition of the subjoined officinal preparations, to which it imparts a pleasant flavour.

Confectio Cassiæ, L. E. D.

Confectio Sennæ, L. E. D.

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### CASSIA MARILANDICA.—*Maryland Cassia.*

SP. CHAR. *Leaflets* in eight pairs, ovate-oblong, equal; a gland at the base of the petioles.

*Syn.*—*Cassia mimosæ foliis, siliqua hirsuta.* *Dill.* Elth, 351. t. 260.

*Cassia marilandica,* *Lin. Sp.* 541; *Willd. v. 2. p.* 524; *Ait. Kew. 3. p.* 29; *Mich. 1. p.* 261; *Pursh. Fl. Am. v. 1. p.* 306; *Bart. Med. Bot. 1. p.* 137. t. 12. *Schkuhr Handb. 1. p.* 355. t. 113.

ENGLISH.—*Perennial Cassia. Wild Senna. American Senna.*

THE Maryland Cassia, so named by Linneus, from the country whence it was sent him, is employed in North America as a



substitute for officinal senna. It is extremely common in almost every part of the United States, south and westward of New York, and is figured in Barton's "Vegetable Materia Medica," t. 12. It was first introduced into this country in 1723, by Peter Collinson, Esq., where it flowers from July to October.

*Cassia marilandica* is a beautiful perennial plant, sending up many slender, often simple, herbaceous, erect, cylindrical, smooth, or slightly hairy stems, to the height of three or four feet. The leaves are alternate, pinnated, composed of eight pairs of ovate-oblong, equal leaflets; of a bright green colour on the upper surface, pale underneath, and furnished with a gland at the base of the petioles. The flowers are a golden yellow colour, in short axillary racemes, on the upper part of the stem. The pods are three or four inches long, a little curved, mucronate, and covered with a few scattered reddish hairs.

**MEDICAL PROPERTIES AND USES.**—According to Dr. Barton, the virtues of Maryland senna are those of a mild cathartic, little if at all inferior to that of the senna of the shops. This gentleman informs us, that he has employed it in many instances in place of Alexandria senna, and bears testimony to the high character which the plant has long maintained. He says, "the leaves alone have commonly been used; but I have made use of the dried leaves and follicles, carefully rejecting the leaf-stalks, and beg leave to recommend this manner of employing the plant for medical purposes. I believe the best time for collecting it would be when the pods are ripe, which is about the last of August."





*Pimpinella Anisum.*

G. Reid. del.

Waddell. sc.

London. Published for the Author. April. 1830.



CLVI

PIMPINELLA ANISUM.

*Anise.*

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Class V. PENTANDRIA. Order II. DIGYNIA.

Nat. Ord. UMBELLATÆ.

GEN. CHAR. *Fruit* ovate-oblong, striated. *Calyx* none. *Petals* inversely heart-shaped, nearly equal, inflected. *Stigma* subglobose.

SPEC. CHAR. Radical *leaves* 3-lobed; stem leaves acutely laciniated. *Germen* downy.

Syn.—Anisum. *Ger. Em.* 1035; *Camer Epit.* 515; *Fuchs. Hist.* 62.f; *Dod. Pempt.* 299.f; *Raii Hist.* 450; *Park. Theatr.* 911; *Rivin. Pentarp. Irr.* t. 73; *Matth. Valgr. v. 2.* 113.f.

Anisum herbariis. *Bauh. Pin.* 159.

Anisum vulgare. *Clus. Hist.* 2. p. 202.

Pimpinella Anisum. *Lin. Sp. Pl.* 379; *Willd. v. 1.* p. 1473; *Ait. Kew. v. 2.* p. 160; *Blackw. t.* 374; *Woodv. v. 3. t.* 180; *Stokes. v. 2.* p. 140.

FOREIGN.—*L'anis*, Fr.; *Anice*, It.; *Anis*, Sp. Port. Ger. Dan. Swed. and Russ.; *Annison*, Arab.

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ANISE is a hardy annual, a native of Egypt, but cultivated in Malta and Spain for the seeds, which have been long known in domestic economy, and as an article of the materia medica. In this country the plant requires a warm border, but it is only in very favourable seasons that the seeds are ripened. Many authors mention it as one of the plants raised in our physical herb gardens near London, probably by mistake, for, as Mr. Neill observes, it is certainly too tender to be cultivated in England for profit.

The root is tapering and woody. The stem is erect, branched, solid, round, jointed, striated, slightly rough or downy, and rises about a foot in height. The lower leaves are roundish, indistinctly three or five lobed, unequally toothed, and stand upon scored sheath-like footstalks; those on the upper part of the stem, are divided into narrow, pinnated acute segments.



The flowers are small and white, in flat terminal umbels of many general and partial smooth rays, without any bractees. The corolla consists of five nearly equal, inversely heart-shaped petals, inflexed at the point. The filaments are five, capillary, spreading, longer than the corolla, and bearing roundish anthers. The germen is inferior, ovate, downy, with capillary, slightly spreading styles, and obtuse, capitate stigmas. The fruit is ovate, separable into two parts, and crowned with the long, capillary, permanent styles. The seeds are oblong, externally convex, each with five rather prominent ribs, the interstices rugose; flat on the inner surface with a longitudinal rib in the middle. Fig. (a) exhibits the root with a radical leaf; (b) an umbel with the seeds; (c) the fruit; (d) a single seed.

The generic name, *Pimpinella*, is supposed by Ambrosinus, whose opinion is adopted by Linneus, to be a corruption of *bipinella*, or *bipennula*, words expressive of the pinnate or feather-like structure of the foliage. The specific term *anisum* is derived from the Arabic word *ànysùm*.

**QUALITIES.**—Anise-seeds have an aromatic odour, and a warm grateful taste, accompanied with a degree of sweetness: water extracts very little of their virtues; alcohol the whole. In distillation with water they afford a pale straw-coloured volatile oil, which possesses the taste and smell of the seeds in perfection. A greenish-yellow, inodorous fixed oil is also obtained from anise-seeds by expression, mixed with a portion of the proper essential oil.

**MEDICAL PROPERTIES AND USES.**—These seeds, in consequence of the essential oil which they contain, are moderately stimulant, and possess the same virtues as a carminative and excitant with others of this class. They are used chiefly in dyspepsia, flatulencies, and in the tormina of infants. Hoffman strongly recommends them in weakness of the stomach, diarrhoeas, and for strengthening the tone of the viscera in general; and thinks they well deserve the appellation given them by Van Helmont, *intestinorum solamen*. Milk drawn from the breast after taking the essential oil, is found impregnated with its odour; and possibly this may be in part, the foundation of the power which it is supposed to possess, of increasing that secretion, and of the pectoral virtues formerly ascribed to it. The seeds may be taken in substance bruised, in doses of from twenty grains to two drachms; or what is preferable, from five to fifteen drops of the oil rubbed up with syrup and camphor mixture.

**OFF. PREP.**—*Spiritus Anisi*, L. *Spiritus Anisi compositus*, D. *Oleum Anisi*, L. D.





*Amyris gileadensis.*

G. Reid. del.

Weddell sc.

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CLVII

AMYRIS GILEADENSIS.

*Balsam of Gilead-tree.*

Class VIII. OCTANDRIA—Order I. MONOGYNIA.

Nat. Ord. TEREBINACEÆ, Juss.

GEN. CHAR. *Calyx* four-toothed. *Petals* four, oblong. *Stigma* quadrangular. *Berry* drupaceous.

SPEC. CHAR. *Leaves* ternate; leaflets entire; peduncles, one-flowered, lateral.

Syn.—Balsamum. *Theophr.* l. 9. c. 6; *Plin.* l. 12. c. 25; *Justin,* l. 36. c. 3; *Bellon.* 110.

Balsamum syriacum, rutæ folia. *Bauh. Pin.* 400.

Balsamum verum. *Bauh. Hist.* 1. 298; *Raii. Hist.* 1755.

Balsamum Alpini cum Carpobalsamo. *Ger. Em.* 1528.

Balsamum, ab ægyptiis Balessan. *Alpin. Ægypt.* p. 48. t. 60.

Balsamea meccanensis. *Gleid. Act. Soc. Berol.* 3. p. 127. t. 3. f. 2.

Balsamodendron Gileadense. *Decand. Prodr.* t. 2. p. 76.

Amyris Opobalsamum. *Forsk. Ægypt.* p. 79; *Niebuhr.* v. i. 307.

βαλσάμου δένδρον. *Theophrasti et Dioscoridis.*

Amyris gileadensis. *Lin. Mantis.* 65; *Diss. de Opobals.* 1764; *Willd.* v. 2.

p. 333. *Vahl. Symb.* i. 28. t. 11; *Lam. Ill.* t. 303. f. 2; *Woodv.* v. 3. t. 192;

*Stokes,* 2. 357.

FOREIGN.—Balsamier de la Mecque, Fr.; Balsamino di Gilead, It.; Gileadischer Balsamstrauch, Ger.

This species of amyris, which affords the balsam of Gilead or Mecca, the most precious of the balsams, is a native of Arabia, and was found by Forskal, and also by Niebuhr, growing spontaneously in the mountains of the province of Yemen. The balsam-tree, though not a native of Judea, was cultivated with great perfection many centuries before Christ in the gardens near Jerico, on the banks of the Jordan;\* and it was from Gilead in Judea, whence the merchants brought the resinous product to Egypt, that it derived its appellation of *Balsam of Gilead*. Since the conquest of Palestine by the Romans, Mr.

\* See Josephus *de Bel. Jud. lib. i. c. viii. sect. 6.*



Buckingham says the balsam-tree has entirely disappeared, and that not one is now to be found;\* but Burckhardt asserts, that it is still partially cultivated in the gardens near the lake of Tiberias.† Mr. Bruce informs us that it is a native of Abyssinia, growing among the myrrh-trees behind Azab, all along the coasts to the straits of Babelmandel.‡

It is an evergreen shrub or tree, seldom exceeding fourteen feet in height, having a flat top, like trees that are exposed to snow blasts or sea air, which gives it a stunted appearance. The trunk is about eight or ten inches in diameter, with many spreading, crooked, purplish branches, having protuberant buds loaded with aromatic resin. The wood is light and open, incapable of receiving a polish, resinous, externally of a reddish colour, and covered with a smooth ash-coloured bark. The leaves are thinly scattered, small, composed of one or two pairs of opposite leaflets, with an odd one; the leaflets are sessile, obovate, entire, veined, smooth, and of a bright green colour. The flowers proceed from the buds by threes; they are small, white, and furnished with a minute slightly bifid bractea, sheathing the base of the pedicel. The calyx is permanent, and divided into four spreading segments; the petals are four, oblong, concave, spreading: the filaments are eight, tapering, erect, bearing erect anthers: the germen is superior, ovate, with a thick style, the length of the filaments, terminated by a quadrangular stigma. The fruit is of a reddish-brown colour, oval, very slightly compressed, pointed, four-valved, and containing a somewhat pointed, smooth nut, flattened on one side, and marked with a longitudinal furrow.

Balm or balsam, is a term commonly applied to resinous substances, which exudes spontaneously from certain plants. It serves very properly to express the Hebrew word עֵרֵב, which in the Septuagint is rendered *ρητινμ*, and by the ancients is indiscriminately interpreted *resin*. But Kimchi, and other moderns have understood the Hebrew noun to designate that particular spe-

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\* *Travels in Palestine*, pp. 299 and 300.

† *Travels in Syria*, pp. 323 and 324.

‡ *Bruce's Abyssinia*, App. p. 16.



cies formerly called "*balsamum*" or *opobalsamum*, and now distinguished by the name of *balsamum judaicum*, or *balsam of Gilead*: celebrated by the ancients for its costliness, its medical virtues, and for being the product of Judea only, and of a particular spot there; which Josephus attributes to the neighbourhood of Jericho, but says that the tree was, according to tradition, originally brought by the Queen of Sheba to King Solomon from Arabia Felix, the country that now principally supplies the demand for that precious drug.

The great value set upon this drug in the East is traced to the earliest ages. The Ishmaelites, or Arabian carriers and merchants, trafficking with the Arabian commodities into Egypt, brought with them יָדָן as a part of their cargo. (Genesis xxxvi. 25, xliii. 11.) Strabo alone, of all the ancients, has given us the account of the place of its origin. "In that most happy land of the Sabæans," says he, "grows the frankincence; and in the coast that is about Saba, the balsam also." Among the myrrh-trees behind Azab, says Mr. Bruce, all along the coast is its native country. We need not doubt that it was transplanted early into Arabia, that is, into the south parts of Arabia Felix immediately fronting Azab, where it is indigenous. The first plantation, says he, that succeeded seems to have been at Petra, the ancient metropolis of Arabia, now called Beder or Beder Humhin.

Notwithstanding the positive authority of Josephus, referred to above, and the great probability that attends it, it is observed by Bruce\* that his account cannot be put into competition with that of the Scriptures, which 1730 years before Christ, and 1000 before the Queen of Sheba, says, "A company of Ishmaelites came from Gilead with their camels, bearing spicery, and balm, and myrrh, going to carry it down into Egypt;" (Gen. xxxvii. 25;) from which it is evident that it had been transplanted into Judea, flourished there, and had become an article of commerce in Gilead long before the period he mentions. Now the spicery or possession was entirely purchased by the Ishmaelites at the mouth of the Red Sea, the market for Indian

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\* *Travels*, vol. vii. p. 149.



goods: and at the same place they must have brought the myrrh, which does not, nor did grow any where else than in Sabo or Azabo, east of Cape Gardfan, where the ports of India were, from whence it was dispersed all over the world.

Theophrastus, Dioscorides, Pliny, Tacitus, Serapion, Justin, Strabo, Diodorus Siculus, and Solinus, speaking of its costliness, all say that it came from India. The words of Pliny are, "But to all other odours whatever, the balsam is preferred, produced in no other part but the land of Judea, and was there in two gardens only, both belonging to the king." At this time, continues Mr. Bruce, I suppose it got its name of *balsamum judaicum*, or balm of Gilead; and thence became an article of merchandise and fiscal revenue, which probably occasioned the discouragement for bringing any more from Arabia, whence it was probably prohibited as contraband. We shall suppose that thirty acres planted with this tree would have produced more than all the trees of Arabia do at this day. Nor does the plantation of Beder Humkin amount to much more than that quantity, for we are still to observe that when it had been, as it were, naturalized in Judea, and acquired a name in that country, still it bore evident marks of being a stranger there; and its being confined to the royal gardens alone, shows that it was maintained by force and culture, and was by no means a native of the country; and this is confirmed by Strabo, who speaks of it as being in the king's palace and garden at Jericho. This place being one of the warmest in Judea, indicates their apprehensions about it.

Josephus, speaking of the vale of Jericho, says, "Now here is the most fruitful country in Judea, which bears a vast number of palm-trees, *besides the balsam-tree*, whose sprouts they cut with sharp stones, and at the incisions they gather the juice which drops down like tears." The balsam produced by these trees was of such consequence as to be noticed by all the writers who treated of Judea. Pliny says,\* "This tree, which was peculiar to Juris, or the Vale of Jericho, was more like a vine

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\* *Natural History*, c. 25.



than a myrtle." Vespasian and Titus carried, each of them one, to Rome, as rarities; and Pompey boasted of bearing them in triumph. When Alexander the Great was in Judea, a spoonful of the balsam was all that could be collected on a summer's day; and in the most plentiful year, the great royal park for these trees, yielded only six gallons, and the smaller one only one gallon. It was consequently so dear, that it sold for double its weight in silver. But from the great demand for it, adulteration soon followed, and a spurious sort was substituted. Justin makes this tree the source of all the national wealth. Speaking of the balsam, he says, "The wealth of the Jewish nation arose from the opobalsamum, which doth only grow in those countries; for it is a valley like a garden, which is surrounded by hills, and inclosed as it were with a wall. It is called Jericho. In the valley is a wood, admirable for its fruitfulness, as for its delightfulness, being intermingled with palms and opobalsamum-trees. The latter have a resemblance to firs, but are lower, and are planted and husbanded like the vine; and on a set season of the year sweat balsam."\* In the estimate of the revenues which Cleopatra derived from the regions round about Jericho, which had been given her by Antony, and which Herod afterwards farmed of her," it is said, "this country bears that balsam which is the most precious drug that is there, and grows there only."† The balsam is mentioned in the scriptures, under the name of "Balm of Gilead." (Jer. viii. 22; chap. xlvi. 11; chap. li. 8.)

QUALITIES AND CHEMICAL PROPERTIES.—Balsam of Gilead, or of Mecca, says Mr. Milburn,‡ is a resinous juice that distils from a tree, or shrub, growing between Mecca and Medina. The tree is scarce; the best sort is said to exude naturally, but the inferior kinds are extracted by boiling the branches. It is at first turbid and white, of a strong pungent, agreeable aromatic smell, and slightly bitter acrid taste; upon being kept, it becomes thin, limpid, of a greenish hue, then of a golden yellow colour, and, at length, like honey. The *opobal-*

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\* Justin's *History*, lib. 36.

† Josephus, *Ant. Jud.* lib. xv. civ. sect 2.

‡ *Oriental Commerce*, p. 71.



*samum* of the ancients, was the green liquor found in the kernel of the fruit; the *carpobalsamum*, the most in esteem, was expressed from the ripe fruit, and *xylobalsamum* from the small twigs after decoction. It is extremely liable to adulteration, and from its high price and scarcity, we believe that a single ounce of the genuine Balsam of Gilead\* is not to be obtained in this country, or even in Europe. To spread when dropped into water, all over the surface, to form a thin iridescent pellicle, so tenacious that it may be taken up entire with the point of a needle, were formerly infallible criteria of the genuine article. It has, however, been observed, that other balsams, when of a certain degree of consistence, exhibit these phenomena equally with the Balsam of Gilead. Mr. Bruce says, if the balsam be dropped on a woollen cloth, in a pure state, it may be washed out completely and readily with simple water. Dried Canada balsam, or the resinous juice which exudes from the *Pinus balsamea*, is at the present day generally substituted for the real, and if it does not possess its odour, it is equally efficacious.

**MEDICAL PROPERTIES AND USES.**—This balsam is highly prized among Eastern nations, particularly by the Turks and Arabs, both as a medicine and odoriferous unguent and cosmetic. It has been highly extolled as a powerful antiseptic, vulnerary, and preventive of the plague. In its medicinal properties it agrees with the balsams of Tolu, Peru, and others of the same class; but its great scarcity has prevented it from coming into use among European practitioners.

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\* **SOLOMON'S CORDIAL BALM OF GILEAD.**—We do not find on examination that this once famous nostrum contains a single grain of the drug whose name it bears. It is, in fact, merely an aromatic tincture of which Cardamoms form a principal ingredient, made with brandy, and containing also a portion of tincture of cantharides. It is, therefore, highly stimulating, and in undue quantities must produce the most deleterious effects on the human body.





*Copaifera officinalis.*

G. Reid. del.

West. del. sc.

London. Published for the Authors. April 1830.



## CLVIII

### COPAIFERA OFFICINALIS.

#### *Officinal Copaiva Tree.*

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*Class X. DECANDRIA.—Order I. MONOGYNIA.*

*Nat. Ord. DUMOSÆ, Lin. LEGUMINOSÆ, Juss.*

GEN. CHAR. *Calyx* none. *Petals* 4. *Legume* ovate.  
*Seed* one, in a berried arillus.

SPEC. CHAR. *Leaflets* 2 to 5 pairs, ovate-lanceolate,  
pointed, obtuse, smooth, with pellucid dots.

*Syn.—Copaiba. Piso Bras. 56*

*Coapoiba. Marcgr. Bras. 130.*

*Copahu. Barr. Hist. de la France equinoct. p. 40.*

*Arbre de Copau. Labat, Amer. v. 2. p. 365.*

*Arbor balsamifera Brasiliensis, fructu monospermo. Raii. Hist. 1659.*

*Balsamum certarum quarundam plantarum, quas Copaibas vocant. Bauh. Hist. 306.*

*Copaifera officinalis. Lin. Sp. Pl. 557; Willd. v. 2. 630; Jacq. Amer. 133. t. 86?; Ait. Kew. v. 3. p. 60; Lam. Ill. t. 342; Decand. Prodr. v. 2. p. 508; Aubl. Guai. v. 1. p. 399; Woodv. v. 3. t. 37. Stokes. v. 2. p. 520.*

FOREIGN.—*Lc Copaiier officinal, Fr.; Copaiba, It. & Sp.; Westindischer Copaiivabaum, Ger.*

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THE Officinal Copaiba tree inhabits various parts of South America, particularly Brasil, Guaiana, Venezuela, and the islands of Trinidad and Martinique. It is met with in great abundance about Tolu, sixty leagues from Carthagena, growing promiscuously in the woods among trees which yield the Peruvian and Tolu balsam. The drawing here given was made from specimens in the Banksian Herbarium, collected by Aublet, in Guaiana, compared with specimens of the tree gathered by Stewart in Trinidad, and by Mutis; but from what country was not mentioned, probably Brasil. There are six or eight species, from all of which the balsam is supposed to be now collected by the natives of the respective countries in which they grow; but



structed with sand, mucus, or pus; strengthens them when relaxed, and heals them when ulcerated. It provokes urine, extinguishes its heat, and cleanses off its bloody, foul, and purulent contents, more effectually than any thing I ever met with." Its action is soon manifested by a violet odour in the urine; and it is very apt to induce nausea, flatulence, and diarrhœa, which are best obviated by a few drops of laudanum. By the action it produces on the mucous membrane of the large intestines, it is occasionally employed in what Dr. Good calls diarrhœa tubularis; and he remarks, that it is generally useful in chronic inflammation, "or irritable condition of the secernments of mucous membranes." In chronic inflammation of the bladder, or cystitis, and in some obstinate forms of chronic bronchitis, spasmodic asthma, and hooping-cough, combined with narcotics and ipecacuanha, it will be found to afford very effectual relief. Even in croup and other inflammatory affections of the membrane lining the larynx and trachea, where it appears desirable to give stimulants, it is sometimes employed; and is a very efficacious remedy in hemorrhoids of long standing. Dr. Chapman advises copaiba to be poured on half a wine glass of water, to which is to be added slowly, a few drops of a bitter tincture, by which means the copaiba will be collected in a small globule, that may be easily swallowed, and its taste, so nauseous to most patients, entirely masked by the bitterness of the vehicle.

It is generally prescribed in the form of emulsion, in doses of from half to one drachm, three times a day; or it may be taken on sugar, by which it becomes more disposed to act on the urinary organs. Combined with the liquor potassæ, its effects in the last stages of gonorrhœa are much increased, and we have found the combination in the subjoined form, to agree with most stomachs :

R. Copaibæ ℥ss.  
 Mucilaginis Acaciæ ℥ij.  
 Mellis despumati ℥vj.  
 Liq. Potassæ ℥ij.  
 Ess. Limonis ℥ss.  
 Aquæ Rosæ ℥v.

Fiat mistura; dosis, cochlearia duo vel tria magna, ter quotidie.





*Papaver somniferum.*

W. Clarke del.

Weddell sc.

London, Published for the Authors. April 1830.



## CLIX

### PAPAVER SOMNIFERUM.

*White Poppy.*

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SPEC. CHAR. *Capsule* nearly globular, smooth. *Calyx* smooth. *Leaves* notched, clasping the stem, glaucous.

Syn.—Papaver. *Hall. Hist. v. 2. 16.*

Papaver sylvestre. *Raii Syn. 308; Ger. Em. 370 f.*

Papaver sativum. *Matth. Valgr. v. 2. 205; Camer. Epit. 803; Bauh. Hist. v. 3. 390. f.*

Μήκων ἡμερος. *Theophrasti et Dioscoridis.*

Papaver somniferum. *Lin. Sp. Pl. 726; Willd. v. 2. 147; Fl. Brit. 568; Eng. Bot. v. 30. t. 2145; Hook. Scot. 168. Decand. v. 2. 81; Bull. Fr. t. 57. Woodv. v. 1. t. 185; Stokes, v. 3. 181.*

FOREIGN.—*Pavot des jardins, Fr.; Papavero domestico, It.; Adormidera, Sp.; Dormideira, Port.; Gartenmohn, Ger.; Vallmo, Swed.; Vallmue, Dan.*

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IT is a generally received opinion, that the common garden or White Poppy, is a native of the East; but, has naturalized itself in fields and waste grounds in the south of Europe, and even in England, where it is cultivated, chiefly for the sake of the capsules. These are raised in great quantities at Mitcham, in Surrey, for the supply of the London market; the average price of each bag containing 3000 capsules, being about 4*l.* 10*s.* The white poppy is found growing spontaneously on the sandy banks of the fen ditches in some parts of Norfolk and Cambridgeshire. We found it last summer growing in great abundance, apparently wild, on a chalky bank, by the side of the Thames, in Ingress Park, Kent, and in an adjoining corn-field. It is a hardy annual, flowering in July, and varying in our gardens in the forms and colours of its rich, beautiful double petals; but easily changing, if neglected to its single state, and pale purple or white hue, having a deep violet stain on each petal. The largest heads, for medical use, are obtained from the single-flowered kind, here figured, which is extensively cultivated in



Turkey, Persia, India, and other warm climates, not only for the purpose of obtaining opium, but also on account of the bland oil, which is expressed from the seeds.

The root is white and tapering ; the whole plant glaucous and generally smooth, though sometimes the upper part of the stem, as in the garden specimen here figured, bears a few rigid spreading hairs. The stem is round, branched, erect, leafy, and rises to the height of three or four feet. The leaves are large, wavy, alternate, obtuse, lobed, and bluntly notched, embracing the stem with their heart-shaped base. The flowers are three inches broad, various in colour, each on a long terminal stalk. The calyx is inferior, and consists of two ovate, concave, obtuse, equal leaves that are deciduous, or drop on the expanding of the petals ; which are four in number, roundish, spreading, large, somewhat undulated and white, in the wild specimens bluish-white, with a broad violet spot at the base of each petal. The filaments are very numerous, capillary, much shorter than the corolla, and furnished with erect, oblong, obtuse, compressed anthers. The germen as well as the capsule is nearly globular, smooth, sometimes furrowed, and crowned with a stigma, of eight, ten, or more rays, with a broad, thin, deflexed margin. The capsule is globular, smooth, from two to four inches in diameter, a little compressed at the top and bottom, of one-cell, divided into several marginal cells, and surmounted with the persistent stigma. The seeds are very numerous, small white, or grey, kidney-shaped ; and escape when ripe, by the valvular openings under the stem ; they are oily, sweet, nutritious, and void of any narcotic power.—Fig. (a) represents a petal of the *wild* poppy ; (b) a stamen and anther ; (c) the capsule.

MODE OF COLLECTING AND PREPARING OPIUM.—The fresh herb has an acrid and bitter taste ; but the petals of the white poppy are somewhat sweet. The unripe capsules, upon being wounded, as they grow, exude plentifully a whitish, opaque, milky juice, which by drying becomes *opium*. The method of obtaining and collecting it in the East Indies has been fully detailed by Mr. Kerr, \* who was an ocular witness, and Mr. Davis, † whose accounts agree with that given by Kœmpfer, ‡

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\* *Medical Observations and Inquiries*, v. p. 317.

† *Transactions of the Society of Arts*, v. xvi. p. 273.

‡ *Amœnitates Exoticæ*, Fas. 3. Obs. 15.



respecting the mode of collecting opium in Persia. The seeds, are sown in quadrangular areas, the intervals which are formed into aqueducts for conveying water into each area. The plants are allowed to grow six or eight inches from each other, and are plentifully supplied with water till they are six or eight inches high, when a nutrient compost of dung, ashes, and nitrous earth, is laid over the areas. A little before the flowers appear, they are again well watered till the capsules, are half grown, when it is discontinued, and they being to collect the opium. This they effect by making, at sunset, two longitudinal incisions from below upwards, without penetrating the internal cavity, with an instrument that has two points, as fine and sharp as a lancet. The incisions are repeated every evening, until each capsule shall have received six or or eight wounds, and they are then allowed to ripen their seeds. The juice which exudes is collected in the morning, by old women and children, who scrape it off the wounds with a small iron scoop, which being inspissated to a proper consistence by working it with wooden spatulas in an earthen pot in the sun's heat, it is formed into cakes for sale.

In India, the *Papaver somniferum* is chiefly cultivated in Bengal, Allahabad, and Bahar. It is a very uncertain crop; and the produce of an acre, according to Mr. Kerr, is from 40lbs. to 60lbs. In Bahar, the cultivation of the poppy, and the manufacture of opium, are carried on so extensively, that 4000 chests of the latter may be exported annually; but it is a general complaint in Europe, that in this, as well as other provinces of Hindostan, the opium is frequently adulterated with cow-dung, an extract of the plant procured by boiling, the gum of a species of mimosa, and various other substances. Opium of an excellent quality, is made from the poppy in some parts of northern Hindostan. In the ceded districts of Mysore, poppies are cultivated not only for the purpose of making opium, but also for the sake of their seed, from which, when ripe, an intoxicating liquor called *post*, is made, that is much drank for inebriation, both by the Mahomedans and Hindoos. The opium made from the poppies grown in the province of Malwah is deemed much inferior to that of Bengal, and is almost always adulterated with oil of sesamum, and other substances. In some of the provinces of the south of India, the poppy is cultivated almost entirely on account of its seed, which is mixed with the sweet cakes that are eaten by the higher ranks of the natives.

In Britain, the Poppy has been cultivated for the purpose of obtaining opium; and specimens of this valuable drug, have been produced, and ascertained to be in no degree inferior to the Oriental. In 1796, a Mr. Ball, obtained the premium offered by the Society for the Encouragement of Arts, for a specimen of British Opium collected according to the Bengal method; and the same society, in 1819, voted Mr. Young, Surgeon, in Edinburgh, the Gold Isis medal, for his improved mode of collecting opium in Great Britain. By this gentleman, it is proposed to cultivate the poppy not only for its opium but also for its oil; and from his statements it appears that a crop of early potatoes may be raised upon the same space of ground, with the opium and oil by the same culture, and that such a crop will, in a



good season, yield a clear profit of from £50 to £80 per acre, allowing £60 for expences. "In the summer of 1817," says Mr. Young,\* I cultivated a small field of poppies, containing about 20,000 plants of the *Papaver somniferum* of Linn., out of which I selected two beds, measuring one fall and fourteen square yards, for the purpose of ascertaining what quantity of opium it would produce. I collected myself as much of the milky juice as was equal to one drachm of solid opium in the space of an hour; but as my professional avocations prevented me from regularly superintending the people at work, *they* did not gather so much as I expected. I ascertained, however, that they could gather at the rate of one drachm in the hour."

I had my poppies sown three different ways. The first broad-cast upon the beds, three feet wide, with an alley between, and thinned out to the distance of four and five inches, when the plants were about two inches high above the ground. The second on beds three feet wide, in rows, six rows to a bed, and six inches between the plants. The third on the spaces between rows of asparagus, two rows of poppies on each space, eight inches between each row, and six inches between the plants; two feet four inches between each double row of poppies occupied by the asparagus. The first produced only one capsule, the second two, and the third three capsules. The plants between the asparagus rows having more room to grow, had not only more capsules but they were much larger than those sown broad-cast, or in beds in close-rows; and as early potatoes, cultivated in a piece of ground adjoining my crop, were sold for a high price before my plants began to flower, I proposed the following year to have, by this mode of culture, the same quantity of opium, with a crop of early potatoes, as I obtained from an equal measurement of ground where there was nothing but poppies."

"Accordingly, in 1818, I selected a piece of ground in the highest state of cultivation, well manured with horse-dung, in which I planted early potatoes, in rows four feet wide. Furrows were first drawn; in these furrows the dung was laid; then the sets were dropped on the dung, about nine inches asunder, and covered with the hoe. The potatoes were planted in the middle of April, on the middle space between the potato rows, two rows of poppies on each space, and twelve inches between the rows. When the poppy plants were about two inches above the ground, they were at first thinned out by the hoe, and afterwards by the fingers, to the distance of eight inches between the plants. In this manner I raised a crop of early potatoes, equal to 36 bolls per acre. Although the potatoes will not be ready for immediate use before the gathering of opium commences, the whole crop will not be entirely ripe for lifting till after the opium is collected."

"The distance between the poppy plants being wider than last year, upon an average they produced four full grown capsules each, and some of them produced seven or eight capsules; and I gathered this season at the rate of two drachms of solid opium in one hour, while, by the same method of gathering, I could not collect more than

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\* See *Edinburgh Philosophical Journal*, v. 1. p. 258.



one drachm in the same time last year. Supposing one acre had been cultivated in the same manner as that piece of ground on which my experiment was made, the produce in that case would have been equal to 57 lb. 9 oz. 4 dr. and 48 gr. of solid opium, which is just twice as much as I collected the year before."

"As my poppies were sown about the middle of April, they were ready for bleeding about the middle of July. For making the incisions I use a double bladed, convex edged knife, having all the blade covered with sealing wax, except so much of the cutting edge as is sufficient for wounding the external rind of the capsule, without penetrating its cavity, and with which I made one or more double incisions, according to the size of the head, at first longitudinally, and afterwards obliquely upwards from the stalk. This operation commences about a week after the flowers fall, when the capsules discover to the pressure a proper degree of hardness. When the capsule is sufficiently scarified in the manner described, I then cut off, with a sharp scalpel, the capitellum or star, with a thin slice of the external rind round it, and by this last incision I obtained more juice than from a scarification upon the side of the head."

"In my communication," continues Mr. Young, "to Dr. Duncan, relative to *Lactucarium* or *Lettuce-Opium*, published in the second edition of his *Observations on Pulmonary Consumption*, I proposed to gather the opium by means of a sponge. But when I began to collect opium in that way, I soon found that it would not do; for although the sponge removes the juice more effectually than the flask proposed by Dr. Howison, it cannot be again entirely expressed, because the sponge decomposes or separates the component principles of the milky juice, and the resinous part adheres to the sponge, and soon clogs its pores. I therefore adopted the use of a small common hair-brush used by painters, and known to the trade by the name of sash tool, which answers the purpose most completely, and with which I gathered the milky juice, even though some of the plants were laid by wind and rain, as well as if they had been standing erect. I used a camel hair-brush, but found the same objection to it as the sponge. When the brush is sufficiently charged with juice, I scrape it off upon the edge of a tin flask, fastened to the breast of the gatherer, and capable of holding more than a day's gathering. The gatherers follow the bleeders immediately. One bleeder will occupy two gatherers, and if he be very expert at using the knife, he may keep three gatherers constantly employed. The juice is afterwards formed into cakes or balls, by spontaneous evaporation in shallow earthen dishes, placed in a close room, stirring it occasionally during the evaporation of its watery part, to be afterwards kept in bladders.

"The operation of gathering cannot be repeated with advantage oftener than three times a week, upon the same capsules, for no more juice will flow from one wound than what may be collected immediately, and a certain time must elapse before the plant forms more juice. One acre will keep twelve gatherers and six cutters constantly employed. That number can only gather a third part of an acre in one day, and by the time they have gone through the crop, the capsules at that place where they begin to gather, will be ready for the



operation being repeated. So that when the milky juice ceases to flow, five operations, as already described, will have been made upon each capsule. Supposing twelve gatherers to work ten hours in the day, and that each gathers two ounces and a half, or as much of the juice as will make that quantity of solid opium: in thirty days they will gather fifty-six pounds of opium from one acre."

"One acre of poppies, cultivated according to my method," says Mr. Young, "will yield 1000 lb. of seed; and this quantity of seed will give by expression 375 lb. of oil."\*

The poppy is also cultivated, as we have already observed, for the sake of the capsules and seeds, which afford, by expression, a considerable quantity of bland oil.† The dried capsule is inodorous, and nearly insipid; water by coction extracts its virtues, and when the decoction is evaporated, an extract is obtained, possessing the properties of opium, but in an inferior degree. In some countries, the seeds are used as food: the union of the farinaceous and other matters, with a mild oil, renders these seeds highly nutritious; and as they do not possess the narcotic principle, which resides only in the capsule, they may be said to afford a very wholesome aliment. The oil expressed from them is used for the same purposes as olive oil.

QUALITIES. — Two kinds of opium are met with in commerce, the *Turkey* and the *East Indian*.‡ The opium used in Britain is almost exclusively the product of Persia, although it is generally distinguished by the name of Turkey opium. It is in flat or rounded masses, covered with leaves, and the reddish capsules of some species of *Rumex*, which is said to be considered an indication of its goodness. It is a solid compact substance, of a dark reddish-brown colour; opaque, soft and tenacious, when fresh, and adhering to the fingers; hard, when long kept, pulverulent, and having a resinous fracture. It has a strong, heavy, peculiar, disagreeable smell, and a nauseous, bitter, and acrid taste. It is inflammable, and burns with a vivid flame, and without any narcotic odour. It is partly soluble in water, acetic acid, wine, alcohol, and ether. The aqueous solution is transparent, and has a dark brown colour. The solution reddens the vegetable test blues, and changes to black the solutions of iron. *East Indian* opium is in round balls, covered with the petals of the poppy, is soft, of a blacker colour, and is much inferior in narcotic power. It agrees in its sensible and chemical qualities with the Turkey opium, but is distinguished chiefly by its blacker colour, less acrid, and more bitter taste, and by its leaving no insoluble plastic residuum, when triturated with water. Opium is decomposed by the solutions of oxymuriate of mercury, acetate of lead, sulphates of zinc, iron, and copper, the carbonates of alkalis, lime-water, infusion of galls and infusions of yellow cinchona bark, consequently it is *incompatible* in extemporaneous formulæ with these substances.

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\* See also a paper on the Manufacture of British Opium, in the Quarterly Journal of Science, vol. viii. p. 234, and vol. ix. p. 69, by the Rev. G. Swayne.

† See Young, on Poppy Oil, *Edin. Phil. Journ.* v. 2. p. 14.

‡ The following are the names by which opium is known in most ancient and modern languages. The ancient inhabitants of India and Arabia call it *affian*, which was also the Egyptian name. In Persia the appellation is *affiun*, and the Moors term it *affiun*. The Greeks call it *opion*, a proper diminutive, which they derive from *ὀπιος*, juice; adding sometimes *μεκωνος*, the juice of the poppy, or more specifically *ὀπιος των κωθειων*, the juice of the capsule. The *Nepenthes* of Homer (*Odyssey*, iv. 220. v.) supposed by some to be opium, was in all probability the *Cannabis sativa*, which is so generally used in India, under the name of *bang*; and which enters the *malash*, the celebrated inebriating compound of the Turks. The Roman name for the drug was *lachryma papaveris*, and *opium*, by which it is now known in all European countries, although the Germans still retain the name *mohnsaf* also; and the Danes *valmnesaft*.



Opium is *adulterated* with the extract of the poppy procured by boiling, with oil of sesamum, the extracts of *Chelidonium glaucum*, *Lactuca virosa*, *Glycyrrhiza glabra*, and sometimes with gum senegal, tragacanth, aloes, and various other substances.

No plant has occupied more of the attention of chemists than the poppy and its products; the importance of opium as a medicine having led to its chemical and medical investigation from the earliest period. Notwithstanding the attention then frequently bestowed on it, nothing of chemical importance was known respecting it, till the year 1803, when Derosne, Seguin, Sertuerner, and others, investigated the substances, and the result of their investigation was most successful; no less than three well characterized new substances having been discovered in opium. To Derosne we owe the discovery of narcotine, and to Sertuerner that of meconic acid, and of morphia, the alkaline properties of which he fully developed. Without entering at length into the different processes for obtaining these substances in a pure state, or detailing the various medicinal properties attributed to them by their discoverers, which subsequently have been found to be erroneous, we recommend the following process for obtaining them in a state of purity.

Macerate the finest Turkey opium in six times its weight of water, and repeat the maceration three times, unite and filter the solutions; about one-third will remain undissolved, which we shall call A; and, the filtered solution B. This solution instantly reddens vegetable blues from the free meconic acid it contains; and as the proportion of this free acid varies in different specimens of opium, Dr. Ure has proposed to estimate their value from the proportion of this acid they contain. Add to this solution, subacetate of lead, in slight excess, and filter; wash the insoluble matter with repeated portions of water, until that fluid passes tasteless; we will call the insoluble precipitate (consisting of meconiate of lead, resin, and extractive) C. To the solution B, add diluted sulphuric acid until it ceases to precipitate, and separate the sulphate of lead by the filter: to the filtered liquid, add ammonia in excess, and a precipitate of nearly pure *morphia* will in a few minutes take place. To obtain it perfectly pure and crystallized, it must be dissolved in boiling alcohol, and then suffered to cool slowly; the small quantity of narcotine it contains will then remain in solution.

To obtain *meconic acid* in a state of perfect purity is exceedingly difficult, and only to be effected by sublimation, a very difficult and uncertain process, as it is decomposed at nearly the same temperature at which it sublimes. Meconic acid, in nearly a pure state, is obtained as follows:—diffuse the precipitate C, in about twenty times its weight of boiling water, and carefully add to it, while hot, diluted sulphuric acid, taking especial care, that a small portion of the precipitate remains undecomposed, or rather, that no more sulphuric acid should be employed than is sufficient to convert the meconic into a sulphate of lead. Heat the filtered solution with very pure animal charcoal, filter whilst hot, and carefully evaporate the solution, until a pellicle forms on its surface: on cooling, a reddish crystallized matter will be deposited, which is impure meconic acid.

To obtain the *narcotine*, digest the insoluble matter A, in dilute sulphuric acid, and precipitate the filtered solution by potass or ammonia. The precipitate is impure narcotine, which by solution and crystallization from alcohol, may be obtained pure.

*Morphia*, on which the medicinal agency of opium depends, is a brilliant crystallized substance, possessing many of the characteristic properties of the alkalis; white, with a silky lustre, greasy to the touch, and friable. Its crystals are tetrahedral prisms, whose bases are rhomboids, more rarely single or double pyramids; sometimes it is found in slender prisms, collected into bundles. It is of greater specific gravity than distilled water; it is inodorous; has an astringent and bitter taste. It is soluble in alcohol, ether, oils, acids, but scarcely in water, four hundred parts of which, accord-



ing to Derosne, and eighty-two according to Choulant, are required to dissolve one part. It unites with all the acids, except the carbonic, forming salts with them: of the saline preparations, the *sulphate* and *acetate* are those generally employed in medicine. It restores the blue colour of reddened litmus paper; forms an intense blue with the persalts of iron, and reddens with nitric acid. It decomposes the salts of mercury and lead, the muriate of copper and the sulphate of iron; but it forms a triple salt with acetate of copper. It melts when heated, and, like sulphur, crystallizes in cooling. It burns readily, and when heated in close vessels, gives out carbonate of ammonia, and a solid black resinous kind of matter remains.

*Narcotine* dissolves in the strong acids, but does not at all chemically combine with them; it is readily soluble in ether and alcohol, from which, when sufficiently concentrated, it crystallizes in fine needles or rhomboidal prisms. It is not changed in colour by the persalts of iron, or reddened by the nitric acid, which characters are sufficient readily to distinguish it from morphia. It is without action, even in large doses, when taken internally; and although Majendie attributes the *after effects*, as they are called, of opium to it, this has not been satisfactorily proved.

*Meconic acid* in a pure state, is a brilliant, perfectly white, crystallized body, reddening with great intensity the persalts of iron; it is soluble in water, alcohol, and ether. It combines with the different salifiable bases, forming salts which are called meconiates. When received into the stomach, it does not seem to exert any deleterious influence on the animal œconomy, or produce any of the effects of opium.\*

Mr. Hennel, who examined British opium, found it to contain a larger proportion of morphia than Turkey opium, probably from its being free from all extraneous matter. The common extract of poppies also contains this substance, but not in sufficient abundance to render it advantageous to obtain it in this manner.

EFFECTS OF OPIUM.—The *modus operandi* of opium on the living system has been the subject of the most violent controversy, and diametrically opposite opinions have been maintained respecting it; for while it has been regarded by many as a direct sedative, by others it has been supposed to be the most powerful stimulant. Into the merits of this controversy it is not our business to inquire; but we may remark, that although under certain circumstances it acts as a powerful stimulant, its primary operation is followed by sedative effects, in proportion to the extent of the dose in which it is exhibited. It is now admitted, as Dr. Murray justly remarks, that opium may be exhibited, “so as to obtain from it stimulant and also depressing effects, and that the former are primary, and are obtained from it in a moderate dose, while the latter are secondary, and are only produced by a larger dose.” Opium was formerly supposed to act on the system, by the medium of the blood; but modern physiologists have shown that it operates directly on the nervous system, without inducing any change on the circulating fluid. When given in a *moderate dose*, as that of one grain,

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\* This brief history of the characters and mode of preparing these substances we have extracted principally from an unpublished paper on opium and its salts, by Mr. Morson. Such of our readers as may wish for further information, may consult the Essay of M. Derosnes, *Annales de Chimie*, vol. xlv. p. 257; that of M. Sertuerner, *Ann. de Chim. et Phys.* vol. v. p. 21; the observations on that paper by M. Robiquet, same Journal, v. v. p. 275; the action of morphia and narcotine on the animal œconomy, by M. Majendie, *Journal de Physiologie experimentale*; a paper on the same subject by M. Orfila, *Ann. de Chim. et Phys.* v. v. p. 288; the article *Opium*, *Traité de matière médicale*, Barbier, vol. ii. p. 467; Report of M. Lodibert, *Bulletin de la Société de Pharmacié*, v. i. p. 87; and a paper by Dr. Ure in the *Quarterly Journal of Science*, for May, 1830.



to a person unaccustomed to its use, it produces excitement which is succeeded by debility, the circulation is accelerated, the pulse becoming soon sensibly increased in fulness, frequency, and force. If the dose is rather larger, the heat of the body is augmented; the respiration is quickened; an elevation of mind, rising to intoxication, or even delirium, is produced; and the different functions, both mental and corporeal, are invigorated. These effects, however, are soon followed by an opposite condition of the body; the action of the sanguiferous system is diminished, the pulse becoming softer, fuller, and less frequent; a degree of languor and drowsiness is produced; the sensibility to external impressions is impaired, so that pain, if present, is allayed, and sleep induced; the skin is warm and moist; all the secretions are diminished, except the perspiration and the flow of milk, which are increased. In many instances this stage of the operation is accompanied with languor, nausea, vomiting, thirst, headache, tremors, and symptoms of general debility; the sleep is disturbed by disagreeable dreams, the bowels become constipated, the urine diminished, and the appetite is impaired. The stimulant operation of opium generally continues about an hour; but the sedative effects usually last six or eight hours.

Opium taken into the stomach in an *excessive dose*, produces the same symptoms, with greater rapidity; and if a *very large dose* be administered, the fatal result is so immediate, that the primary action is scarcely perceptible. When this is not the case, it acts in the same manner as the narcotic poisons, and the consequences are delirium, flushing of the countenance, tremors, slow and stertorous breathing, a slow and oppressed pulse, stupor, incapability of being roused by stimuli, convulsions, and death. But the quantity requisite to produce either, or all of these consequences, must be considered relative merely. In no two cases can we be sure of a similar result from the employment of the same quantity. Peculiarities of constitution, unusual torpor or irritability of the system, and the habitual use of this drug, produce a wonderful variety in its power and effects.\* To some constitutions it is injurious in very small doses; the smallest quantity capable of producing death, in an adult, being, probably, four or five grains; while instances are continually occurring of as few as ten drops of laudanum destroying infants, to whom it has been improperly administered, to mitigate pain, or procure sleep.

The symptoms produced by opium are nearly the same, whether it be taken into the stomach, applied to the divided mouths of the absorbents, or directly injected into the veins. Thus opium, applied externally to an ulcerated or abraded surface, will produce poisonous effects, not so soon, indeed, as when it is administered internally, but with equal certainty. "I have known," says Sir Astley Cooper, "opium, in water, applied on the surface of a scald in a child, which, I really believe, occasioned its death. It produced violent constipation of the bowels, and convulsive motions of the child's eyes."

The effects of habit in diminishing the powers of opium on the system are truly wonderful, as evinced by the immense quantities that are consumed by the Turks, and other eastern nations, where the established religion prohibits the use of wine. By the natives of these countries it is taken pure, and in the form of extract, and by its effects they find all their cares obliterated. A thousand delicious images and agreeable visions present themselves to their

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\* An interesting case is recorded by Dr. Marcet in the first volume of the *Medico-Chirurgical Transactions*, where six ounces of laudanum were taken by a man 18 years of age, and remained in his stomach five hours before any remedies were applied for its removal. He, however, by perseverance in judicious treatment, eventually recovered. Gaubius (*de Meth. concin. form.*) relates a case, where a patient died, in consequence of having taken an *enema*, into which four grains of opium entered.



imagination; they give themselves up to frantic and extravagant actions; roaring fits of laughter, and mad proposals distinguish them; they are said to feel a greater propensity for venereal enjoyments; all their passions and desires are exalted; a warlike ardour animates them, and they are prepared to brave death without fear—a resource which the officers of the Turkish armies frequently turn to their advantage. Frequently, too, they abandon themselves to violent fits of madness: they murder or stab all who make the least resistance to them. This state lasts several hours, when dejection and languor succeed. They become cold, melancholy, stupid, and sleepy. The traveller Chardin, in recounting the effects of a certain drink prepared from the capsules and seeds of the poppy, says, “There is a decoction, which they call *Coquenar*, for the sale of which there are taverns in every quarter of the town. It is extremely amusing to visit these houses, and to observe carefully those who resort there for the purpose of drinking it, both before they have taken the dose, before it begins to operate, and while it is operating. On entering the tavern they are dejected, sad, and languishing; soon after they have taken two or three cups of this beverage they are peevish, and as it were enraged; every thing displeases them; they find fault with every thing, and quarrel with one another; but, in the course of its operation, they make it up again, and each one giving himself up to his predominant passion, the lover speaks sweet things to his idol; another, half asleep, laughs in his sleeve; a third talks big, and blusters; a fourth tells ridiculous stories;—in one word, a person would believe himself to be in a madhouse. A kind of lethargy and stupidity succeed to this unequal and disorderly gaiety; but the Persians, far from treating it as it deserves, call it an extasy, and maintain that there is something supernatural and heavenly in this state. As soon as the effect of the decoction diminishes, each one retires to his own home.” The Turks have their *teriakihana*, or opium shops, and take *afioni* (opium) in doses of from 10 to 100 grains in a day.\* The increasing attachment to wine has diminished the consumption of opium, but there are still to be found *teriakis*, or opium-eaters, who will swallow in a glass of water 100 grains.† It is mixed with rich syrup, and the inspissated juices of fruit, to render it more palatable, and less intoxicating; and is taken in a spoon, or made up into small lozenges, mixed with spices, and stamped with the words *Masch Allah*, literally, “the gift of God.” It is supposed, however, that these lozenges contain other narcotics, as those of *hemp*, and seeds of *Lolium temulentum*, as well as opium.

In our own country opium is also taken in excessive quantities, to exhilarate the spirits; and while we are charmed by the rhapsodies contained in the “Confessions of an Opium Eater,” we regret to state, that the vice has been rapidly increasing since his work appeared; for, in such glowing colours are his visions depicted, that it is almost impossible to resist the temptation of trying for once the effects of such mighty magic. Those who habituate themselves to it, are miserable without its stimulus; they look pale and dejected; they require little food, from the torpor induced in the digestive organs; their vigour decreases; and, at last, their mental energies are annihilated. So completely does the habit triumph over the dictates of reason, that few determine to overcome it, so pleasant are the sensations with which its victims are enthralled. We remember once to have measured out a fluid ounce of laudanum, which, as the morning dose, we poured into a glass for a young and beautiful woman, Lady A. L——, who drank it off, at a draught,

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\* Mustapha Shatoor, the Smyrna opium-eater, was in the practice of swallowing three drachms daily. The “English opium-eater” confesses to 8000 drops (210½ grs.) as his utmost excess; and Garcias, in his History of Drugs and Spices, speaks of a person who took ten drachms every day.

† Hobhouse’s *Journey through Albania, and other Provinces of Turkey to Constantinople in 1809 and 1810*. 4to. vol. ii. p. 945.



before us. She was just then recovering from a painful and very protracted illness, during which the habit gradually stole on her; and were we to narrate the quantity of laudanum which her brother took in the course of a week, who was invalided home from Spain, our readers might suppose that we were dealing in the marvellous. He soon sank under his afflictions; while his sister gradually lessened the dose, till she left it off entirely, married, and became a mother.

Dr. Christen, who has written an excellent essay on opium,\* states some curious facts, in noticing the effects of that celebrated drug to augment the physical powers of the body, as well as to elevate those of the mind. The couriers between Surat and Bombay travel stupified with opium, and run on half asleep, although their eyes are open (*Dict. Port. de Commerce*, iv. 60); and the Turkish couriers, when tired, renew their strength by means of opium, (*ib.*) The Tartars, who traverse the Turkish empire in an astonishing short space of time, carry with them opium only, in the form of wafers, inscribed with the words Masch Allah. In mentioning the power of opium to expand the intellectual powers, Dr. Christen mentions the well known fact, that the celebrated author of the Brownian system, in propounding his theory to his pupils, was in the habit of taking 40 or 50 drops of laudanum in a glass of rum, before and during his lecture. The following fact is related by a very distinguished pupil of Brown, who happening to call upon his preceptor one morning, at an early hour, was surprised, as he entered his study, to hear him in the act of giving this order to his daughter: "Eppy, my dear, gie me the moderate stimulus o' one hundred and fifty draps of laudanum in a glass o' whisky."

Willis, and some other writers maintain that opium destroys virility. Sir Astley Cooper says, a married man who took it freely declared to him, that, "though he slept regularly with his wife, it was rather a matter of ceremony than of practical duty, for he never felt the slightest disposition to sexual indulgence. On the contrary, Dr. Christen quotes Alpinus, Cleyer,† and others, who state, that this drug is employed as an aphrodisiac by the Japanese, the Chinese, the inhabitants of India, the Egyptians, and the Turks. Jahn relates, that the Turkish women incite the men with opium.‡ Linneus also mentions, that it is regarded as an aphrodisiac by the Turks.§ *Opio ingesto eregi mentulam observatum est; Turcæ ad Levenzinum 1664 contra comitem Lud. Souches pugnantes, opio exaltati, turpiter cæsi et octo mille numero occisi mentulas rigidas tulere, referente Dejean, (in Eph. Nat. Cur. Dec. 1. An. 2. Obs. 69. p. 127; et Haller in Præf. ad Boerh. iv. 519).* These effects of opium, however, depend on the dose in which it is exhibited, for in large doses it undoubtedly enfeebles the sexual powers.

That opium, and even the odour of it, causes sleep, has been an established fact from the earliest period of its history; but it has also been long known that it produces watchfulness instead of sleep, in certain habits, and under peculiar circumstances. Riedlin remarked, above a century since, that a small dose of opium will sometimes procure sleep, when a large dose prevents it. Van Swieten passed a wakeful, jovial night, from having eaten opium (*Com. 1. p. 118.*); and Zimmerman saw a woman, in whom opium produced watchfulness, whilst she procured sleep by taking a concentrated infusion of coffee! This effect of opium has been noticed also by Willis, Geoffroy, Gorterius, and many other writers.

Opium suppresses all the secretions, except that of the cuticular discharge, which it generally promotes. Nicander (*Alexiphar. t. 15.*) noticed, that the

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\* *Opium Historicæ, Chemicæ atque Pharmacologicæ investigatum*, per Chr. Andr. Christen, M.D. Vindebonæ. 8vo. 1820.

† *Eph. Nat. Cur.* ii. 10. 35.

‡ *Mat. Med.* ii. 265.

§ *Amæn. Acad.* viii. 298.



sweat which flowed when opium was administered, often exhaled the odour of opium; and Dioscorides observed, that this odour extended itself over the whole body (*l. v. c. 17*). But Dr. Christen, in the valuable treatise already referred to, remarks, that opium, unless it be combined with diaphoretics, is not always followed by perspiration. Hence the mixed opiates of the ancients, the theriaca and diascordium, were regarded as diaphoretics; and, on the same account, Sydenham exhibited opium, on the fifth and sixth day, in small-pox. There are some facts, however, which are exceptions to the general rule, that opium suppresses all the secretions. Thus the flow of milk is not diminished, but augmented, by opium; the secretion of the bile is also increased, although the excretion is diminished, (*Jahn ii. 207*). With regard to the alvine excretions, although, in general, opium confines the bowels, instances are on record, which prove that it operates as a cathartic under certain circumstances. In a similar manner, the urinary secretion is not always lessened, when the excretion of that fluid from the bladder is impeded.

**MORBID APPEARANCES.**—Although numerous instances are recorded, in which opium has proved fatal to human life, the accounts of the appearances on dissection are by no means satisfactory. Even the cases related by Orfila are defective in this respect. From experiments made upon animals, the morbid appearances after death from opium, have been the following. No very marked alteration in the alimentary canal, though in one instance a whitish coat was found upon the mucous membrane of the stomach. The lungs were marked by livid spots, and distended with blood. The blood in the left ventricle of the heart was generally black and coagulated, though not uniformly so; and the superior portion of the pia mater appeared, in one instance, as if injected.

In the human subject marks of inflammation have been found in the stomach, or discolorations, that by superficial observation might be construed into such. “No alteration can be discovered on dissection,” says Orfila, “in the digestive canal of persons who have swallowed any of the narcotic poisons; and if facts, contrary to this assertion, be met with in authors, *it is because there have been administered irritating substances, capable of producing inflammation.*”

These assertions of Orfila are strongly supported by the subjoined evidence. “A man who was in a state of convalescence from a recent disorder, took a cathartic by order of his medical attendant, and soon after suddenly died. It was supposed that he had been poisoned through some mistake of the druggist. The body was opened, and the œsophagus and stomach were not only red, but here and there livid; in other words, apparently in a state of gangrene. At first these appearances were considered satisfactory evidence that the deceased had in reality been poisoned. The character of the druggist, however, was unimpeachable; and the physician, who reports the case, became convinced, from further examination, that the person had died of his former complaint, in a state of insidious convalescence. It was at length ascertained that he had been in the habit of using a strong infusion of poppies. A similar preparation was made, and administered to a dog, and upon opening his body, the œsophagus and stomach presented the same appearances, in respect of colour, which repeated washings could not remove.”\*

Another case is recorded in the sixth volume of the Transactions of the Royal College of Physicians, of a woman who had died by laudanum. In this instance the cellular tissue of the pia mater was found to contain water; and the stomach was stained of a red colour, deepest on the edges of the rugæ, evidently from the tincture of cardamoms that had been thrown in during unavailing attempts to preserve life. The *general* redness of the mucous membrane was produced by effusions of blood into the cellular tissue.

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\* *Journal de Medicine*, tom. vii.



Sir A. Cooper also makes some strong remarks on this subject, when speaking of a fatal case to which he had been called in. "On examination of the body after death," says Sir Astley, "the stomach appeared to be very much reddened, and a considerable quantity of solid opium was found in it. In all cases of violent death from opium, a reddened appearance of the stomach will be found. I do not, however, believe that it is really inflammatory. Inflammation, and a mere *error loci*, from determination of blood to the parts, are very different states. I do not believe that opium has the power of producing inflammation of the stomach; and I mention this, that it may guide your judgment, if you should be called on to give evidence in a court of justice, in a case of this kind. You should make up your mind never to give an opinion as to the death of an individual being produced by a vegetable poison, unless you find that vegetable poison in the stomach, or some strong proof be given that it was administered." When opium is present, it is easily distinguished, whether solid or fluid, by its strong and peculiar smell.\*

TREATMENT.—When opium, or any of its preparations, have been taken in undue quantities, the first part of the treatment is to evacuate the stomach of its contents, by means of the stomach-pump, or to expel the poison by vomiting. For this purpose emetics of the most active kind, as sulphate of zinc, or sulphate of copper, ipecacuanha, or tartarized antimony, should be given as soon as possible, and their operation assisted by irritating the fauces, and the frequent exhibition of mustard and water. Sulphate of zinc, or sulphate of copper, are generally used, dissolved in water; the former in the dose of one scruple, the latter in a dose of eight or ten grains. The latter is by far the most powerful; but the following is more to be depended on, and will seldom fail in rousing the action of the stomach, and evacuating its contents.

R. Ammoniaë subcarbonatis, ℥j.  
 Pulveris Ipecacuanhæ, ʒ ss.  
 Tincturæ Capsici, ʒij.  
 Aquæ communis, ʒij. Fiat haustus emeticus.

If the patient has lost the power of deglutition, the draught should be introduced by a flexible tube into the stomach. Should these means fail to produce any effect, M. Orfila suggests the injection into a vein of one or two grains of tartar emetic, dissolved in an ounce of water, as a last resource. After the poison has been removed from the stomach, it will be proper to administer, alternately, water acidulated with any vegetable acid, particularly vinegar, and a strong infusion of coffee warmed. The patient ought to be kept constantly on his legs, if capable of standing, at least for several hours. From numerous experiments made on dogs, M. Orfila concludes, that acids, instead of counteracting the effects of opium, aggravate the symptoms, by dissolving the opium, and promoting its absorption into the system; but when the poison has been expelled by vomiting, acids may be advantageously employed to remove its effects. To assist in obviating the torpor of the stomach, and sustaining the powers of the system, warm brandy and water, or punch, ammonia, ether, aromatic confection, and other cordials, may be advantageously employed. The nostrils may be irritated, from time to time, with a feather dipped in spirit of hartshorn; a linen rag, wetted with the liquor ammoniaë, may be laid over the scrobiculus cordis, and sinapisms applied to the soles of the feet, or warm fomentations. When there is complete insensibility, with

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\* An interesting paper on the comparative merits of tincture of galls, ammonia, and iodine, as tests for *morphia*, will be found in vol. ii. of "The Lancet," p. 201.



coldness of the extremities, cadaverous countenance, feeble pulse, or a livid hue of the lips and face, the jugular vein may be opened, and a few ounces of blood abstracted. In these cases the warm bath has been found to have a most decidedly beneficial effect, by inducing a flow of blood to the surface, and thus relieving the vital organs. Bleeding, however, should only be had recourse to when the pulse becomes full, in plethoric habits, or where apoplectic symptoms supervene. If a considerable time has elapsed since the opium was administered, and if there is reason to believe that it still remains in the large intestines, it will be necessary to employ active purgatives, and warm stimulating clysters.

**MEDICAL PROPERTIES AND USES.**—Opium has been employed for ages as the most active and efficient means we possess to support the powers of the system, mitigate pain or irritation, induce sleep, relieve inordinate action, check morbidly increased evacuations, and diminish morbid sensibility. It was known to the ancients, and formed an ingredient in most of the *theriacas* which were esteemed antidotes against poisons. Hippocrates prescribed it in quartans, combined with hyosciamus, mandragora, silphium, and trifolium; in which practice he was followed by Galen, (*De Ratione Feb. Cur.* c. 15.) who, from his own experience, asserts, that the recurrence of the paroxysm is stopped by the *theriaca*. Alexander Trallianus (lib. xii. c. 8.) likewise extols the use of opiates, conjoined with stimulants, in the cure of quartans. Among the moderns, Wedelius, (*Opiologia*, lib. ii. sec. 2. c. 1.) Horstius, (*Problemat. Therap.* dec. 1. quæst. 7.) Lind, Trotter, the late Professor Gregory, and others, have also strongly recommended the exhibition of an opiate in intermittent fever, previous to the expected approach of the paroxysm. Dr. Lind found, that an opiate given soon after the commencement of the hot stage, produced a more perfect intermission, and rendered a less quantity of bark necessary to complete the cure. A full dose of opium, especially in combination with ether, not only abates the violence of the fit, and shortens the duration of the fever, but has frequently succeeded in checking the paroxysm, when given on its first approach.

In continued fever opium is advantageously employed, where there are no symptoms of inflammatory action, or of increased determination to particular organs. In typhus, when given in small doses frequently repeated, it is sometimes administered as



an useful adjunct to wine and cordials, in obviating debility, and supporting the powers of the system. It is, as Dr. Murray justly observes, "more frequently used to diminish irritation, and lessen that state of increased susceptibility to impressions connected with debility, which frequently gives rise to restlessness, watchfulness, delirium, and spasmodic affections, particularly tremors and subsultus tendinum."\* In those cases of typhus that are accompanied with a hot and dry skin, or where there is a tendency to local inflammation, its exhibition is highly improper. On the contrary, when the tongue is moist, the bowels open, and the heat of the surface below the natural standard, opium may be advantageously given to lessen irritation, and procure sleep. In the early stages of the disease, it is indeed a doubtful remedy, and frequently augments the heat of the skin, constipates the bowels, and increases the delirium. A full dose is usually given at bed-time; or, as Dr. Currie recommends, about one or two o'clock in the morning, when the febrile exacerbation at that period begins to subside.

In the exanthemata, particularly in small-pox, opium is often advantageously employed to moderate the irritation connected with the eruption, and to promote the maturation of the pustules. It was prescribed by Sydenham in the early stage, when convulsions precede the eruption; but in this, as in other febrile diseases, its exhibition requires great caution, when the fever is inflammatory. Opium, with camphor, bark, wine, and aromatics, is requisite in small-pox, scarlatina, and other eruptive diseases, when they are accompanied with typhoid symptoms. In the measles, opium may be given with much advantage, after bleeding and other evacuations, if the cough continues troublesome, combined with some diaphoretic.

No doubt can be entertained of the impropriety of exhibiting opium in diseases of a purely inflammatory character; but, in many of the phlegmasiæ, after the inflammatory action is subdued by general and local bleeding, purging, and the usual antiphlogistic treatment, it is a valuable remedy. In some forms

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\* *System of Materia Medica and Pharmacy*, ed. 2d. vol. i. p. 147.



of phlegmonous inflammation, particularly that which attends severe injuries, where the pain is so violent as to deprive the patient of his natural rest, a large dose of opium is occasionally administered, immediately after bleeding, to allay pain, and procure sleep. In that singular affection of the brain and nervous system, called delirium tremens, bleeding has, in general, been found prejudicial, and full and repeated doses of opium the most efficient remedy. During the active stage of pneumonic inflammation, opium is quite inadmissible, on account of its tendency to check expectoration; but, in the more advanced periods of the disease, where the inflammatory action has subsided, it relieves the cough, induces refreshing sleep, and encourages diaphoresis. When it is given in combination with calomel, ipecacuanha, or tartarized antimony, so as to determine to the surface of the body, it is often employed with the most beneficial effects, especially in acute rheumatism. In nephritis, in subacute, and chronic bronchitis, in podagra, and in some other diseases of this order, when the tongue is moist, with little constitutional disturbance, advantage will be derived from the exhibition of opium. In that species of mortification of the toes and feet, commonly termed dry or chronic gangrene, in which the patient experiences severe pain, without the usual symptoms of inflammation, opium is almost the only remedy to be depended on.

In the hæmorrhagiæ, opium must be employed with extreme caution; particularly in plethoric habits, or where the disease is connected with highly increased vascular action. It is chiefly indicated where the hæmorrhagy is of the *passive* kind, where the discharge is periodical, or arises from an increased degree of irritability.

In common catarrh, and in the epidemic catarrh or influenza, opium is of great utility when the cough continues urgent, but is highly improper when the febrile symptoms run high. In these cases it is advisable to promote diaphoresis by combining it with antimonials, by which its direct stimulant action on the vascular system is obviated, and its operation is determined to the skin. In dysentery, after free evacuations have been pro-



cured from the bowels by purgatives, opium, especially in combination with ipecacuanha, in the form of Dover's powder, will be found eminently beneficial. In the chronic and habitual fluxes of warm climates, opiates combined with aromatics, according to Dr. Thomas, are as valuable as the cinchona in intermittents. In phthisis, opium is employed merely as a palliative and anodyne.

“ In spasmodic and convulsive diseases,” says our ingenious preceptor, the late Dr. Murray of Edinburgh, “ opium is obviously indicated, and in many of them is the remedy of greatest power. In chorea, it has been advantageously employed ; though the dependence of this disease on the accumulation of feculent matter in the intestines, as established by Dr. Hamilton's observations, suggests the necessity of its being employed with caution, and of its constipating effect being carefully guarded against. In epilepsy, it sometimes abates the violence of the paroxysm, especially where this is liable to recur during sleep ; but as this disease so often depends on change of organic structure, the effects of opium can be those only of a palliative ; where plethora is present it may be hurtful. In tetanus, to produce any relief, it requires to be given in very large doses, and these must be frequently repeated ; and even then the system is often little affected by it ; when pushed, however, to a great extent, the violence of the spasmodic affection has at length been overcome, and a cure obtained. A similar remark applies to hydrophobia, in which very large quantities of opium have been given without any sensible effect on the state of the functions, but in some cases with ultimate success, especially when combined with calomel. In mania, the system is in general little susceptible to the action of any medicine ; but opium, when given in sufficient doses, is frequently useful in diminishing irritation, and producing composure or sleep. In other cases it altogether fails, when given even in a very large dose, and sometimes it aggravates the restlessness and agitation of the patient ; and when a plethoric or inflammatory state exists, its use must be hazardous. In the hysteric paroxysm, opium is often employed with advantage, either introduced into the stomach, or given under the form of enema. Its frequent employment to relieve the less urgent symptoms of hysteria is improper, as tending to the injurious consequences from its habitual use ; and the same remark applies to its employment in hypochondriasis and melancholia. In purely spasmodic asthma, the paroxysm is shortened, and even sometimes cut short by a full dose of an opiate ; and in all the varieties of dyspnœa, opium affords more or less relief. In cholera, it relieves the violence of the pain ;



though its administration requires caution, where there is any tendency to an inflammatory state; and the constipation it is liable to produce requires also to be obviated. In cholera it is the principal remedy, and is given in moderately large and repeated doses, until the symptoms are subdued. In diarrhoea it speedily checks the evacuations, and the precaution is hence necessary, not to use it too freely, until any acrid matter, or substance exciting irritation, has been discharged. In pyrosis, a moderate dose generally affords at least temporary relief; and it also frequently succeeds in checking vomiting from morbid irritability of the stomach."

"Opium is given to relieve the pain of gastrodynia, and that attending icterus; and in that form of the latter disease depending on calculus of the biliary ducts, by lessening irritation and relieving spasm, it promotes the discharge. It is given on the same principle to relieve the pain, and promote the discharge of urinary calculus. In syphilis, it is employed, principally with the intention of alleviating the irritation arising from the operation of mercury; for there is no sufficient evidence for the opinion which has been advanced, that it is possessed of real anti-syphilitic power. Considerable advantage is derived from its use in extensive venereal ulceration; as well as in the treatment of painful and irritable ulcers, not connected with a venereal taint. It is given as a stimulant to check the progress of gangrene, and frequently with marked advantage, as well as to relieve those spasmodic symptoms, and that state of irritation, which often accompany gangrene, or the injuries from which it arises."

As a topical remedy, opium is extensively and effectually employed to alleviate pain and spasmodic action. It is usually applied by frictions, combined with oils and camphor, or in the form of tincture, and much advantage has been derived from this mode of employing it in many of the diseases above enumerated, particularly in cholic, tetanus, symptomatic trismus, in some forms of dysuria, in cholera, and hysteria. By local application it relieves the pain of toothache, a piece of solid opium being introduced in the cavity of the affected tooth, or the gums being rubbed with laudanum. Introduced into the rectum either in a solid form, or in the form of enema, it is of singular efficacy in relieving tenesmus, in spasmodic stricture, and in that affection of the prostate gland, which is sometimes the consequence of the discharge in gonorrhoea having been suddenly checked. A very dilute solution of it injected into the urethra



has been used to relieve *ardor urinæ* in gonorrhœa; and the vinous tincture introduced beneath the eyelids, is a most effectual application, in the second stage of acute ophthalmia, when the inflammatory action has been subdued, and when the action of the vessels has been weakened by the continuance of the disease.

“The *dose* of this narcotic,” as Dr. Murray very judiciously remarks, “is very various, according to the state of the disease, and the intention with which it is administered. One grain is the medium quantity to a person unaccustomed to its use; but to remove the symptoms from irritation, or relieve pain, it often requires to be given in a larger quantity. Its stimulating operation is principally obtained by frequent repetition of small doses; its sedative effect by a larger dose, repeated, if necessary, at greater intervals. Its power on the system soon becomes weaker; and from habitual use is so much impaired, and very large doses are required to produce its usual effects. In some diseases, too, particularly mania, tetanus and hydrophobia, it produces little sensible effect unless the dose be very large. In the last disease, it has been taken to the extent of two drachms in twelve hours, without abating the violence of the symptoms. Lastly, the operation of opium is much varied by idiosyncrasy, the same dose producing very different effects on different individuals. Too small a dose of opium is liable to produce restlessness or disturbed sleep. The latter effect, with sickness and thirst, and sometimes delirium, are the consequences of a dose rather too large.”

The *preparations* of opium most generally employed in medicine in this country, are the acetate and sulphate of morphia, the tincture of opium, and two secret preparations, the *Black Drop*, and Battley's *Liquor Opii sedativus*. The black drop is an acid solution, considerably stronger than laudanum; and the liquor opii is most probably a solution of twenty-five grains of an extract of opium in seven drachms of water, with the addition of one drachm of spirit; the extract employed in its preparation, having been previously deprived of its resin, either by saturating the excess of meconic acid with an alkali, probably with a small quantity of caustic potash, or by repeated evaporations of the common extract. On analysing several samples of this preparation, it was found to contain from four to



five grains of morphia *per* ounce, and did not contain any narcotine, although Mr. Battley has stated, in his papers published in the Medico Chirurgical Review, that to this substance opium owes its activity. Mr. Battley has evidently mistaken morphia for narcotine, in all his papers on this subject. The following will perhaps be found the best preparation for the administration of opium; at least it has the great advantage of perfect uniformity: it is a solution of morphia of the strength of the *tinctura opii* of the London pharmacopœia.

*Dissolve sixty-four grains of acetate of morphia in fifteen ounces of distilled water, with one ounce of proof spirit.*

OFF. PREP.—Decoctum Papaveris, L. Extractum Papaveris, L. E. Syrupus Papaveris, L. E. D. Confectio Opii, L. Emplastrum Opii, L. Extractum Opii, L. Vinum Opii, L. Pilulæ Saponis cum Opio, L. Pulvis Cornu usti cum Opio, L. Pulvis Ipecacuanhæ comp. L. E. D. Pulvis Kino comp. L. Tinctura Camphoræ comp. L. D. Tinctura Opii, L. E. D. Electuarium Opii, E. Electuarium Catechu, E. Pulv. Opiatus, E. Pilulæ Opii, E. Tinctura Opii ammoniata, E. Trochisci Glycyrrhizæ cum Opio, E. Opium purificatum, D. Syrupus Opii, D.





*Cocculus palmatus.*

G. Reid. del.

London. Published for the Authors. May. 1830.

W. Dill. sc.



## COCCULUS PALMATUS.

*Palmated Cocculus, or Calumba Plant.**Class XX. DIOECIA. Order VI. HEXANDRIA.**Nat. Ord. SARMENTACEÆ, Lin. MENISPERMEÆ, Juss.*

GEN. CHAR. *Sepals and petals* arranged in a double series, very rarely in a triple series. *Stamens* 6, free, opposite to the petals. *Carpella* 3-6. *Fruit* drupaceous, reniform, rather compressed, 1-seeded. *Cotyledons* distant.

SPEC. CHAR. *Leaves* cordate, five to seven-lobed; lobes entire, acuminate, somewhat hairy on both sides. *Stem* and *germens* clothed with glandular hair.

*Syn.*—*Menispermum palmatum*. Willd. *Sp. Pl.* 4. p. 825; Lam. *Dict.* 4. p. 99; Spreng. *Syst. Veg.* v. 2. p. 154; Berry in *Asiat. Res.* v. 10. p. 385. t. 5. *Cocculus palmatus*. Decand. *Syst. Veg.* v. 1. p. 323; Ejusd. *Prodr.* v. 1. p. 98. Curt. *Bot. Mag.* v. iv. N. S. t. 2970—2971.

THERE are few articles of the materia medica more generally esteemed than Calumba root. It is procured from a plant of the natural order of the Menispermeæ, and was formerly erroneously supposed to derive its name from Columbo, the principal town in the island of Ceylon, which was regarded as its native country. Among the Africans, its name is *Kalumb*. It is spelt *Kalumbo* by the Portuguese, in whose language the *o* is mute, and from this, Dr. Berry tells us, the name originated by which this valuable root is known in Europe. It is a staple export of the Portuguese from Mosambique; and when we consider the quantity exported, it is certainly a remarkable circumstance, that its native country should have been so long unknown. It is, however, now ascertained to grow naturally, and in abundance, in the thick forests that are said to cover the shores about Oïbo and Mosambique, on the east coast of Africa, and



inland for about fifteen or twenty miles. For this important discovery we are indebted to M. Fortin, a Frenchman, who, when at Mosambique, and engaged in purchasing the root, as an article of trade, procured an entire offset of a larger size than usual. This he brought with him to Madras, in 1805, and presented it to Dr. Anderson, who justly esteemed it a valuable acquisition to India. This being planted, produced a male plant, from which Dr. Berry's figure and description were made. Still, the female flower and fruit was a desideratum; and for the means of making them known to the readers of Medical Botany, we are indebted to the indefatigable exertions of Dr. Hooker, of Glasgow, who, in the Botanical Magazine, for March, 1830, has published a full description, accompanied by figures representing portions of the Calumba plant, with admirable dissections, executed by Professor Bojer, aided in the colouring by the faithful pencil of Mrs. Charles Telfair, of the Mauritius. The following description from the above work, is translated from the Latin MSS. of Professor Bojer:—

The root is perennial, composed of a number of fasciculated, fusiform, somewhat branched, fleshy, curved, and descending tubers, of the thickness of an infant's arm, clothed with a thin, brown epidermis, marked, towards the upper part especially, with transverse warts; internally they consist of a deep, yellow, scentless, very bitter flesh, filled with numerous parallel, longitudinal fibres or vessels. The stems are annual, herbaceous, one or two proceeding from the same root, about the thickness of the little finger, twining, simple in the male plant, branched in the female, rounded, green; in the full grown plant, below, thickly clothed with succulent longitudinal hairs, which are tipped with a gland. The leaves are alternate, the younger ones thin, pellucid, bright green, generally three-lobed; older ones remote, a span in breadth, nearly orbicular in their circumscription, deeply cordate, five to seven-lobed, the lobes entire, often deflexed, wavy on the surface and margin, dark green above, paler underneath, hairy on both sides, with prominent nerves, and supported on round hairy footstalks, about as long as the leaves. In the *male* plant the racemes are axillary, solitary or



two together, drooping, about as long as the petiole, compound, clothed with glandular hairs, and having at the base small deciduous bracteas. The calyx is smooth, consisting of six ovate, acute, nearly equal leaves, arranged in a double series. The corolla is pale-green, consisting of six oblong, free petals, with involute margins, and recurved apices, arranged round a central orbicular disc or gland, in a single series. The filaments are six, thick, shorter than the petals, with terminal, truncated, four-celled anthers; the cells opening internally, and filled with linear, oblong grains, of yellow pollen. In the *female* plant the racemes are also axillary, solitary, simple, patent, shorter than those of the male. The pedicels are furnished with minute caducous bracteas. The sepals or leaves of the calyx are six, in two series, three inferior, smaller, ovate, acute, subpatent, plane, glabrous. The petals are six, rarely eight, green, glabrous, shorter than the germen, and recurved at the extremity. The pistils are three, free, of which two are generally abortive, ovate, acuminate, glanduloso-pilose, and containing one ovule. The style is very short, and the stigma has several spreading points. The fruit is drupaceous or berried, about the size of a hazel-nut, densely clothed with long, spreading hairs, which at their extremity are tipped with a black gland. The seed is subreniform, clothed with a thin black shell, transversely striated.—Fig. (a) exhibits a portion of a male plant, reduced to one-fourth its natural size; (b) the male flower; (c) stamen and petal; (d) the grains of pollen; (e) glandular hair; (f) female flower; (g) pistils—all but fig. a more or less *magnified*; (h) portion of a female raceme, with perfect fruit; (i) seed; (j) embryo, *magnified*; (k) the root, with a portion of two young stems rather less than the size of nature.

The roots are dug up in the month of March, the dry season, or when the natives are not employed in agriculture. The main stock of the root is not removed, but offsets from the base are taken, and those of sufficient size, yet not so old as to be full of fibres, which render it unfit for commerce. Soon after it is dug up, the root is cut into slices, strung on cords, and hung up to dry in the shade. It is deemed fit for commerce, when, on ex-



posure to the sun, it breaks short ; and of a bad quality when it is soft or black.

From the following extract from a Memoir which appears to have been read at a Literary and Scientific Society in the Mauritius, by Mr. Telfair, it appears that the culture of colomba root has been recently introduced into our colonies, in the East Indies.

“ The late Sir Walter Farquhar, Physician to the King,” says Mr. Telfair, “ was very anxious to introduce into England the *Colombo root* in a living state ; and for that purpose he desired his son, Sir Robert Farquhar, Governor of Mauritius, Bourbon, and their Dependencies, to procure the plant from its native soil in Africa, and forward it to London. Sir Robert lost no time, after assuming his government at the conquest of the French Islands, in applying to the Governor of Mozambique for growing plants ; and was repeatedly assured that these should be sent to him at the proper season. These promises, however, were never fulfilled ; although renewed by the several succeeding officials of the Portuguese possessions on the east coast of Africa, ever since the year 1811. Dr. Wallich also took much pains for effecting the same object, and sent to Governor Farquhar the drawing made at Calcutta of a male plant of the *Colombo root*, which had been brought to the Botanic Garden there by Mr. Berry. Copies of this drawing were distributed to the different ships of war, and captains of merchant vessels, trading to the eastern coast of Africa, that they might be enabled to distinguish the plant and bring it to the Mauritius ; since there had been an evident unwillingness on the part of the Portuguese authorities to permit this precious vegetable to be taken away, in any other state than what it bears in commerce, when deprived of vegetative power by passing through the oven.

“ All the attempts resulting from these means proved fruitless ; until Captain William Fitzwilliam Owen, commanding the surveying squadron of his Majesty’s navy, on the east African coast, undertook the task. The extensive influence he had acquired by his intercourse with the native chieftains and tribes, enabled him to procure living plants ; while his botanical knowledge secured him against the mistakes committed by others, who had been misled by the local settlers in their search, and imposed on by the substitution of other species instead of the true *Colombo root*. Captain Owen, in the year 1825, brought away in his Majesty’s ship *Leven*, from Oïbo, a great number of cases, filled with growing roots of the male and female plants laid down in the sandy loam, which appears to be their favourite soil. No time was lost by him in forwarding a great portion of these to Mr. Telfair, at Mauritius, planting some also at Mahé, in the Seychelles Archipelago, and sending to Bombay several cases, in order to multiply, by dispersion, the chances of success in naturalizing them in different climates.



“ The roots that were brought to Mauritius, were partly transmitted to England, New Holland, and America ; but the greater number were distributed among the various districts of Mauritius and Bourbon. Many of these plants blossomed at Mauritius in the course of a year, but the flowers proved all male. The roots, however, had, during that period, multiplied to twenty or thirty times the original quantity, and thus an opportunity was given for distributing them still more extensively. The female plants flowered at Seychelles, and Mr. G. Harrison, the Government Agent there, transmitted some of their roots to Mr. Telfair, in whose garden of Bois Chéri, in the Mauritius, they have flowered, and being fecundated by Professor Bojer, who touched them with the pollen of the male blossom, they bore seeds. From these individuals the drawings by Professor Bojer have been taken, which give a delineation and dissection of every part.”

QUALITIES, AND CHEMICAL PROPERTIES. Calumba root is brought to us in round pieces, about a quarter of an inch thick, and formed by transverse sections of the root. These sections are surrounded by bark, externally of a brown wrinkled appearance ; internally yellow. The woody part of the root should be of a light yellow colour, solid and heavy. It is, however, often spongy and worm-eaten. According to analysis by M. Planche, calumba contains a large proportion of starch, and of a peculiar animal substance ; a yellow bitter matter, not precipitated by metallic salts ; a small quantity of volatile oil, salts of lime and potass, oxide of iron and silex.\* It is in the yellow resinous matter that the properties of the plant reside. The infusion of calumba is copiously precipitated by infusion of galls, and yellow cinchona bark, by acetate and superacetate of lead, oxymuriate of mercury and lime water, from which it is inferred that it contains *cinchonin*.

A spurious calumba is met with in France, which is imported from the states of Barbary. It is known by its not containing starch ; and is, therefore, easily detected by the agency of iodine, which does not alter its colour ; by its turning black with sulphate of iron, disengaging ammonia by the action of caustic potass, and by its infusion reddening turnsole paper. The root of our common red-berried bryony, *Bryonia dioica*, tinged yellow, with tincture of calumba, is sometimes sold as a fraudulent sub-

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\* *Bull. de Pharm.* iii. 289.



stitute; and the root of an American plant, *Fraseria Walteri* of Michaux, *Swartzia Fraseri* of Smith, is imported into Liverpool, and dispersed over the north of Europe as the true calumba root. It may be distinguished from the true calumba, by its whiter colour, lighter texture, the admixture of longitudinal pieces, and especially by its taste, which is sweetish at first, and much less bitter than the real calumba.\* The tincture of the spurious root gives no precipitate with infusion of galls.†

**MEDICAL PROPERTIES AND USES.**—Calumba is a powerful antiseptic and tonic, and is free from that nauseous taste which distinguishes many other bitters. It is employed with great advantage in those affections of the stomach and bowels which are attended with an increased formation of vitiated bile, and is often found to check the vomiting in cholera. The vomiting which is so distressing to many females during the first months of pregnancy is also frequently removed by it; and it is one of our most useful and grateful stomachics. By some it is much commended for the diarrhœa and vomiting which are caused by dentition, and Denman recommends it particularly, as preferable to cinchona for the low stage of puerperal fever. In the last stages of phthisis pulmonalis, and in hectic fever, it has been found to check colloquitive diarrhœa, to allay irritability, and to impart some degree of vigour to the stomach. It is usually given in the form of infusion, which will not bear to be kept long. It may be combined with aromatics, orange-peel, alkalies, and neutral salts. Sometimes the root is chewed; and the powder, combined with soda, we have found serviceable in pyrosis, in chronic dysentery attended with ulceration of the colon, and some other painful affections of the stomach and bowels.

The dose of the powder is from ten to thirty grains, three times a day.

**OFF. PREP.**—Tinctura calumbæ. L. E. D.

Infusum calumbæ. L. E.

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\* See Bigelow's *Treatise on the Materia*, 8vo. Boston, 1822. p. 141.

† Stolze. *Berlinisches Jahrbuch für die Pharmacie*, 1820. p. 481.





*Astragalus creticus.*

*G. Reid. del.*

*Widdell sc.*

*London. Published for the Authors. May. 1830.*



## ASTRAGALUS CRETICUS.

*Cretan Milk-vetch.*


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*Class XVII. DIADELPHIA.—Order IV. DECANDRIA.*

*Nat. Ord. PAPILIONACEÆ, Lin. LEGUMINOSÆ, Juss.*

GEN. CHAR. *Legume* gibbous, of two longitudinal cells.

SPEC. CHAR. Shrubby. *Petioles* spinescent. *Leaves* pinnate; leaflets lanceolate, hoary. *Flowers* aggregate, axillary, sessile. *Calyx* 5-cleft; the segments longer than the corolla, woolly.

*Syn.*—*Tragacantha cretica incana flore parvo lineis purpureis. Tourn. Cor. 29; Itin. p. 55.*

*Tragacantha humilior spinosior densius ramificata. Moris. Hist. 2. p. 133?*

*Poterium alterum densius ramificatum. Alpin. Exot. 50?*

*Astragalus cretensis. Pall. Astr. n. 6. p. 5.*

*Astragalus creticus. Sp. Pl. Willd. v. 3. p. 1330; Lam. Dict. n. 62; Ency. 1. p. 318; Decand. Astrag. p. 196. t. 33.*

FOREIGN.—*Astragale de Crete, Fr.; Eichter Tragacanth, Ger.*

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FROM this species, which grows plentifully in Candia, Greece, and many parts of Asia, is procured the *gum tragacanth*, used for various purposes, as well as an article of the materia medica. Tournefort found it growing very common on the naked hillocks about Mount Ida, where, during the summer months, not only the vessels of the bark, but the pores of the wood also, when the branches are cut off, appear turgid with gum. Before Tournefort discovered that the *Astragalus creticus* yields the *Tragacanth* of commerce, it was supposed to be the produce of the *A. Tragacantha* of Linneus. Dr. Sibthorp, who found the *Astragalus creticus* on all the higher mountains of Greece, remarks, that there are different species nearly allied to this, and *A. Tragacantha* which produce gum tragacanth. In travelling



from Smyrna to Prusa, he observed the gum in great abundance on a species with yellowish flowers, growing in low sandy situations. There are, indeed, several species belonging to this genus, almost all confounded by Linneus under his *Astragalus Tragacantha*, most of which yield a gum, although the *A. creticus* is that from which the best tragacanth is generally obtained. Prosper Alpinus describes it as flowing from the stem and branches of this, and *Astragalus echinoides*, and M. de la Billardière, who visited Mount Lebanon in August 1786, the season when the gum is collected, gathered it on *A. gummifer*. In both these species, the gum exudes copiously through natural openings in the bark, to which it adheres and concretes. M. Olivier, the distinguished traveller, however, asserts that the gum tragacanth of commerce is not brought from Candia and other islands in the Levant, but what we receive comes from the northern part of Persia, Armenia, and Asia Minor, where it exudes spontaneously from a nondescript arborescent species, to which he has given the name of *Astragalus verus*.

The *Astragalus creticus* is a low shrub, with a short, thick, woody, blackish procumbent stem, nearly smooth at the lower part, but divided above into several short, erect, or somewhat spreading, scaly branches, beset with sharp spines, the remains of the footstalks and stipules of the former year. The leaves are pinnated, consisting of four or five pairs of small, opposite, unequal, oblong-lanceolate, downy, deciduous leaflets, which are attached to a strong, spinous, persistent footstalk or midrib. The petioles are woody, acuminate, at first tomentose, but afterwards becoming smooth, having attached to the base of each, a pair of membranaceous, broad, downy, pointed, stipulas. The flowers are papilionaceous, small, axillary, sessile, solitary, and stand in compact clusters upon the extremity of the branches. The calyx is tubular, deeply divided into five pointed, linear, straight segments, longer than the corolla, and clothed with long white down. The corolla is white, streaked with purple, and consists of a standard, or upper petal, which is ovate-oblong, obtuse, and longer than the rest; two linear, obtuse wings, and an equal, bluntish keel, or carina. The filaments



are ten, nine of them united at the base, bearing roundish anthers. The germen is oblong, villous, and furnished with a straight awl-shaped style, and obtuse stigma. The legume is ovate, somewhat tumid, villous, 2-celled, containing one or more small, kidney-shaped seeds.—Fig. (a) represents the calyx cut open to show the germen.

QUALITIES AND CHEMICAL PROPERTIES.—Gum tragacanth is in irregular lumps, or in long worm-like pieces, variously contorted. The best sort is white and semi-transparent; but it is sometimes greyish, reddish, and opaque. M. Decandolle says, “*Tragacantha mercatoribus preciocissimum semi-pellucidum est; gummi ab A. gummifero collectum omninò pellucidum ostenditur, in aqua infusum non gelatinam efficit, unde vilioris est pretii.*” When put into water, tragacanth slowly imbibes a large quantity of it, swells into a large volume, and forms a soft, but not fluid, mucilage. It is greatly superior to all the gums, in giving viscosity to water; its power being, in this respect, to that of gum Arabic, as one to twenty-four. If the quantity of water be more than the gum can imbibe, the mucilage forms an irregular mass, which does not unite with the rest of the liquid. When a solution of gum arabic is poured into this solution, the mucilaginous gum tragacanth separates much sooner than usual, and forms no union with the gum arabic. When treated with nitric acid, it yields abundance of salactic acid, malic acid, and oxalic acid; but not the slightest degree of artificial tannin. Sulphuric acid develops some traces of artificial tannin. When Mr. Cruickshanks distilled 480 grains in a glass retort, he obtained the following products:—

Pyromucous acid . . . . .	245	grs.
Charcoal . . . . .	93	
Lime, with some phosphate . . . . .	12	
Carbonic acid and carburetted hydrogen gas . . . . .	130	
	480	

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\* *Astragalogia*, p. 13.



Dr. Bostock, by digesting tragacanth in water till it became gelatinous, and then triturating it with pure water in a mortar, formed a homogeneous mucilage, consisting of 100 parts of water, and one of tragacanth. Subacetate of lead formed a copious precipitate with this mucilage. Acetate of lead produced a slight precipitate, which increased by standing, though on mucilage of gum arabic it produced no effect. The permuriate of tin likewise throws down a firm coagulum, though it does not alter mucilage of gum arabic. Persulphate of iron, and silicated potass produced no effect. Nitrate of mercury, and the permuriate of tin, each throw down precipitates of a red-dish tinge.

By Dr. John, gum tragacanth has been considered as pure *cerasin*, but recent observations by M. Bucholz, prove that it consists of two substances in the following proportions:—

Substance analogous to gum arabic	57
<i>Adragantine</i>	43
	100

*Adragantine* is scaly, of a dirty white colour, easily reduced to powder, insoluble in cold water, but soluble in boiling water; not acted on by alcohol, but dissolves easily in aqueous potass, and in hydrochloric acid.

**MEDICAL PROPERTIES AND USES.**—Gum Tragacanth, medicinally, is simply useful as a demulcent; but is less employed than gum arabic, excepting for pharmaceutical purposes, in which it is preferred in the manufacture of troches, on account of its greater viscosity.

**OFF. PREP.**—Pulvis Tragacanthæ comp. L.

Mucilago Astragali Tragacanthæ. E. D.





*Smilax Sarsaparilla.*

G. Reid. del.

Weddell sc.

London. Published for the Authors. May. 1830.



## SMILAX SARSAPARILLA.

*Medicinal Smilax, or Sarsaparilla.**Class XXII. DICECIA.—Order VI. HEXANDRIA.**Nat. Ord. SARMENTACEÆ, Lin. ASPARAGI, Juss.*

GEN. CHAR. Male. *Calyx* six-leaved. *Corolla* none.  
 Female. *Calyx* six-leaved, inferior, deciduous.  
*Corolla* none. *Styles* three. *Berry* three celled.  
*Seeds* one, two, or three.

SPEC. CHAR. *Stem* prickly, somewhat quadrangular.  
*Leaves* unarmed, elliptical, pointed, abrupt, three-  
 nerved, somewhat glaucous beneath. Common  
 flower-stalk longer than the footstalk.

*Syn.*—*Smilax aspera peruviana, sive Sarsaparilla. Bauh. Pin. 296.*

*Smilax peruviana, Sarsaparilla. Ger. Em. 859. 1. f.*

*Smilax viticulo asperis virginiana, folio hedaraceo leni Zarga noblissima. Pluk. Alm. 348. t. 111. f. 2. mala; Raii Supl. 345.*

*Smilax glauca, ramis subteretibus passim aculeatis, foliis quasi cordato-ovalibus acuminatis, &c. Mich. Amer. 2. p. 237.*

*Smilax Sarsaparilla. Lin. Sp. Pl. 1459; Willd. v. 4. p. 776; Woodv. 3. t. 194.*

FOREIGN.—*Salsepareille, Fr.; Salsapariglia, It.; Sarsaparillen—Smilax, Ger.*

DR. WOODVILLE, of whose figure and description we have here availed ourselves, says, "this species of smilax is a native of South America, flowering in July and August." It is a climbing perennial plant, inhabiting the hedges and swamps of Virginia; and probably also of Brasil, Mexico, and Peru. The root has been long known as an article of the materia medica; but the roots of more than one species of smilax are imported from America under the name of sarsaparilla. Of these, Hernandez mentions



four species, the spontaneous produce of the soil, which grow in Mexico or New Spain, viz. *Mecapatli seu Zarsaparilla prima*, *Quauhmeatl seu Zarsaparilla secunda*, *et tertia*; and *Quauh-mecapatli seu Zarsa quarta*.\* According to Baron Humboldt, the best sarsaparilla grows on the borders of a lake on the north of the Cerro Unturan, two days' journey from Esmeralda. The sarsaparilla of this district is celebrated at Grand Para, Angustura, Cumana, Neuva Barcelona, and in other parts of South America, by the name of *Zarza del Rio Negro*. It is esteemed the most active of all that are known, and is much preferred to the *sarza* of the province of Carracas, or of the mountains of Merida; it is dried with great care, and exposed purposely to smoke, in order that it may become blacker. This species of sarsaparilla grows in profusion on the humid declivities of the mountains of Unturan and Achivaquere, where it is collected by the Indians, and brought to the capital. M. Humboldt found twelve new species of smilax in South America, among which the *S. syphilitica* of the Cassiquiare, and the *S. officinalis* of the river Magdalena, are the most esteemed, on account of their medicinal qualities. "The trials made," says this illustrious traveller, "in several botanical gardens of Europe, prove that the *Smilax glauca* of Virginia may be cultivated in the open air, whenever the mean temperature of the winter rises above six or seven degrees of the centigrade thermometer; but those species that possess the most active virtues belong exclusively to the torrid zone, and require a much higher degree of heat." Clusius informs us that Europe received the first sarsaparilla from Jucatan, and the island of Puna, opposite Guayaquil. But the trade in this article is now more active in those parts which have interior communications with the Orinooko, the Rio Negro, and the Amazon.

The root of the officinal smilax is divided into several branches, which are somewhat thicker than a goose-quill, strait, externally brown, internally white, and three or four feet in length; the stems are shrubby, long, slender, climbing by means of tendrils,

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\* *Rerum Medicarum Nov. Hispan. Thesaur.* p. 288.



like those of our bryony, a little zig-zag, roundish, with about four slight unequal angles, and beset with strong scattered, awl-shaped, hooked prickles. The leaves are elliptical or ovate, and when full grown, nearly orbicular, two inches and a half broad, alternate, abrupt, or contracted at each extremity, with a short terminal point; smooth, of a deep green colour above, somewhat glaucous beneath, and marked with three strong prominent ribs. The footstalks are short, broad, channelled; each furnished with a pair of long tendrils, subsequently deciduous. The flowers are male and female, upon different plants, lateral, and usually stand three or four together on slender axillary racemes, longer than the footstalks. The calyx of the *male* flower is bell-shaped, divided into six segments, which are oblong, spreading, and reflexed at their points: the filaments are six, simple, and bearing oblong anthers. The calyx of the *female* flower is deciduous, and also bell-shaped, similar to that of the male; there is no corolla, unless the calyx be considered as such, which, from analogy to *Asparagus*, it ought to be. the germen is superior, ovate, supporting three minute styles, with oblong, reflexed, downy stigmas. The fruit is a round three-celled berry, the size of a currant, umbilicated, of a red colour, and containing a solitary seed in each cell, one or two of them generally abortive.—Fig. (a) represents the fruit.

The systematic name, *Smilax*, was originally given to the Yew, *Taxus*; but likewise applied by Dioscorides to different plants of a climbing nature. One of these he terms *τραχεια*, *rough*, and as the term *smilax* is still applied to this by modern botanists, De Theis supposes the word to originate from *σμιλη*, a *scraper*. The *σμιλαξ* of Dioscorides, simply so denominated, is stigmatized by him as a most virulent poison; while his *σμιλαξ τραχεια* is celebrated as an antidote so powerful, that if given to a new-born infant he can never be poisoned as long as he lives! The specific name is derived from the Spanish *zarza*, a brier or bush, and *parilla*, a little vine.

The dried root is imported from South America, principally from Brasil, packed in bales. According to Humboldt, nearly 5000 quintals are annually exported from Vera Cruz. It is in

*Art. Sarsaparilla.*



long, slender twigs, of the thickness of a goose-quill, which, for pharmaceutical purposes, are split and cut in small pieces. It is internally white, with a small woody centre, tough, flexible, and covered with a brownish bark, marked with longitudinal furrows. Three different *varieties* are met with in commerce. 1st. The Honduras, composed of very long roots, often doubled in the bundles. 2d. The red, or bearded, called also, from its channel of importation, Jamaica, but the product of Honduras, distinguished by its colour, and the presence of its radicles. 3d. The Brazilian, or, as it is called, Lisbon, without radicles, which is held in the greatest estimation. There is a spurious or grey sarsaparilla, which resembles very nearly, in its external appearance, that of Brasil. The roots of this species are dotted with purplish spots, and there is not the white woody centre, which all the known sarsaparillas exhibit. This small creeping root is derived from the *Aralia nudicaulis*, Lin.\* There is also known in commerce a red sarsaparilla, the root of a plant belonging, according to M. Virey, to the family of the Asphodeli; and what is called the spurious red, which is the root of the *Agave cubensis*. The roots of the *Carex arenaria* and *Carex hirta*, are called German sarsaparilla, and used as a substitute.

QUALITIES AND CHEMICAL PROPERTIES.—This root is inodorous, and has a slightly bitterish, not ungrateful taste. Boiling water extracts from it a portion of fecula, in which the virtues of the root appear to reside. The aqueous solution has a brown colour, reddens litmus paper, and affords a precipitate, with infusion of galls. M. Galileo Palotta, an Italian physician, has discovered in this root what he considers its active principle, to which he has given the name of *parigline*.\* The process by which it is procured is the following. The sarsaparilla is sliced, or bruised with a pestle, and on a given quantity of the root six times its weight of boiling water is to be poured; the vessel in which this is placed is then covered, and the infusion allowed to continue for eight hours. The fluid is then strained off, and a similar quantity of boiling water is added to the roots, and allowed to remain the same time as the first. The two infusions, when mixed, are of a deep amber colour, slightly bitter, and nauseating. To these mixed infusions lime-water is added, and the whole stirred together with a wooden spatula; the fluid soon changes its colour, becomes brown, and deposits a pulverulent substance, of a greyish colour. This, when collected, is washed with water saturated

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\* MM. Planche and Virey, *Journal de Pharmacie*, iv. p. 405.



with carbonic acid, and being allowed to dry in the sun, is afterwards reduced to a fine powder. It is then put into a matrass, and boiled in alcohol for about two hours, and filtered. The residue is treated with a fresh quantity of alcohol, and the same method is pursued.

These spirituous solutions are mixed, and the whole put into a glass retort, which is then placed in a sand-bath, and the alcohol distilled off; just as the liquid in the retort is observed to thicken, it is to be immediately poured off into a pan, and allowed to remain undisturbed. In a short time a white pulverulent matter is precipitated, which attaches itself to the sides of the vessel. The supernatant liquor is to be poured off; the vessel is to be placed in a stove heated to about 25° R. When the new precipitate is sufficiently dry, it is to be collected and preserved in a glass jar. The liquid which was poured off being evaporated by a gentle heat, furnishes a solid substance, slightly deliquescent, and of a dark colour, which is the impure parigline. The *characters of parigline* are the following:— it is white, pulverulent, light, unalterable on exposure to atmospheric air, of a bitter austere taste, slightly astringent and nauseating, and of a peculiar odour. All the acids unite with it, forming various salts.

Dr. Palotta made five experiments with this medicine on himself; he began by taking two grains, and gradually increased the quantity to thirteen. From the effects it produced he has drawn the following conclusions:—that it has a sedative, but more particularly a diaphoretic property; that it excites an influence, principally on the lymphatic system, and that it will therefore answer all the indications of the sarsaparilla; that it may be used with great advantage in cases of chronic rheumatism; and in hepatic affections, as well as in those forms of disease, the effects of the syphilitic poison.

Another experimentalist, Professor Folchi, contends, that the active principle of sarsaparilla resides in the medullary part of the root, and has extracted from it a yellowish-white substance, crystallized in acicular prisms, dissolving easily in cold water, nearly insoluble in alcohol, having little taste, and tinging green the syrup of violets. M. Folchi ranks it among the vegetable alkalis, under the name of *smilacine*.†

**MEDICAL PROPERTIES AND USES.**—Matthiolus, we believe, was the first author who wrote on sarsaparilla as a remedy for syphilis; and the Spaniards were indebted to the Indians for their acquaintance with it. About the year 1563 it was introduced into Europe, as a cure for that disease. It quickly fell into disrepute, and was little employed, till it was brought into notice, during the last century, by Dr. William Hunter. Dr. Cullen allows but eight lines to its history and qualities; and, as he never found it effectual in any disease, he states, that he would not give it a place in the *materia medica*. Cullen has many converts to his opinion of it in the present day; and since it has been ascertained that many forms of venereal disease get well without the employment either of it or of mercury, it is easy to assume, that it is altogether worthless. Its more evident properties

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\* *Journal de Pharmacie*, x. p. 543.

† *Journ. de Chimie Medicale*, v. i. p. 215.



seem to be those of a mild stimulant and diaphoretic; but, if it be useless as an anti-syphilitic, we are inclined to think that few medical men are really so sceptical of its powers as to neglect its aid, after the disease has made its ravages in their own constitutions. Sir William Fordyce recommended it more particularly as an auxiliary to mercury, and to purify the system after its continued administration. Mr. Pearson (who told us, shortly before his death, that in making the decoction it was never sufficiently boiled, in opposition to the opinions of others) says, "the contagious matter, and the mineral specific, may jointly produce, in certain habits of body, a new series of symptoms, which, strictly speaking, are not venereal: which cannot be cured by mercury, and which are sometimes more to be dreaded than the simple and natural effects of the venereal virus. Some of the most formidable of these appearances may be removed by sarsaparilla, the venereal virus still remaining in the system; and, when the force of the poison has been completely subdued by mercury, the same vegetable is also capable of freeing the patient from what may be called the sequelæ of a mercurial course." Dr. Good says, "I have chiefly found it succeed in chronic cases, when the constitution has been broken down, perhaps, equally beneath a long domination of the disease, and a protracted, and apparently inefficient, mercurial process. In connexion with a milk diet and country air, and with a total abandonment of mercury, I have found it of essential importance, and have seen an incipient hectic fall before a free use of it in a week. Its best form is the old one of the decoction of the woods." A late writer, Mr. Bacot, whose admirable treatise on syphilis we have read with much satisfaction, thinks very highly of sarsaparilla; and at page 278 of his work narrates the case of a man affected with gummata and nodes, (in whom mercury produced colliquative sweats, loss of appetite, and rapid waste of flesh,) attacked by nocturnal pains, so severe, that no language could be too strong to express his sufferings. Opium afforded no relief. A pint of the simple decoction of sarsaparilla was given each day, uninterruptedly, for five weeks, accompanied by no other medicines; and, at the end of that time, all symptoms were removed, excepting a few flying pains. Dr. Good and Mr. Pearson appear to us to have formed a correct estimate of its powers in syphilis, and the majority of medical men coincide with them. Sarsaparilla is used in those affections of the stomach which appear to arise from its own morbid secretions: also in chronic rheumatism, scrofula, gout, elephantiasis, and some other cutaneous diseases. In that irritable state of constitution consequent to severe operations, or to long continued suppuration, we have seen it employed with evident success in Guy's Hospital, under the auspices of Sir A. Cooper. It increases the appetite, brings down the pulse, augments its tone, and, conjoined with milk, is both food and medicine.

OFF. PREP. — Decoctum Sarsaparillæ, L. E. D. Decoct. Sarsaparillæ, comp. D. Extractum Sarsaparillæ, L. Syrupus Sarsaparillæ, L. D.







P. 163.



*Amanita muscaria.*

C. Reid. del.

Weddell sc.

London. Published for the Authors June 1830.



## AMANITA MUSCARIA.

*Fly Amanita.*

Class XXIV. CRYPTOGRAMIA.—Order IV. FUNGI, Lin.

Nat. Ord. FUNGI, Link. Grev.

GEN. CHAR. *Pileus* furnished with a stem and *volva*, and bearing on its inferior surface straight sporiferous *lamellæ*. *Stem* either with a ring-like veil, or naked.

SPEC. CHAR. Margin of the *pileus* striated, shining, warty, rarely naked; *warts* and *lamellæ* white; *volva* vanishing, scaly; *stipes* bulbous.

Syn.—*Agaricus rubens*. Scop. Fl. Carn. p. 416.

*Agaricus pseudo-aurantiacus*. Bull. Camp. t. 112.

*Agaricus nobilis*. Bolt. Fung. t. 46.

*Agaricus imperialis*. Batsch. p. 59; Fl. Dan. t. 1129.

*Fungus bulbosus e volva erumpens, &c.* Mich. Nov. Pl. Gen. p. 118. t. 78. f. 2.

*Agaricus muscarius*. Lin. Fl. Suec. 1235; Hall. Hist. 2375; Schæff. Fung. t. 27; Huds. Angl. 2. p. 612; With. Bot. Arr. ed. 6. 4. p. 234; Bolt. Fung. 1. t. 27; Sow. Fung. t. 286; De Cand. Syn. p. 42; Purt. Midl. Fl. v. 2. p. 630; v. 3. p. 200; Fries. Syst. Mycol. v. 1. p. 16.

*Amanita muscaria*. Pers. Syn. Fung. p. 253; Wahl. Fl. Lapp. p. 527; Lam. Dict. v. 1. p. 111; Gray's Nat. Arr. v. 1. p. 600; Hook. Scot. pt. 2. p. 19; Grev. Fl. Edin. p. 369; Ejus. Crypt. Fl. v. 1. t. 54.

MANY species of this order are used as food, or rather as condiments; and several of them are known to rank among the most active of the vegetable poisons. Accidents, arising from the poisonous Fungi being taken through mistake for the esculent mushrooms, are frequent both in this country and on the continent, especially in France, where many species are eaten that are rejected by us. Almost the only ones in use in this country are the *Agaricus campestris* and *oreades*, the *deliciosus*,



which the ancient Romans esteemed the greatest of luxuries, the truffle, and the morel. Even some of these, under certain circumstances, have proved injurious, if not poisonous; hence the greatest caution is requisite in selecting any species of this tribe for food. Haller informs us, that the Russians eat the whole race, using the poisonous ones as means of intoxication. It appears, however, that these are used after a process of fermentation, so that their noxious effects are, probably, diminished. The poisonous species found in this country have not been correctly determined; those most commonly fatal are *Amanita muscaria*, and its varieties; the *Agaricus semiglobatus*, and *Agaricus globosus*.

The *Amanita muscaria* is one of the largest, and most beautiful of the Agaric tribe, and really deserves the name of "imperial," applied to it by Batsch; "for the most indifferent person must be attracted by the glowing hues of its ample pileus its regular form, tall pillar-like stipes—extremely conspicuous, even at a distance, in the shaded recesses of its native woods." It is found in woods throughout the whole kingdom, and is extremely abundant in the Highlands of Scotland.

The pileus is from three to six inches in diameter, convex at first, at length nearly quite flat, striated at the margin, varying very much in colour, being mostly bright red or orange, but sometimes liver-coloured, yellowish, or even whitish, and beset with downy, angular warts. The warts are white, or yellowish, prominent, pretty regular, scattered over the surface, but sometimes wanting. The lamellæ are flat, adnate with the stipes, very numerous, broad, and whitish. The flesh is thick, and white, partaking to a small depth of the colour of the pileus. The stipes is cylindrical, smooth, white, very straight, subsolid, from four to eight inches high, and bulbous at the base. The volva, according to Dr. Greville, is perfect only in extremely young plants, cracking immediately into pyramidal warts, which become less elevated, and more distinct, as the pileus expands, and generally leave a few traces upon the bulb, at the base of the stem.—PLATE CLXIV. exhibits three of the most striking varieties.





*Amanita muscaria, var.*

G. Reid. del.

Weddell sc.

London, Published for the Authors, June 1830.



PL 165.



*Agaricus semiglobatus.*

*G. Reid. del.*

*Weddell sc.*

*London. Published for the Authors. June 1830.*



## AGARICUS SEMIGLOBATUS.

*Hemispherical glutinous Agaric.**Class XXIV. CRYPTOGRAMIA.—Order IV. FUNGI, Lin.**Nat. Ord. FUNGI, Link. series V. Tribe XXXII. PSALLIOTA, Fries.*

GEN. CHAR. *Pileus* furnished with a *stipes*, or fixed by its side, bearing on the under surface straight, simple, sporiferous *lamellæ*. *Volva* none.

SPEC. CHAR. *Pileus* hemispherical, smooth, glutinous, reddish, or greenish-yellow. *Lamellæ* fixed horizontally to the *stipes*, mottled with black. *Stipes* hollow, glabrous; ring indistinct.

*Syn.*—Fungus minor ex albido subluteus pileo hemispherico. *Raii Hist.* 2. p. 97. t. 5.

*Agaricus glutinosus.* *Curt. Fl. Lond.* v. 2. t. 144.

*Agaricus nitens.* *Bull. Champ.* t. 566.

*Agaricus præcox.* *Schum. Fl. Scell.* p. 315.

*Agaricus virosus.* *Sow. Fung.* t. 407. f. 3. 4. 5. et t. 408. f. 12. 13. 14; *Purt. Midl. Fl.* v. 2. p. 646.

*Agaricus semiglobatus.* *Batsch. Fung.* p. 141. t. 21. f. 110. *Sow. Fung.* t. 248; *Pers. Syn. Fung.* p. 407. *With. Bot. Arr.* v. 4. p. 330; *Hook. Scot. pt. 2.* p. 23. *Grev. Fl. Edin.* p. 391; *Crypt. Fl.* v. 6. t. 344; *Fries Syst. Myc.* v. 1. p. 391.

THIS is one of the most common, and, if Messrs. Brande and Sowerby's account be correct, the most deleterious of the Agaric tribe. It occurs in most parts of the kingdom, in exposed and elevated pastures, moist meadows and woods, from May to September. Dr. Greville says it is extremely common in Scotland; and Mr. Curtis found it in great abundance about Peckham, Hornsey, and other places near London.



It generally grows singly, but sometimes springs up in clusters, especially on dunghills, or on those spots where dung has been thrown. The stipes, or stem, is from three to six inches in height, and two or three lines in diameter, pale yellowish, hollow, the tube being very small, and sometimes partly filled with a white pith; more or less crooked, somewhat incrassated towards the base, glutinous, furnished with a ring, and mostly dotted with black immediately beneath the pileus. The pileus is from half an inch to an inch and a half in breadth, of a pale reddish-orange, or straw colour, in the full grown ones exactly hemispherical, rarely becoming in large specimens plano-convex, very glutinous and smooth, hence the name *glutinosus* given to it by Curtis. The usual colour of the cap is reddish-orange, but when wet with rain it becomes browner and transparent, so that it sometimes appears as if striated. The flesh is thin and white. The lamellæ are numerous, fixed, horizontal, extending in a right line, or nearly so, from the margin of the pileus to the stipes, and beautifully mottled with the purplish black spordia.

With regard to this species, it may not be improper to remark, that the poisonous qualities usually ascribed to it, are still somewhat problematical. Mr. Sowerby states, that it was the variety marked No. 1 on our Plate, which nearly proved fatal to a poor family in London, who were so indiscreet as to stew a quantity of it, gathered in Hyde Park, for breakfast. We cannot help thinking, however, with Dr. Greville, that the plant with the acuminate pileus, is a distinct species from the other figures on the same plate.





*Agaricus bulbosus.*

*A. Reid. del.*

*W. A. Dettler. sculp.*

*London. Published. for the Authors. June. 1830.*



## AGARICUS BULBOSUS.

*Bulbous stemmed Agaric.**Class XXIV. CRYPTOGRAMIA.—Order IV. FUNGI, Lin.**Nat. Ord. FUNGI, Link. GYMNOCARPI, Pers.*

SPEC. CHAR. *Pileus* obtusely umbonate, smooth, tawny, when dry testaceous. *Lamellæ* cinnamon coloured. *Stem* very thick, bulbous; veil white.

*Syn.—Amanita. n. 2445. Hall Hist. v. 3. p. 174.*

*Cortinaria bulbosa. Gray's Nat. Arr. v. 1. p. 630.*

*Agaricus bulbosus. Sow. Fung. t. 130; Purt. Midl. Fl. 2. 636; Pers. Syn. Fung. p. 195; Fries. Syst. Mycol. 1. p. 214.*

ONE of the common poisonous native Agarics, abounding in woods, in the autumnal months. It has a pungent odour, resembling that of horse-radish. The pileus is two or three inches broad, bright brown, or chestnut coloured, obtusely umbonate, thin at the margin, testaceous when dry, and brittle. The lamellæ are cinnamon-coloured, or tawny, three or four in a set, distant, and three or four lines broad, with rose-coloured sporidia. The stem is about four inches in height, solid, very thick, dullish red, bulbous, ovate, and in old specimens ferruginous at the base. The veil is annular, whitish, and fugacious. Withering's *A. bulbosus*, (*Bot. Arr. v. 4. p. 271.*) is a different plant.

On the continent a great many kinds of Fungi are used for culinary purposes. In this country very few are regarded by epicures as edible; but Dr. Greville\* enumerates no fewer than twenty-six species, which grow abundantly in most parts of Britain, that may be eaten with safety. They are the following:—*Tuber cibarium*, or common Truffle; *T. moschatum*, and *T. album*, two analogous spe-

\* *Memoirs of the Wernerian Natural History Society, v. iv. p. 399.*



cies; *Amanita cæsarea* and *aurantiaca*, the Oronge of the French, which is often confounded with *A. muscaria*, but may be distinguished from it by the colour of the gills, which in the former species are yellow; *Agaricus procerus, campestris, oreades, odoratus, eburneus, ulmarius, ostreatus, violaceus, piperatus, acris*, and *deliciosus*; *Cantharellus cibarius*; *Boletus edulis, scaber*; *Fistulina hepatica*; *Hydnum repandum*; *Clavaria coralloides, cinerea*; *Morchella esculenta*; *Helvella mitra* and *leucophea*. Some of these, however, especially *piperatus* and *acris*, have been deemed unwholesome.

M. Orfila, in his "Toxicologie Générale," mentions the following species as decidedly poisonous: *Amanita, muscaria, alba, citrina*, and *viridis*; the *Hypophyllum maculatum, albocitrinum, tricuspidatum, sanguineum, crux-militense, pudibundum*, and *pellitum*; the *Agaricus necator, acris, piperatus, pyrogalus, stipiticus, annularis*, and *urens*. To these may be added, the *A. semiglobatus, bulbosus*, and probably many others.

In the selection of unknown Fungi, colour has been regarded by many writers as of considerable importance. "Quamobrem recte scribit Avicenna," says Matthiolus, "eos noscentes esse, qui nigri vel virides, vel in nigro-purpurascens visuntur." Persoon remarks, that a pure yellow, or golden colour, especially in the lamellæ of Agarics, denotes a good quality. Dr. Greville says, many excellent species have a very pale, or nearly white pileus; but that some are brown. A vinous, red, and violet, is regarded as universally wholesome; but orange, red, and rose-colour, poisonous. According to Decandolle, all the Boleti are edible, except, 1st, coriaceous and ligneous species; 2nd, those whose stem is furnished with a collar, or annular veil; 3rd, those with an acrid taste; and 4th, those whose flesh turns to a blue colour on being cut. Whenever this last character is perceived in any plant of this order, it always denotes a poisonous property. All those species that have a pungent, or disagreeable smell, an astringent taste, or leave an unpleasant sensation on the tongue and palate, should be entirely rejected. Agarics growing in tufts and clusters from the trunks of trees, are almost universally to be avoided. "Fungi, especially Agarici and Boleti, should be gathered for the table before they arrive at their full age, as they frequently then become tough and insipid. The *hymenium*, or that part containing the fructification, should, when it consists of tubes, (as in the Boleti,) be invariably removed, as it is often noxious, when the rest of the plant is unexceptionable. When the hymenium consists of gills or lamellæ, (as in *Agaricus* and *Amanita*,) they need not be separated, if the plant be taken when quite young; but if the pileus, or cap, be expanded,



they must be removed before cooking." Many species that are innocent when the plant grows in dry ground, are deleterious when it grows in a wet situation. The same species may be eaten with impunity when young, but becomes noxious when old. In some constitutions, even the common esculent kinds prove deleterious, as evinced by their not unfrequent effects on one of a party, while the rest escape.

QUALITIES AND CHEMICAL PROPERTIES.—Mushrooms are of rapid growth and speedy decay. When they putrify, they give out an extremely unpleasant odour, and approach animal matter more closely than other vegetable substances. Braconnot, who, with M. Vauquelin, has analyzed a great number of species, distinguished the insoluble spongy portion which characterizes mushrooms by the name of *fungin*. It approaches woody fibre in its properties; but is sufficiently distinguishable by various characters, particularly by constituting a nourishing article of food, and being much less soluble in alkaline leys. Braconnot also ascertained the existence of two new acids in mushrooms. One of these is termed *boletic acid*, and consists of irregular four-sided prisms, of a white colour, and permanent in the air. The other acid, which constitutes a very general ingredient in mushrooms, is called *fungic acid*. Both may be obtained from the expressed juice of the *Boletus pseudo igniarius*, the latter also from *B. juglandis*, *Merulius cantharellus*, *Peziza nigra*, and *Phallus impudicus*. Proust has likewise discovered in them the benzoic acid, and phosphate of lime.

*Amanita muscaria*. This was examined by Vauquelin, who extracted from it an animal matter, insoluble in alcohol, osmazome, a fatty matter, muriate, phosphate, and sulphate of potash.

*Agaricus bulbosus*. Vauquelin obtained from this species, the two animal matters found in the *Amanita muscaria*, a fatty soft matter, of a yellow colour and acrid taste, and an acid salt, which is not a phosphate. The insoluble substance of this, and of the former species, yielded an acid when distilled.\*

We have met with no analysis of the *Agaricus semiglobatus*.

POISONOUS EFFECTS.—The symptoms which generally arise from eating the noxious Fungi, are pains of the stomach, nausea, vomiting, and purging; sense of heat of the bowels, faintings, cramps of the lower extremities, convulsions, sometimes general, sometimes partial, and unquenchable thirst succeed: the pulse is small, hard, and very frequent. When these symptoms, after having continued a certain time, do not diminish in consequence of the remedies administered, vertigo, stupor, and delirium, affect some subjects, and are only interrupted by pains and convulsions. In others there is no drowsiness; the pains and convulsions exhaust the strength, faintings and cold sweats come on, and death puts a period to this series of suffering, after having been foreseen and announced by the patient himself, who has not lost his senses for a single moment.

Poisonous Fungi do not in general manifest their action till six or eight hours after they are eaten, and twelve or sixteen occasionally elapse. In cows and other cattle, they have been known to produce

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\* *Ann. de Chim.* lxxxv.



bloody urine, nauseous milk, swellings of the abdomen, inflammation of the intestines, obstructions, diarrhœas, and death. In sheep, they are said to bring on a scirrhus liver, a cough, general wasting, and dropsy.

1. *Amanita muscaria*. In the Toxicologie Générale of M. Orfila, several cases are detailed of the fatal effect of this species on the animal economy. Several French soldiers ate, at two leagues from Polosk, in Russia, mushrooms of the above kind. Four of them, of a robust constitution, who considered themselves proof against the consequences under which their feebler companions were beginning to suffer, refused obstinately to take an emetic. In the evening the following symptoms appeared: anxiety, sense of suffocation, ardent thirst, intense griping pains, a small and irregular pulse, universal cold sweats, changed expression of countenance, violet tint of the nose and lips, general trembling, fœtid evacuations. These symptoms becoming worse, they were carried to the hospital. Coldness and livid colour of the limbs, a dreadful delirium, and acute pains accompanied them to the last moment. One of them sunk a few hours after his admission into the hospital; the three others had the same fate in the course of the night. Haller relates that six persons of Lithuania perished at one time by eating the *A. muscaria*; and that in Kamtschatka it had driven others raving mad. The inhabitants of the latter country prepare a liquor from it, and from a species of *Epilobium*, which, taken in small quantities, inebriates. It has not, however, been clearly ascertained whether the species which grows in this country, and in the south of Europe, be the same as that which is found in Kamtschatka. The properties of this variety are exceedingly curious, and have been fully described in an Essay by Dr. Langsdorf,\* quoted by Dr. Greville. The inhabitants of the north-eastern parts of Asia use it in the same manner as ardent spirits, or wine, to produce intoxication. These fungi are collected in the hottest months, and hung up by a string in the air to dry; some dry of themselves on the ground, and are said to be far more narcotic than those artificially preserved. Small deep-coloured specimens, thickly covered with warts, are also said to be more powerful than those of a larger size and paler colour.

The usual mode of taking this fungus, is to roll it up like a bolus, and swallow it without chewing, which the Kamtschadales say, would disorder the stomach. It is sometimes eaten fresh in soups and sauces, and then loses much of its intoxicating property; when steeped in the juice of the berries of the *Vaccinium uliginosum*, its effects are those of strong wine. One large, or two small fungi, is a common dose to produce a pleasant intoxication for a whole day, particularly if water be drunk after it, which augments the narcotic principle. The desired effect comes on one or two hours after taking the fungus. Giddiness and drunkenness result from the fungus, in the same manner as from wine or spirits. Cheerful emotions of the mind are first produced, involuntary words and actions follow, and sometimes at last an entire loss of consciousness. It renders some

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\* *Annalen der Wetterauischen Gessellschaft für die gesamente Naturkunde.*



remarkably active, and proves highly stimulant to muscular exertion; with too large a dose, violent spasmodic effects are produced.

So very exciting to the nervous system, in some individuals, is this fungus, that the effects are often very ludicrous. If a person under its influence wishes to step over a straw, or small stick, he takes a stride or a jump sufficient to clear the trunk of a tree; a talkative person cannot keep secrets or silence; and one fond of music is perpetually singing.

The most singular effect of the *Amanita* is the influence it possesses over the urine. It is said, that from time immemorial, the inhabitants have known that the fungus imparts an intoxicating quality to that secretion, which continues for a considerable time after taking it. For instance, a man moderately intoxicated to-day, will by the next morning have slept himself sober; but (as is the custom) by taking a tea-cup of his urine, be more powerfully intoxicated than he was the preceding day by the fungus. The intoxicating property of the fungus is capable of being propagated; for every one who partakes of it has his urine similarly affected. Thus, with a very few *Amanitas*, a party of drunkards may keep up their debauch for a week. Dr. Langsdorf mentions, that by means of the second person taking the urine of the first, the third that of the second, and so on, the intoxication may be propagated through five individuals.

Linneus says, that flies are killed by this fungus, when infused in milk, hence its name *muscarius*; and the same author also tells that the expressed juice, rubbed on walls and bedsteads, effectually expels bugs. In the north of Europe, it is sometimes administered in doses of from ten to thirty grains, by the vulgar, in epilepsy, palsy, and as an application to foul ulcers. More recently, a tincture of it has been employed internally by M. Reinhard, for scaly affections of the skin, and in obstinate expectorations, both mucous and purulent. The dose is from thirty to forty drops in any proper vehicle.\*

2. *Agaricus semiglobatus*. In vol. iii. of the "London Medical and Physical Journal," cases are detailed by Mr. E. Brande, in which the species was partaken of by several individuals of one family, all of whom were saved by energetic and well-directed treatment. In vol. xx. of the same work, is the subjoined account, by Mr. Parrott, of Mitcham, in which it will be seen that death occurred from eating this fungus in three instances, and very alarming symptoms were produced in others.

"The family, which partook of this poison, consisted of William Attwood, aged 45 years; Eliza, his wife, 38; their daughters, viz. Mary, 14, Hannah, 11, Sarah, 7, Eliza, 5.

"On Monday, the 10th inst. 1808, all ate stewed champignons, at one o'clock, which stew was made in an iron vessel, and consisted of the articles already specified, with the addition of butter, flower, pepper, salt, and water. Each of these parties, Hannah excepted, was supposed to have eaten more than half a pint. Within ten minutes after they had eaten their meal, they felt their spirits exhilarated, and the eldest daughter said to her mother, 'How funny you

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\* *Mag. der Pharm.* Nov. 1823, p. 163.



look !' All the parties continued cheerful till about six o'clock, when having taken their tea, they were attacked with stupor, which was not of long continuance ; this was soon succeeded by severe pains in the bowels, accompanied with violent vomiting, and copious purging, which continued till the following afternoon, when the patients were alarmed, and requested my attendance. Under these symptoms, it appeared that the first step to be taken, was to get rid of the poison ; for which purpose, oily opening medicines were administered, with emollient clysters, and plentiful dilution with warm broth was recommended. This method of treatment appeared to promise success in the case of Mary, who had so far recovered on the following day, Wednesday, that she walked about a quarter of a mile from home ; in the evening, however, the symptoms returned. On Thursday evening she became convulsed, and died on Friday morning at two o'clock.

" Hannah only ate two spoonfuls of the stew, as she did not like its flavour ; this girl recovered after a severe vomiting and purging.

" Eliza did not complain much of her sufferings, but became convulsed at the same time her sister Mary did, and died half an hour after her.

" Sarah never complained of pain in the head, but was continually suffering under extreme pain in the bowels, which was increased on pressure, but no tension existed. Clysters afforded her no relief, and she died on Saturday morning, in the same convulsed state as her sisters. Permission having been obtained to open one of the bodies, that of Sarah was examined, as she had suffered under the most excruciating pain in the bowels, but no appearance of disease was manifest in any of the abdominal viscera ; the stomach was empty, and also the whole of the alimentary canal. On Friday, the 14th, the vomiting still continuing in the father and mother, it was thought proper to administer small doses of opium,\* but without effect ; the effervescing draught was then given, which succeeded, but the pain in the bowels was thereby so much increased, that both regretted having taken it. On the same night Mrs. Attwood miscarried—she was two months advanced in pregnancy ; but, with her husband, is now in a state of convalescence. During the progress of this unfortunate occurrence, the pulse in each of the patients was quickened, and varied from 100 to 120 in a minute, but was not sufficiently full to justify the use of the lancet ; the tongue was parched, and slightly streaked with white ; the tunicæ conjunctivæ were not inflamed, and the parties were all perfectly sensible ; the urine was secreted in very small quantity, but it was not high coloured.

" A dog which had partaken of the stew died on Wednesday night, apparently in great agonies."

3. *Agaricus bulbosus*.—In vol. xii. of the London Medical and Physical Journal, pages 387 and 512, Dr. Bardsly, of Manchester, narrates several cases in which very severe effects were produced by a fungus, which, according to Dr. Hull, was the *Agaricus bulbosus*.

" On the 29th of October, 1804," says Dr. B. " I was called upon at

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\* " In our opinions, considerable doses of solid opium should have been given long before this."—EDITORS.



six in the evening to visit Master S., aged 5 years, the son of a gentleman living near this town. His parents informed me that he went out to play in perfect health, after eating a moderate dinner, with a companion of nearly his own age, in the fields adjoining; and in about two hours was led home in a state of alarming illness. He seemed to stagger like a person intoxicated, and with odd gesticulations laboured to express his sufferings, but was unable to articulate a single syllable. When I saw the patient, which was probably about two hours after the seizure, he appeared partially delirious, and uttered faint and indistinct screams. His pulse was slow, and somewhat irregular. The pupils of both eyes were much dilated, and vision was evidently imperfect. He seemed very averse to lying down, and his restlessness and impatience led him to make frequent attempts to walk about the room, but without any fixed object or design. He was unable to answer any questions, or to express his feelings by words. Slight convulsive motions might be perceived in the legs and arms, which gradually extended to the muscles of the trunk, and produced irregular distortions of the whole body. The upper extremities began to swell, and assumed a livid colour; the abdomen felt hard and tumid." From the symptoms Dr. B. suspected the cause, but could not ascertain the fact at the time. Frictions, with the volatile liniment, were applied to the spine, and a stimulating enema administered. He was put into a hot bath at 100°, and kept in for ten minutes. The clyster was soon repeated, and purgative pills, composed of calomel and extract of jalap. Profuse sweating ensued, and was maintained by diluents of lemon whey, &c. A copious stool took place twenty minutes after the last clyster, and the patient, who was tranquillized by the bath, became much better. Soon after, he vomited an offensive greenish coloured fluid, and this was succeeded by a plentiful discharge from the bowels, but no vestiges of the fungus could be discovered in the dejections. An evident abatement of symptoms followed, the dilatation of pupils disappeared, the pulse became slower and firmer, he articulated with tolerable distinctness, but seemed like a person just roused from a long and deep sleep, unconscious of any thing that had happened. The bowels were kept in action during the night, and the next day, with the exception of debility and languor, the patient had recovered.

Upon strictly questioning him and his companion, it appeared that they had eaten of some fungi while in the fields, but the latter partook of so little that his symptoms were very mild. Dr. Bardsly further remarks, that had he been called at an earlier period, he should have ordered an emetic, but supposing that a sufficient time had elapsed for the poison to have passed into the bowels, he directed his efforts to procure a plentiful evacuation from them.

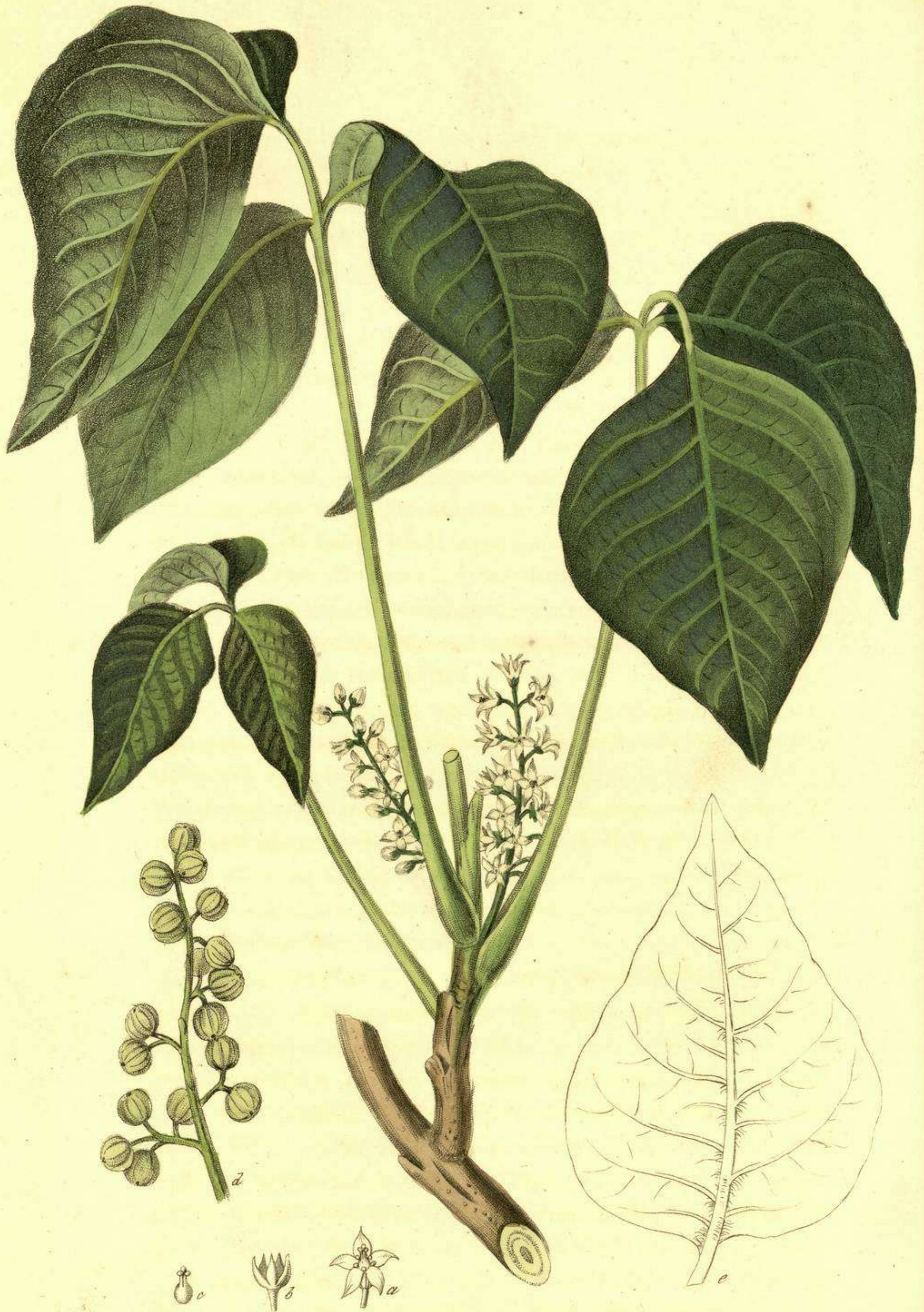
**MORBID APPEARANCES.**—The appearances observed on dissection are violet coloured spots on the skin over the whole body, very extensive and numerous; the abdomen is extremely bulky, the conjunctiva is injected, the pupil contracted, the stomach and intestines inflamed, and scattered over with gangrenous spots; sphacelus is present in some portions of this viscus, and the stomach and intestines are so contracted, that the canal of the latter is often obliterated. The œso-



phagus in one subject was inflamed and gangrenous; and in another there was *intus-susceptio* of the ileon. One individual alone has been known to have the intestines distended with excrementitious matter. *In none have the remains of the mushroom been found*; they had either been completely digested or evacuated. The lungs were inflamed and distended with black blood; congestion had also taken place in almost all the veins of the abdominal viscera, in the liver, spleen, and mysentery. Inflammation and gangrenous spots occur on the membranes of the brain, in its ventricles; on the pleura, lungs, diaphragm, mysentery, bladder, uterus, and were even observed on the fœtus of a pregnant woman. The blood in this subject was extremely fluid; in others, it was almost coagulated. Extreme flexibility of the limbs was not a constant appearance.

**TREATMENT.**—Although the fungi have generally passed the stomach prior to the manifestation of alarming symptoms, it will be right to excite vomiting as speedily as possible, by a solution of sulphate of zinc or copper; evacuations from the bowels should be immediately produced by stimulating purgative clysters; and as soon as the stomach becomes settled, the intestines should be thoroughly emptied by means of castor or croton oil; perhaps a large dose of spirits of turpentine would be better than either. After the first evacuation, small, but repeated doses of ether, or ether and opium, should be given in almond emulsion; and water acidulated with vinegar, or other vegetable acids, may form the common drink. Other symptoms, subsequent to the effects of these poisons, must of course, be treated according to the general principles which will suggest themselves to every well-in-formed practitioner.





*Rhus toxicodendron*

G. Reichenow.

Walden 1830

London. Published for the Authors. July. 1830.



## RHUS TOXICODENDRON.

*Trailing Sumach. Pubescent Poison Oak.*

Class V. PENTANDRIA.—Order III. TRIGYNIA.

Nat. Ord. DUMOSÆ, Lin. TEREBINACEÆ, Juss.

GEN. CHAR. *Calyx* 5-parted. *Petals* 5. *Berry* superior, with one seed.SPEC. CHAR. *Leaves* ternate; leaflets petioled, ovate, sinuated, angular, pubescent underneath. *Stem* creeping.Syn.—*Hedera trifolia virginiana*. *Park. Theatr.* 679. 5.*Arbor trifolia venenata virginiana*, folio hirsuto. *Raii. Hist.* 1799.*Edera trifolia canadensis*. *Cornut. Canad.* 96. t. 97; *Barr. Ic.* 228.*Vitis canadensis*. *Munting. Phyt.* p. 239. t. 60.*Rhus radicans*. *Willd. Sp. Pl.* 1. p. 1481; *Hort. Kew.* 2. p. 163; *Kalm. Trav.* v. 1. 67. 177.*Toxicodendron triphyllum glabrum*. *Duham. Arb.* v. 2. 341. t. 98.*Rhus toxicodendron*. *Lin. Sp. Pl.* 381; *Willd.* 1. 1481; *Hort. Kew.* 2. p. 82; *Pursh. Fl. Amer. Sept.* 205; *Mich. Bor. Am.* 1. p. 183; *Stokes Bot. Mat. Med.* 2. 160; *Bot. Mag.* v. 43. t. 1806.FOREIGN.—*Toxicodendron*; *Herbe à la puce*, Fr.; *Rus Tossicodendro*, It.; *Giftsumach*, Ger.

THE Trailing Sumach, or Poison Oak, as it is sometimes improperly called, is a common tree in woods, fields, and hedges, in North America, from Canada to Georgia; flowering in June and July. It is assumed by many botanists that this is a distinct species from the *Rhus radicans*. Linneus is of this opinion, and founds his distinction on the leaves of the latter being naked and entire, while they are pubescent and angular in the former. Michaux and Pursh, who had more extensive opportunities for observation, consider the two as mere local varieties, while Elliot and Nuttall agree in opinion with Linneus. We consider, however, that the question in favour of their identity has been set at rest by Professor Bigelow, who



states, "among the plants which grow abundantly round Boston, I have frequently observed individual shoots from the same stock having the characters of both varieties. I have also observed, that young plants of *Rhus radicans* frequently do not put out rooting fibres until they are several years old, and that they seem, in this respect, to be considerably influenced by the contiguity of supporting objects." The drawing was taken from a plant in the garden of the Society of Apothecaries, Chelsea.

The root sends up many stems, which divide into slender, woody branches, and are covered with a brown bark. These stems seldom grow erect, but trail along the ground, and when they meet with support will ascend a wall, or climb like ivy to the tops of the loftiest trees. The leaves are placed alternately, supported on long petioles; and are composed of three dark green, shining leaflets, about three inches long and one and a half broad. The leaflets are of an ovate, or rhomboidal form, pointed, strongly veined, smooth on the upper surface, but always more or less downy beneath, at least about the ribs, and sometimes quite covered with down at the back, their margin almost entire, but most generally, in the downy variety, strongly sinuated, cut, or lobed: the two lateral leaflets are considerably the smallest of the three, and nearly sessile. The flowers are produced in simple axillary racemes on short peduncles, and are of an herbaceous colour, and sometimes diœcious. The calyx is divided into five deep, erect, permanent segments. The petals are also five, ovate, pointed, and spreading. The filaments are five, shorter than the corolla, bearing small roundish anthers. The germen is superior, roundish, supporting a very short style with three small heart-shaped stigmas. The fruit is a globular striated, whitish berry, containing a single, roundish, bony seed. Fig. (a) exhibits a flower a little magnified; (b) the calyx; (c) the germen and style; (d) the fruit; (e) a leaf in outline, to show the pubescence on the under surface.

QUALITIES AND CHEMICAL PROPERTIES.—"If a leaf or stem of this plant be broken off," says Prof. Bigelow, "a yellowish milky juice immediately exudes from the wounded extre-



mity. After a short exposure to the air, it becomes of a black colour, and does not again change. This juice, applied to linen, forms one of the most perfect kinds of indelible ink. It does not fade from age, washing, or exposure to common chemical agents. I have repeatedly, when in the country, marked my wristband with spots of this juice. The stain was at first faint and hardly perceptible, but in fifteen minutes became black, and was never afterwards eradicated by washing, but continued to grow darker, as long as the linen lasted."

Dr. J. Horsefield, in a valuable dissertation on the American species of *Rhus*, states various unsuccessful experiments he made with a view to ascertain the nature of this colouring principle, and the means of fixing it on stuffs. He found that the juice expressed from the pounded leaves did not produce the black colour, and that strong decoctions of the plant, impregnated with various chemical mordants, produced nothing more than a dull yellow, brownish, or fawn colour. The reason of this is, that the colouring principle does not reside in the sap, but in the *succus proprius*, or in the peculiar juice of the plant, which is secreted in small quantity, and is wholly insoluble in water,—a circumstance which contributes to the permanency of its colour, at the same time that it renders some other medium necessary for its solution.

With a view to ascertain the proper menstruum, Dr. Bigelow subjected pieces of cloth stained with it, to the action of various chemical agents. Water, at various temperatures, assisted by soap and alkali, produced no change in its colour. Alcohol, both cold and boiling, was equally ineffectual. A portion of the cloth, digested several hours in cold ether, with occasional agitation, was hardly altered in appearance. Sulphuric acid reddened the spots, but scarcely rendered them fainter. The fumes of chlorine, which bleached vegetable leaves and bits of calico in the same vessel, excited no effect on this colour. Boiling ether is the proper solvent of this juice. A piece of linen spotted with it, was immersed in ether, and placed over a lamp; as soon as the fluid boiled, the spot began to grow fainter, and in a few minutes was wholly discharged, the ether acquiring from it a



dark colour. This black juice, in common with that of the *Rhus vernix*, appears to be a distinct principle in vegetable chemistry.

The leaves and bark are astringent to the taste; this quality appearing to depend on gallic acid, rather than on tannin.

*Sumach*, used in the arts of tanning and dyeing, is the produce of the *Rhus coriaria*, which grows naturally in Syria, Palestine, Spain, and Portugal. It is also cultivated in the neighbourhood of Montpellier, where it is called *rédoul*, or *roudou*.

*Copal*, improperly called *gum copal*, is said to be furnished by the *Rhus copallinum*. There are, however, several kinds met with in commerce, which are supposed to be the produce of some species of *Hymenia*.

**POISONOUS EFFECTS.**—An acrid poison exists in the juice of many species of the *Rhus* genus. The *Rhus pumilum* and *R. typhinum* produce ill effects in a greater or lesser degree; and these plants appear to be less injurious than the *R. vernix*. The effects described, appear to be produced in particular constitutions only, as this plant (assuming it to be identical with the *R. radicans*) is so commonly diffused by road-sides and near habitations, in America, that its ill consequences would be extremely frequent, were all individuals susceptible to its impressions. Those persons who are constitutionally liable to the influence of this poison experience a violent itching, redness, and tumefaction of the affected parts, particularly of the face: succeeded by vesications, aggravated swelling, heat, pain, and fever. When the disease is at its height, the skin becomes covered with a crust, and the swelling is so great as in many instances to close the eyes, and almost obliterate the features of the face. The symptoms begin in a few hours after the exposure, and are commonly at the height on the fourth or fifth day; after which, desquamation begins to take place, and the distress, in most instances, to diminish. Sometimes the eruption is less general, and confines itself to the part which has been exposed to contact with the poison. An acquaintance of Dr. Bigelow's marked his wristband with the fresh juice, to ob-



serve the effect of the colour. The next day his arm was covered with an eruption, from the wrist to the shoulder, but the disease did not extend further. It sometimes happens that the eruption continues for a longer time than that which has been stated, and that one set of vesications succeeds another, so as to protract the disease longer than usual. The symptoms of this malady, though very distressing, are rarely fatal; but death sometimes occurs in America.

**TREATMENT.**—The disease appears to be of an erysipelalous nature. The general antiphlogistic treatment is required, such as rest, low diet, and evacuations: saline purgatives are peculiarly useful, and bleeding is occasionally required. The extreme irritability and burning sensations may be greatly mitigated by opium. Cold applications, in the form of ice or cold water, are recommended by Dr. Horsefield, and are said to exert a remarkably beneficial effect. The acetate of lead in solution is also very useful.

Persons who have been in contact with this poison, should immediately examine their hands, clothes, &c. to see if there be any juice adhering to them. This should be rubbed off with some absorbent powder, as washing does not accomplish the purpose.

**MEDICAL PROPERTIES AND USES.**—This plant was introduced into practice by Dufrenoy, a physician at Valenciennes, about the year 1788. He has reported seven cases of obstinate herpetic eruptions which were cured by it. His attention was drawn to the subject by finding that a young man, who had a *dartre* on his wrist of six years standing, was cured by accidentally becoming poisoned with this plant. The same physician administered the extract in several cases of palsy, four of which he says were cured by it. Dr. Horsefield, in several instances, administered a strong infusion, in the dose of about a teacupful, to consumptive and anasarcaous patients. It appeared to act as an immediate stimulant to the stomach, producing some uneasiness in that organ, also promoting perspiration and diuresis.

Dr. Alderson, of Hull, published an Essay on the *Rhus toxic-*



*codendron*, in which he asserts, that he gave the dried leaves of this plant in doses of half a grain, or a grain, three times a day, in several cases of paralysis. He says, that all his patients recovered, to a certain degree, the use of their limbs. The first symptom of amendment was an unpleasant feeling of prickling or twitching in the affected limbs; which appears analogous to the sensation produced by *Strychnine*. Subsequent experiments by no means confirm the good opinion which Dr. Alderson endeavoured to impress on the public; but we conceive that it is highly culpable to abandon a sufferer to his lamentable fate, without trying the efficacy of a medicine which can easily be obtained. We have always experienced the greatest facility in procuring specimens of plants from Mr. Anderson, of the Apothecaries garden at Chelsea; and feel assured that the Worshipful Company are well satisfied to have the profession supplied with small quantities of any of their productions, when they cannot be procured elsewhere.

Dr. Givensius has administered the leaves of this species of *Rhus*, in doses of one-fourth of a grain, twice a day, in five cases of paralysis, four of which were cured.\*

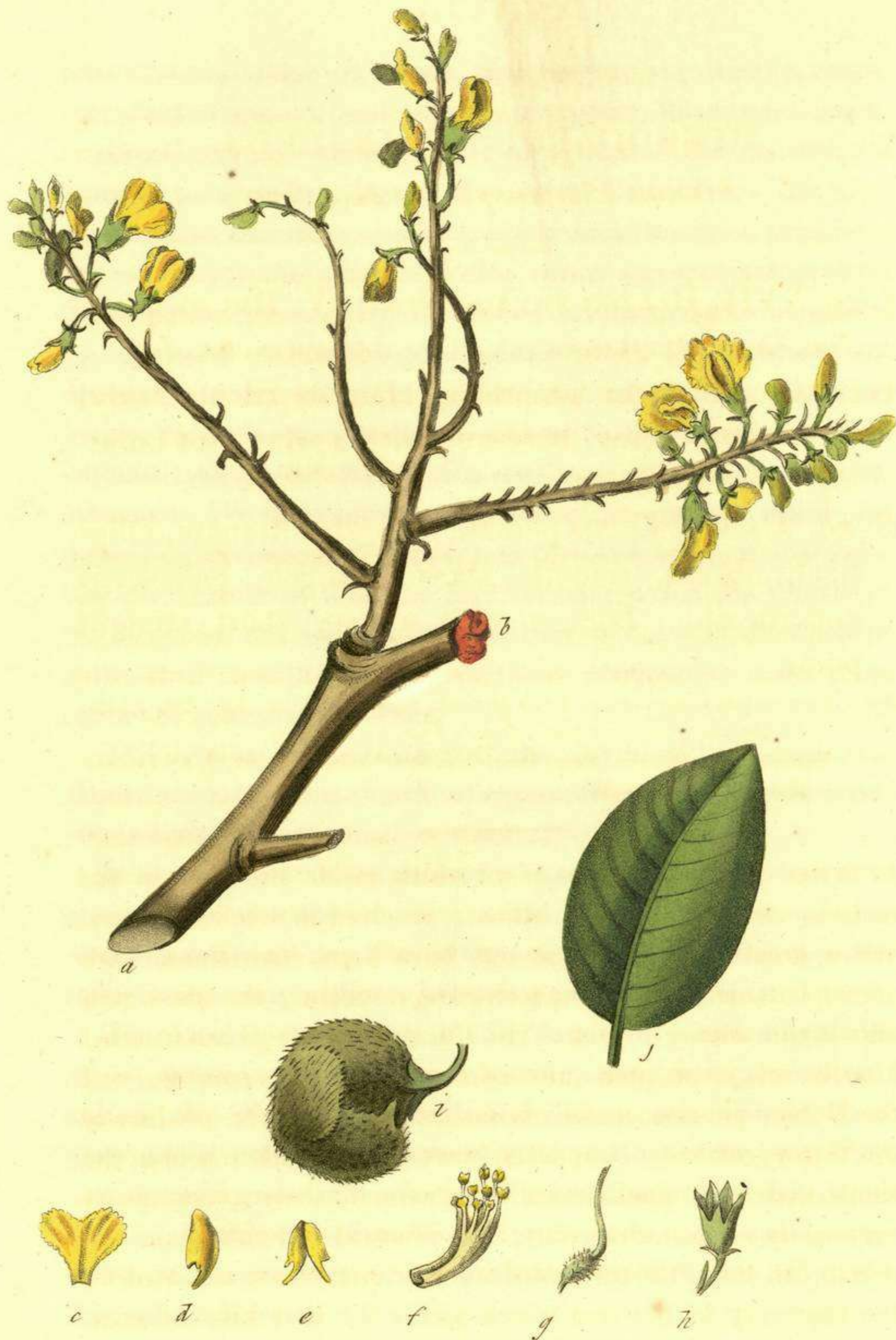
In persons not constitutionally susceptible to the eruptive disease, it is probably an inert medicine, as Dufrenoy's patients sometimes carried the dose as high as an ounce of the extract, three times a day, without perceiving any effect from it.

The external application of this family of plants might, no doubt, be used in certain cases as a stimulant, with great effect; indeed, Dr. Pierson, of the United States, was relieved from dyspeptic symptoms and chronic inflammation of the eyes, after having been powerfully affected by exhalations from the *Rhus vernix*. But as the effects would not be certain, nor manageable in extent, the prospect of benefit is scarcely sufficient to justify the risk of the evil.

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\* *Bulletin des Sciences Medicales*. Sept. 1825.





*Pterocarpus erinaceus.*

G. Reid. del.

Woodville.

London. Published for the Authors. July. 1830.



## CLXVIII

### PTEROCARPUS ERINACEUS.

*African Pterocarpus, or Kino Tree.*

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Class XVII. DIADELPHIA.—Order IV. DECANDRIA.

Nat. Ord. PAPILIONACEÆ, Lin. LEGUMINOSÆ, Juss.

GEN. CHAR. *Calyx* 5-toothed. *Legume* falcate, leafy, with tumid veins, bordered with a wing, not bursting. *Seeds* solitary.

SPEC. CHAR. *Leaves* pinnate; *leaflets* alternate, elliptical, obtuse, smooth above, reddish, pubescent underneath. *Legume* with a very short straight point.

Syn.—*Pterocarpus senegalensis*; foliis pinnatis, foliolis ovalibus fructibus lunato-orbiculatis, pubescentibus. *Gray's Trav.* p. 395. t. D.

*Pterocarpus erinaceus.* *Lam. Dict.* 5. p. 728; *Illustr.* t. 602. f. 4; *Decand. Prodr.* part. 2. p. 419.

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It is well known that the plant which yields the *Kino* of the materia medica has been hitherto involved in much obscurity, and a great variety of opinions have been entertained, both among botanists and pharmacologists, respecting the tree which affords this useful extract. The Edinburgh college has inserted kino as the inspissated juice of the *Eucalyptus resinifera*, and the Dublin pharmacopœia has considered it as the product of the *Butea frondosa*. It appears, however, that there is sold in the shops, under the appellation of kino, various substances, agreeing very nearly in their characters, both physical and chemical; but it is to Mr. Park, the celebrated traveller, that we are indebted for the discovery of the tree which yields the best kino of commerce; who, in his second expedition into Africa, found it in its native situation on the Gambia, and transmitted a dried specimen of the plant to Europe, which we believe is still preserved in the Banksian Herbarium. It is a *Pterocarpus*, a native of Senegal, and is described by Lamarck, under the specific



name *erinaceus*, in the Encyclopédie Méthodique. Messrs. Gray and Dochart, from whose interesting "Travels in Western Africa" our figure is taken, state that this plant, which is known to the inhabitants by the name of *kari*, loses its leaves in the month of November, and in December the flowers appear.

It is a middle sized tree, with spreading branches, covered with an ash-coloured bark. The leaves are deciduous, pinnated; composed of alternate, oval, obtuse, entire, leaflets, larger at the base, thin, smooth above, pubescent, and of a reddish hue beneath, with fine parallel, oblique ribs or nerves, somewhat arched, and placed on short footstalks. The racemes are compound and terminal. The flowers are numerous, yellow, on short, curved, pedicels, with a pair of small lanceolate bractees at the base of each pedicel. The calyx is bell-shaped, unequally toothed, pubescent, and furnished with two small awl-shaped bractees. The flowers are papilionaceous, and soon fall off; the corolla consists of a roundish, heart-shaped, spreading vexillum, or standard, waved at the margin, with a short claw; two lanceolate wings, and a short carina. The filaments are alternately longer, connected at the base, and support roundish, yellow anthers. The germen is oblong, pubescent, with a curved, thread-shaped style, and simple stigma. The fruit is a compressed, orbicular pod, with a leaf-like edge, covered at the sides with white bristles, and containing a single, kidney-shaped seed. Fig. (*a*) represents a flowering branch after the leaves have fallen away; (*b*) the gum, or kino, flowing from the wounded part; (*c*) a leaflet; (*d*) the calyx; (*e*) the standard of the corolla; (*f*) one of the wings; (*g*) the keel, or carina; (*h*) stamens; (*i*) pistil; (*k*) legume:—all but figures (*a*) (*b*) and (*k*) more or less magnified.

The kino is obtained from incisions made in the trunk and branches of the tree. "When," says Major Gray, "an incision is made, the juice flows out, at first, of an extremely pale red colour, and in a very liquid state; but it soon coagulates, becoming of a deep blood red hue, and so remarkably brittle, that its collection is attended with some difficulty."

QUALITIES AND CHEMICAL PROPERTIES.—That kind of



kino which is most esteemed, and fetches the highest price, was first introduced to the profession by the celebrated Dr. Fothergill. It is the produce of *Pterocarpus erinaceus*, and is imported from Senegal. *African Kino* has twigs intermixed in its substance, is of a reddish brown colour; it is brittle, breaks with a resinous lustre, is gritty between the teeth, has a bitterish taste, and does not colour the saliva. Water at 60° dissolves the greater part of it.

*Botany Bay Kino* is the concrete juice of the *Eucalyptus resinifera*, or brown gum-tree of that country. Like the above, it is inodorous, is somewhat bitter, and more astringent to the taste. It is in larger pieces: water at 60°, also, dissolves the greater portion of it.

*Jamaica Kino*, which is now seldom met with, was supposed to be the juice of the *Cocoloba uvifera*, or sea-side grape, by Dr. Duncan; while others assert it to be that of the *Swietenia Mahagoni*. It is in small brittle fragments, of a dark colour, resembling blood when dry, and having a resinous fracture. Water dissolves more of this than of the other sorts.

Dr. Ainslie states, that *kino* is generally confounded with dragon's blood in India by the native practitioners; and that what is met with in the bazaars is brought from New Holland, as described above.

Many other astringent concrete juices are occasionally met with and substituted for kino. The *Nauclea Gambir*, *Nauclea-Kino*, or *Funis uncatu*s of Rumphius furnishes one sort, and the *Butea frondosa* another. All the different sorts of kino contain a large proportion of modified tannin. They dissolve better in alcohol than in water, being muddy in solutions of the latter, but transparent in the former, and of a fine crimson colour if sufficiently diluted. "All the varieties dissolve in solutions of pure potass, and of ammonia, and no precipitation takes place on the addition of water. Some chemical change, however, is effected, and the astringent property of the kino is completely destroyed—a fact which ought to be kept in remembrance in prescribing this remedy."\*

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\* *London Dispensatory*, p. 346.



**MEDICAL PROPERTIES AND USES.**—Kino is powerfully astringent, and is given in the same manner, and for the same purposes as Catechu; but is not considered so uniform in its qualities. It is principally employed in obstinate, chronic diarrhoeas, uterine and intestinal hæmorrhages, either alone, or combined with other astringents. Externally, it is applied as a styptic, and to constrict the vessels of flabby, ill-conditioned ulcers. The sort produced by the *Pterocarpus erinaceus* is most grateful, and is generally preferred for its medical effects.

**DOSE.**—In substance, it may be given in a dose from ten grains to half a drachm. The officinal tincture of it may be given in the dose of two or three drachms, diffused in some aqueous fluid, by means of mucilage and syrup.

**OFF. PREP.**—Tinctura Kino, L. E. D.

Pulvis Kino Compositus, L.

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**PTEROCARPUS SANTALINUS.** — *Three-leaved Pterocarpus, or Red Saunders Tree.*

**SPEC. CHAR.** *Leaves* ternate, roundish, abrupt, very smooth. *Petals* crenate, wavy.

*Syn.*—Santalum rubrum. *Tabern. Ic.* 933; *Bauh. Hist.* 1. 489.

*Pterocarpus santalinus.* *Lin. Suppl.* 318; *Willd. v.* 3. 906; *Ait. Kew. v.* 4. p. 249; *Woodv.* 4. t. 254.

**FOREIGN.**—*Santale rouge*, Fr.; *Sandalo roso*, It.; *Sandalo rubio*, Sp.; *Rothes Sandalholz*, Ger.

This species of *Pterocarpus*, which supplies the officinal *red saunders*, is a native of the East Indies, where it was first observed by Kœnig. It thrives best on a strong soil, and is found in the greatest abundance, as well as of the best quality, in the Mysore, above the western Ghauts. It was introduced into the stoves at Kew in 1800, by the late Sir Joseph Banks, but the plant has not yet flowered there. It is a lofty tree, with alternate branches, covered with a bark which has been compared with that of the common alder. The leaves are ternate, seldom pinnated, with ovate, blunt, entire leaflets, very smooth



on the upper surface, and hoary beneath. The flowers are in axillary, simple, or branched, erect spikes. The calyx is five-toothed; the standard of the corolla is obcordate, bent back, with the edges toothed, waved, and of a yellow colour, with red veins; the wings, yellow, spreading, toothed, and waved, and the keel oblong, inflated, and curled at the tip. The filaments are yellow, and support globular, white anthers. The germen is oblong, compressed, hairy, with a curved style, and simple stigma. The legume is curved upwards, compressed, smooth, with a membranous wing along the lower edge, and contains a single, orbicular, compressed seed.

QUALITIES.—Red saunders wood is brought to this country in billets, which are very hard, heavy, of a deep red colour, with black veins, and take a fine polish. It has a slight aromatic odour, and a weak, nearly insipid taste. It must not be confounded with the finely perfumed wood, called sandal wood, or the white and yellow saunders of the older writers on the materia medica, which is very different. Its colouring matter is very sparingly soluble in water, and, in this respect, differs from Brasil wood, with which it is apt to be confounded. It yields its colouring matter to ether, alcohol, and volatile oil of lavender, but scarcely at all to oil of turpentine. Dr. Bancroft found that diluted sulphuric acid acted very efficaciously in extracting the colouring matter of this wood.

MEDICAL PROPERTIES AND USES.—Red saunders was formerly esteemed as a mild astringent and tonic; but it really seems to possess little or no medical properties. The principal use of this wood is as a colouring matter; with which intention it is employed in some formulæ, particularly in the *Spiritus Lavandulæ compositus*. Willdenow says, “succus dat speciem sanguinis Draconis officinarum.” The resinous substance, however, to which the absurd name of Dragon’s blood has been given, is principally the product of another species, the *Pterocarpus Draco* of Linneus.

*Dragon’s blood* is a solid, resinous, concrete substance, of a



dark red colour, which, when powdered, changes to crimson; it readily melts, and catches flame; is insipid, and has a slightly warm pungent taste. It was known to the ancient Greeks, by the name of cinnabar, the cinnabar of the moderns being in those ages called *minium*. In the time of Dioscorides it was employed as an astringent in hæmorrhages and alvine fluxes; but it probably has no such property, and has long since been discarded from medical practice.



P. 169.



*Ferula persica!*

G. Reid. del.

W. Smith. sculp.

London. Published for the Authors. July. 1820.



## FERULA PERSICA.

*Persian Fennel-Giant.**Class V. PENTANDRIA.—Order II. DIGYNIA.**Nat. Ord. UMBELLATÆ, Lin. UMBELLIFERÆ, Juss.*

GEN. CHAR. *Fruit* oval, compressed, with three ribs on each side. *Calyx* obsolete. *General involucrem* deciduous. *Flowers* uniform, all fertile.

SPEC. CHAR. *Leaflets* many-cleft, acute, decurrent. *Primary umbel* sessile.

*Syn.*—*Assa foetida.* Hope in *Phil. Trans.* v. 75, t. 34.

*Ferula persica.* Willd. *Sp. Pl.* v. 1. 1413; *Ait. Kew.* v. 2. p. 136; *Bot. Mag.* v. 46. t. 2096; *Andrew's Reposit.* 558; *Pers. Syn.* 1. p. 312.

*Persiches Sekenkraut.* *Nom. Triv.* Willd.

ABOUT sixty years ago, seeds of this species of *Ferula* were sent to Pallas from the mountains of Ghilan in Persia, supposed to be those of the plant producing the assafœtida. From these, several plants were raised by the Professor at St. Petersburg, and two of them were sent by Dr. Guthrie to the late Dr. John Hope, Professor of Botany in the University of Edinburgh. Both these roots were planted in the open air in the Botanic Garden there, but one of them died; the other did well, and produced seed, and from this source, as Dr. Sims rightly conjectures, sprung the plant in the garden of the Apothecaries' Company at Chelsea, from which the figure in the Botanical Magazine, and that which embellishes our work, was made.

Though this is not the plant described by Kœmpfer as yielding the officinal assafœtida, it seems probable that there are



various species which afford a gum to which the name of assafoetida has been applied, but that the plant mentioned by this author is the one in which it exists in the greatest degree, or at least, which is usually employed for medicinal purposes. That the *Ferula persica* produces assafoetida seems confirmed by the strong smell of that drug which pervades the whole herb; and Dr. Sims informs us that he has collected small globules of true assafoetida that had exuded from the stem. The gum resin, known in the shops under the name of Sagapenum, which is brought to this country from Alexandria, is supposed by Willdenow to be the produce of the *Ferula persica*. It is, indeed, mentioned by Dioscorides as the concrete juice of a species of *Ferula*, but of what particular species, without authentic materials, it is impossible for botanists to decide.

The *Ferula persica* is a hardy plant with a perennial root and annual stems. With us it rises with an erect, round, smooth, slightly striated stem, having only one pair of imperfect leaves about the middle, to the height of three feet. It is described by Dr. Hope as having branches that are naked and spreading; the three lower ones alternate, and supported by the concave membranaceous petiole of the imperfect leaf, the upper ones in whorls; all of them supporting a many-rayed, sessile, plano-convex, terminal umbel, besides from three to six branchlets placed on the outside, bearing compound umbels. The stem is surrounded at the base with six radical leaves, somewhat glaucous, which are petioled, spreading, 3-lobed, ovate, many times pinnate; with incised, acute, decurrent leaflets, of a deep green colour. The footstalks of the lower leaves are flat above, with a raised line running longitudinally through the middle of them. The umbels have from twenty to thirty general spreading rays, and from ten to twenty partial ones, with subsessile florets. The florets of the sessile umbels are fertile; of the peduncled umbel mostly abortive. The petals are yellow, equal, flat, ovate, at first spreading, but afterwards reflexed with the tip ascending. The filaments are awl-shaped, longer than the corolla, curved inwards, and bearing roundish anthers. The germen is inferior,



turbinate, with two reflexed styles, and an obtuse stigma. The fruit is oval, compressed, marked with three distinct ribs, separable into two parts. Every part of the plant abounds with a milky juice, having the odour and taste of assafoetida.

In Persia, when the stem and leaves begin to decay, the top of the root is cut off transversely, and the juice, after it exudes, is scraped off, and inspissated by exposure to the sun. The plant grows chiefly on the mountains in the provinces of Chorrassan and Laar, where it is named *hingisch*. It receives so great an alteration from the nature of the soil, on which it grows, that, according to Kœmpfer, at a small distance from the places above-mentioned, the juice is not worth collecting, being either exceedingly small in quantity, or entirely void of its foetid smell. The plant is even reported to become so mild, not far from Disguun, that the goats greedily browse upon the leaves, and become surprisingly fat.\*

QUALITIES AND CHEMICAL PROPERTIES.—This gum-resin is in irregular masses, composed of agglutinated pieces, which vary in colour from white to pink, and even a dark brown. Its odour is alliaceous, and extremely foetid; it is, therefore, sometimes called *stercus diaboli*. It is with difficulty that it can be powdered, unless triturated with carbonate of ammonia. Its specific gravity is 1.327. It yields its virtues to alcohol and ether, and diffused in water by trituration, forms a milky opaque fluid.

To Pelletier it furnished by analysis ;

Resin	65
Gum	19.44
Bassorine	11.66
Volatile oil	3.60
Malate of lime	(traces)
Loss	3.30
	100

\* For a full and highly interesting account of the mode of collecting and preparing Assafoetida, see *Amœnitates Academicæ*, p. 535.



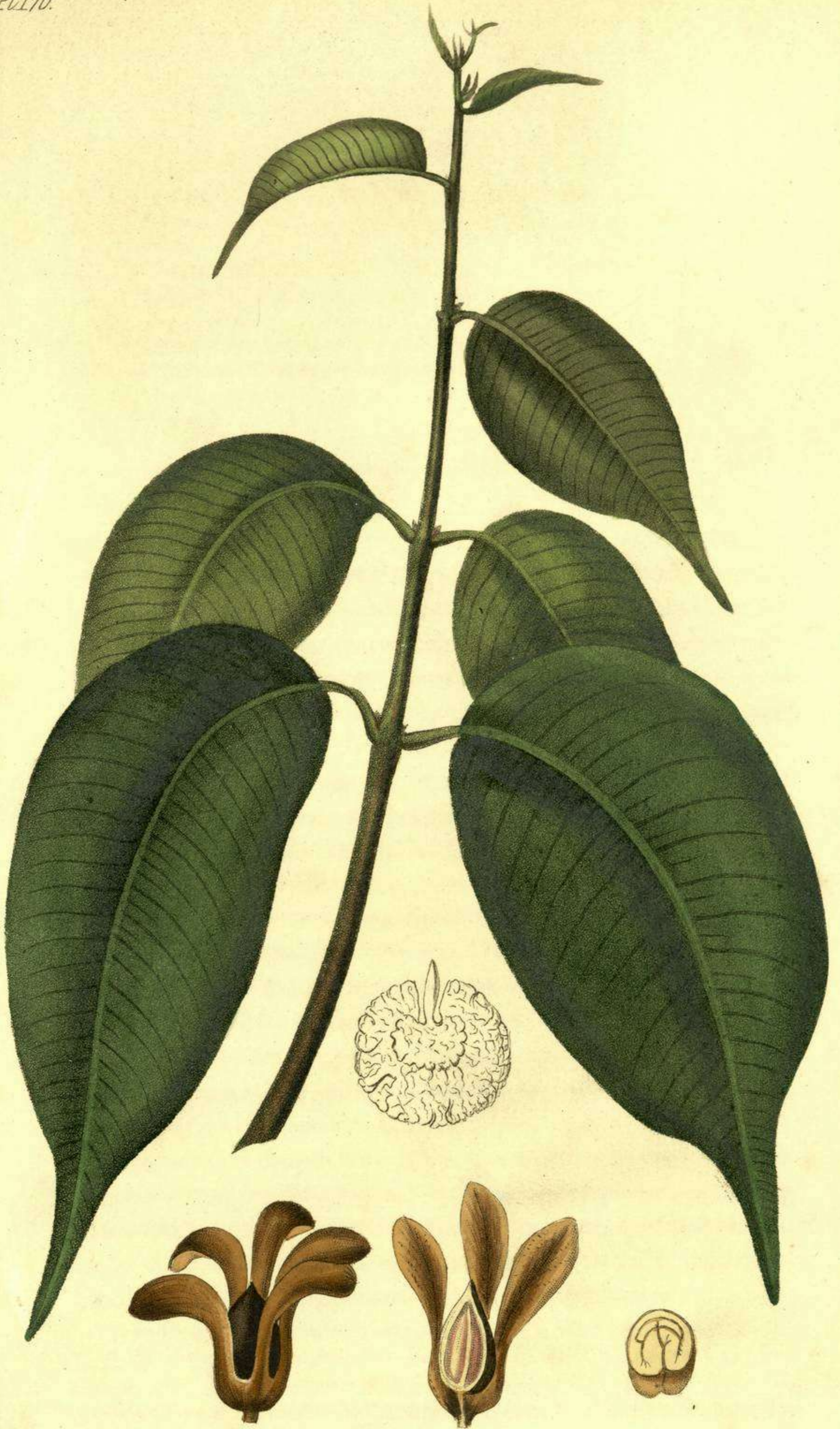
To Brandes,	
Resin	472
Gum	194
Volatile oil	46
Resinous substance	16
Tragacanth! (Cerasin?)	64
Extractive, with malate of lime	10
Sulphate of lime, with traces of potass	62
Oxide of iron	}
Water	
Phosphorus	(traces)
Acitate, malate, sulphate, and phosphate of potass and lime	(traces)
Impurities	46
	—974

**MEDICAL PROPERTIES AND USES.**—Assafœtida is employed as a powerful antispasmodic, being preferred for its quickness of operation, and efficiency, to any of the gum-resins. It is found useful in many nervous diseases, especially in hysteria, flatulent cholera, and tympanites. In dyspepsia, attended with flatulence, and in dyspnoea, it is very efficacious. Amenorrhœa is also benefited by it, and in the chronic coughs of old people, in asthma and pertussis, its expectorant properties render it serviceable. In India it is used by the natives as a specific for the Guinea-worm, and diffused in water is efficaciously injected for the convulsions of infants, and to destroy the parasites which infest the rectum. It is occasionally combined with antimonials and nitre to counteract its stimulant properties, and is given in substance in doses of from five grains to a scruple, in the form of pills. Formed into an emulsion, it is a nauseous compound, suited to few stomachs. Occasionally, it is employed as a discutient plaster.

*Sagapenum* is considered by European practitioners to be antispasmodic and emmenagogue. It is seldom employed, excepting as a substitute for assafœtida, when it is given in substance, in doses of from eight grains to a scruple. Externally, it is occasionally used as an ingredient in stimulating plasters.

**OFF. PREP.**—Mistura Assafœtida, L. D. Tinctura Assafœtida, L. E. D. Spiritus Ammoniae Fœtidus, L. D. Tinctura Castorei comp., E. Pilulæ Assafœtidæ compositæ, E. Pilulæ Aloes et Assafœtidæ, E. Pilulæ Galbani compositæ, L. Enema Fœtida, D.





*Dryobalanops camphoral.*

G. R. R. del.

W. H. W. sc.

London Published for the Authors July 1. 1830.



## DRYOBALANOPS CAMPHORA.

*Camphor Tree of Sumatra.*

Class XIII. POLYANDRIA.—Order I. MONOGYNIA.

Nat. Ord. GUTTIFERÆ, Juss.

GEN. CHAR. *Calyx* 1-leaved, permanent; enlarged into a gibbous cup, with five ligulate, long, scariose wings. *Corolla* 5-petalled. *Capsule* 3-valved, 1-celled. *Seed* solitary. *Embryo* inverse, without perisperm.

*Syn.*—*Dryobalanops camphora*. *Colebr. in Asiatic Res.* v. xii. p. 539; *Malay Miscel.* 1. p. 5.

*Carpura*. Sans.; *Cáfur*, Arab.; *Cápúr*, Hind.; *Kapur Barus*, Malay.

THERE are two species of trees from which the camphor of commerce is obtained. That with which botanists have been longest acquainted is the *Laurus Camphora* of Linneus, a large forest tree, that grows wild in Japan. From the wood, root, and leaves of this tree, the camphor is extracted by distillation. It has been supposed, perhaps erroneously, that the greater part of this valuable drug imported from India, is exclusively the product of a tree belonging to a different genus, the *Dryobalanops camphora*. Kœmpfer, indeed, had long ago remarked, that the camphor which is found in a concrete state, occupying cavities and fissures in the trunk of a tree in the islands of Borneo and Sumatra, is not the *Laurus camphora*; but it is only within these thirty years that the discovery of the species which yields it, was made by Mr. H. T. Colebroke, who was enabled to determine the genus from the examination of some seeds sent to him by Mr. Prince, a resident at Tapanooly, to Calcutta.



Specimens in flower were also sent by the same gentleman to Sir Stamford Raffles in 1819, from which a full and correct description was drawn up by Mr. William Jack, and published by him in No. I. of the "Malayan Miscellanies." In Sumatra, the camphor trees are confined to the country of the Battas, which extends about a degree and a half immediately to the north of the equator; and they are found in Borneo in nearly the same parallel of latitude. This valuable tree is not known to exist in any other part of the world, and on this account, as well as the difficulty of obtaining its produce, this kind of camphor bears an exorbitant price. The camphor of Sumatra appears to be little known in Europe; it is stated by Mr. Jack to be all carried to China, where it sells for twelve times as much as that of Japan.

The *Drobalanops camphora* is found growing in great abundance in the forests on the north-western coast of Sumatra, especially in the vicinity of Tapanooly. It is a lofty tree, frequently attaining the height of ninety feet, with a trunk that measures six or seven feet in diameter. It is said to flower only once in three or four years. The trunk is arboreous, and covered with a brown bark. The leaves are opposite below, and alternate above, elliptical, obtusely acuminate, parallel, veined, entire, smooth, 3-7 inches long, one inch and a half broad, and supported on short petioles, with subulate, caducous stipules, in pairs. The flowers, according to Mr. Jack, are terminal and axillary, forming a kind of panicle at the extremity of the branches. The calyx is monophyllous, with five linear-lanceolate spreading teeth. The corolla is 5-petalled, longer than the calyx; the petals ovate-lanceolate, and in some degree adnate, or connected together at the base. The stamens are numerous, and have their filaments united into a ring, in which particular it differs from the genera most nearly related to it. The anthers are nearly sessile on the tube of the filaments, connive into a conical head round the style, and terminate in membranous points. The germen is superior, ovate, with a slender filiform style, longer than the stamens, and crowned by a capitate stigma. The capsule is ovate, woody, fibrous, longitudinally



furrowed, embraced at the base by the calycine hemispherical cup, and surrounded by its enlarged leaflets, which are converted into remote, foliaceous, spatulate, rigid, reflex wings; 1-celled, and 3-valved. The seed is solitary, thin, membranaceous, thickened along one side, and contained between the interior fold of the cotyledons.

The camphor is found, as already observed, in a solid state, occupying portions of about a foot, or a foot and a half, in the heart of the tree. The natives in searching for the camphor, make a deep incision in the trunk, about fourteen or eighteen feet from the ground, with a billing or Malay axe; and when it is discovered, the tree is felled, and cut into junks of a fathom long, in order to allow of the extraction of the crystalline masses. The same trees yield both the concrete substance and a liquid or oily matter, which has nearly the same properties as the camphor, and is supposed to be the first stage of its formation. The product of a middling sized tree, is about eight China *catties*, or nearly eleven pounds, and of a large one, double that quantity. The camphor thus found is called *Se Tantung*.

QUALITIES AND CHEMICAL PROPERTIES.—Camphor is imported into this country in chests and casks, chiefly from Japan, in small granular, or friable masses, and is afterwards purified by sublimation, in low flat-bottomed glass vessels, placed in sand, for that purpose. It is usually obtained in large cakes, concave on one side, and convex on the other, and generally perforated. It has a strong, peculiar, fragrant odour, and a bitter, acrid taste. It is white, transparent, unctuous to the touch, easily frangible, exhibiting a foliated or crystalline structure. It is not altered by exposure to the atmospheric air; but if it be not kept in well-stopt vessels, especially during warm weather, it evaporates completely. When sublimed in close vessels, it crystallizes in hexagonal plates or pyramids. It is somewhat ductile, but may be pulverised by moistening it with alcohol, and triturating it till dry. It is insoluble in water; but it communicates to that liquid a certain portion of its peculiar odour. It swims on water, its specific gravity being 3.9887. It dissolves readily in alcohol, and is precipitated again by water. It is also soluble in ether, acetic acid, the diluted mineral acids, the fixed and volatile oils, and unites with and converts the resins into a soft tenacious mass. When heat is applied to camphor it is volatilized; when heated under pressure, it melts at 288°, and boils at the temperature of 403°. It is decomposed by the strong sulphuric acid, forming artificial tannin; and by repeatedly distilling it with nitric acid, camphoric acid is obtained. When exposed to a strong heat it is decomposed, and resolved into a volatile oil, carbonic, and camphoric acids, and carburetted hydrogen, a portion of carbonaceous matter remaining. According to Dr. Ure's analysis, camphor is composed of one atom of oxygen, nine of hydrogen, and ten of carbon.

Camphor, or a substance analogous to it, exists in several other vegetables besides the *Laurus* and *Dryobalanops*; as mint, thyme, mar-



joram, and many other plants, and is held in solution by the essential oils obtained from them.

**MEDICAL PROPERTIES AND USES.**—There is still some difference of opinion respecting the action of camphor on the animal system; by some it has been regarded as a stimulant, while others have maintained it to possess considerable sedative powers. Its primary operation is that of an excitant, but its stimulant action is not very considerable. In moderate doses, it increases the heat of the body, softens and increases the fullness of the pulse, and excites diaphoresis. In a large dose, it diminishes the force of the circulation, induces sleep, and sometimes produces delirium, vertigo, convulsions, or coma—effects which are best counteracted by wine and opium. As a stimulant, camphor has been used in typhus, cynanche maligna, malignant measles, confluent small-pox, and other febrile affections accompanied with debility; in gangrene combined with wine and bark; and in various spasmodic diseases; as hysteria, asthma, chorea, and epilepsy. As a sedative, it has been employed for allaying pain and irritation in pneumonia, acute rheumatism, gonorrhœa, small-pox, gout, mania; and in inflammatory fevers, where evacuations have been previously employed. In these cases, it is usually combined with antimonials and nitre. It is employed externally in frictions, dissolved in oils, alcohol, or acetic acid, as an anodyne in rheumatism and muscular pains, and as a discutient in bruises and inflammatory affections. In collyria, it is of advantage in ophthalmia, and is sometimes added to enemas to relieve the uneasy sensations occasioned by ascarides. Combined with opium, it is useful as a local application in toothache.

**DOSE.**—From gr. v. to ℥j. diffused in almond emulsion.

**OFF. PREP.**—Mistura Camphoræ, L. D. Emulsio Camphorata, L. E. D. Tinct. Camph. comp. L. E. D. Acid. Acetos. Camphoratum, E. D. Linim. Camphoræ, L. E. D. Lin. Camphoræ. comp. L. Lin. Hydrarg. L. Lin. Saponis, L. E. Lin. Sapo. c. Opio, E. D.





*Quassia simaruba.*

A. Reid. del.

W. C. C. sc.

London. Published for the Author. Aug. 1830.



## QUASSIA SIMARUBA.

*Simarouba Quassia.**Class X. DECANDRIA.—Order I. MONOGYNIA.**Nat. Ord. GRUINALES, Lin. MAGNOLIÆ, Juss. SIMARUBÆ, Decand.***GEN. CHAR.** *Calyx* 5-leaved. *Petals* 5. *Nectary* composed of five scales. *Drupes* 5, distant, bivalve, placed on a fleshy receptacle.**SPEC. CHAR.** *Flowers* monœcious. *Leaves* abruptly pinnate; leaflets alternate, not quite sessile; petiole naked. *Clusters* pannicled.*Syn.—Simarouba amara. Aubl. Guaian. v. 2. 859. t. 331, 332.**Euonymus fructu nigro tetragono, vulgo Simarouba. Barrere Franc. Equinox, p. 50.**Le Simarouba vel Bois Amer. March. Voy. en Guinee et à Cayenne, v. 2. p. 124; Bancroft's Nat. Hist. Guaiana. p. 84.**Quassia Simarouba. Lin. Suppl. 234; Willd. Sp. Pl. v. 2. p. 568; Ait. Kew. v. 3. p. 42; Woodv. v. 2. t. 76; Wright in Trans. Roy. Soc. Edin. v. 2. p. 73; Lunan. Hort. Jam. v. 2. p. 521.***FOREIGN.—***Simarouba, Fr.; Simarouba, It.; Simarube Quassia, Ger.*

THE Wing-leaved or Simarouba Quassia, is a native of various parts of South America and the West Indies, growing in a sandy soil; and flowering in November and December. It is known in Jamaica by the names of Mountain Damson, Bitter Damson, and Stave-wood. The bark has been known in Europe as an article of the materia medica for more than a century, but it is not many years since the species of plant was accurately determined. Dr. Wright, who has given a full account of this tree, informed us that, in 1773, specimens of the fructification were sent from Jamaica, in September, to Dr. Hope, at Edinburgh, with some dried bark of the roots, and that



the following year specimens were also transmitted to Dr. John Fothergill, of London, who sent them to Linneus, at Upsal. It was introduced in the royal garden at Kew, by Mr. Alexander Anderson, in 1787, but it has not yet blossomed.

This tree is common in all the woodlands of Jamaica. It grows to a considerable height, sending off alternate, spreading branches covered with a smooth, grey bark, marked with broad yellowish spots. The wood is hard, white, and without any sensible bitter taste. The leaves are pinnate, and stand alternately upon the branches; each leaf consists of six, seven, or eight leaflets, placed alternately on short petioles, two inches long, obvate, rather narrow, entire, smooth, of a deep green colour above, and whitish beneath. The flowers, which appear about the beginning of April, are of a yellowish white colour, monœcious, or, according to some writers, diœcious, and placed in branched spikes or long axillary panicles. In Jamaica, according to Dr. Wright, the male flowers are never found on the same tree with the female. The calyx is small, monophyllous, and divided into five obtuse, erect segments. The petals are five, lanceolate, equal, spreading, bent outwards, and triple the length of the calyx into which they are inserted. The nectary, in the male, is a small, hairy scale, affixed to the inner side of the base of each filament; in the female, the scales are placed in a regular circle. The filaments are ten, equal, about the length of the corolla, and furnished with oblong incumbent anthers. The receptacle is orbicular, fleshy, and marked with ten furrows. The germen is ovate, composed of five roundish germens adhering together, crowned with an erect, cylindrical style, about the length of the corolla, and divided at the top into five recurved stigmas. The fruit consists of five ovate, black, smooth, one-celled berries, all standing on a fleshy pentagonal receptacle, and opening spontaneously when ripe; each berry containing a solitary oblong pointed nut, or seed. Fig. (*a*) exhibits a male flower; (*b*) a female flower; (*c*) nectary, with the stamen and anther; (*d*) the five berries attached to the common receptacle; (*e*) a berry detached; (*f*) the same cut across to show the nut; all magnified except the two last.



QUALITIES AND CHEMICAL PROPERTIES.—It is the root\* of this tree which furnishes the bark termed Simaruba quassia. It is brought to us in long pieces of various sizes, which are rolled or curled inwards. They are very fibrous, tough, light, of a greyish colour externally, and of a yellow internally: they are also scaly, warted, and marked with prominent transverse furrows. Simaruba is inodorous, but powerfully bitter. It gives out all its active matter to alcohol, and water, by maceration, and forms with them a yellow solution. It seems to impart its virtues more perfectly to cold than to boiling water; the cold infusion being rather stronger in taste than the decoction. The infusion, which is of a transparent yellow colour while hot, grows turbid and of a reddish-brown as it cools: it is not affected by the sulphate of iron, and muriate of tin occasions no precipitate.

According to an analysis by M. Morin, (*Journ. Pharm.* viii. 57,) it contains, 1st, a resinous matter; 2d, volatile oil, having the odour of benzoin; 3d, acetate of potass; 4th, an ammoniacal salt; 5th, malic acid, and traces of gallic acid; 6th, *quassine*; † 7th, malate and oxalate of lime; 8th, some mineral salts, oxide of iron, and silex; 9th, ulmine and woody matter.

MEDICAL PROPERTIES AND USES,—This bark was introduced into British practice many years ago, by Dr. Wright, as a valuable tonic and astringent in chronic diarrhœa, dysentery, and intermittent and remittent fevers. It had, however, been previously known in France, having been brought to that country from Guaiana about the year 1710. It is recorded, that in the years 1718 and 1720, an epidemic dysentery prevailed very generally in France, which resisted all the medicines usually employed in such cases; small doses of ipecacuanha, mild purgatives, and astringents, were found to aggravate rather than to relieve the disease. Under these circumstances, recourse was had to the cortex simaruba, which proved remarkably successful, and first established its medical character in Europe. Dr. Wright says, most authors who have written on the Simaruba agree that in fluxes it restores the lost tone of the intestines, allays their spasmodic motions, promotes urine and perspiration, removes the low-

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\* The Dublin College has fallen into an error in designating the wood, which is inert, as the part used in medicine. M. Fée observes, "Nous avons vainement cherché des parasites sur l'épiderme du simarouba, qui est bien certainement l'écorce de la racine, et non celle du tronc."—*Cours D'Histoire Naturelle Pharmaceutique*, p. 600. t. 1.

† For a detailed account of this principle, see *Quassia Excelsa*.



ness of spirits attending dysenteries, and disposes the patient to sleep; the gripes and tenesmus are removed; and the alvine evacuations are changed to their natural colour and consistence. In a moderate dose, it occasions no disturbance or uneasiness, but in large doses it produces sickness at the stomach and vomiting.

“Modern physicians have found from experience, that this medicine is only successful in the third stage of dysentery, where there is no fever, where too the stomach is no way hurt, and where the gripes and tenesmus are only continued by a weakness of bowels. In such cases, Dr. Monro gave two or three ounces of the decoction every five or six hours, with four or five drops of laudanum, and found it a very useful remedy. The late Sir John Pringle, Drs. Huck Saunders, and many others, prescribed the cortex simaruba in old and obstinate dysenteries and diarrhœas, especially those brought from warm climates. Fluxes of this sort, which were brought home from the siege of Martinico and the Havannah, were completely and speedily cured by this bark. The urine, which in these cases had been high coloured and scanty, was now voided in great abundance, and perspiration restored. Dr. James Lind, at Haslar Hospital, says, that the simaruba produced these effects sooner, and more certainly, when given in such quantity as to nauseate the stomach. Dr. Saunders remarks, that if the simaruba does not give relief in three days, he expected little benefit from its farther use; but others have found it efficacious in fluxes after a continued use for several weeks. My own experience, and that of many living friends, are convincing proofs to me of the efficacy of this medicine; and I hope the simaruba bark will soon be in more general use.”

Dr. Cullen says, that the high character given of the virtues of this bark, has not been ascertained in his own experience, and it is now seldom prescribed by British practitioners. It is commonly given under the form of infusion, in the proportion of  $\mathfrak{z}\text{ij}$ . or  $\mathfrak{z}\text{iiij}$ . drachms to a pint of water; the dose may be  $\mathfrak{z}\text{ij}$ . twice or thrice a day. In substance, the dose is from  $\mathfrak{ʒ}\text{j}$ . to  $\mathfrak{z}\text{fs}$ .

OFF PREP.—Infusum Simarubæ, L.





*Quassia amara.*

*Reid del.*

*Weddell sc.*

*London. Published for the Authors. Aug. 1830.*



## QUASSIA AMARA.

*Bitter Quassia.*

SPEC. CHAR. *Flowers* hermaphrodite. *Leaves* pinnate; leaflets opposite, sessile; common stalk jointed, winged. *Flowers* racemose.

Syn.—*Quassia amara.* *Lin. Suppl.* 235; *Amæn. Acad.* v. 6. 421. t. 4; *Willd. Sp. Pl.* v. 2. p. 567; *Ait. Kew.* 3. p. 42; *Plenck. Icon.* 333; *Woodv.* 2. t. 77; *Bot. Mag.* v. 13. t. 497.

Echte Quassie. *Nom. Triv. Willd.*

THIS beautiful shrub is a native of Surinam, and was introduced in 1790, by Mr. Alexander Anderson, to the royal garden at Kew, where it blossoms tolerable freely, and continues flowering great part of the summer. It is the true officinal *Quassia*, but being very rare, and of small bulk, its place is usually supplied by the *Quassia excelsa*, which is imported in considerable quantities, not only for medical purposes, but as a substitute for hops. Willdenow, speaking of this plant, says, “*Quassia amara* est planta rarissima, lignum amaritie reliquis palmam præripit. Lignum quassiæ venale non ex hoc frutice venit; colligitur a quassia excelsa, quæ minus amara.”\*

The Bitter *Quassia*, as before observed, is a shrub rather than a tree, is branched, and covered with an ash-coloured bark. The leaves are alternate, consisting of two pairs of leaflets, with a terminal one; they are elliptic-lanceolate, entire, veiny, very smooth, sessile, two or three inches in length, and of a deep green colour; the common footstalk is linear, articulated at the insertion of each pair of leaflets, and winged, or edged on each side, with a leafly membrane, which gradually expands towards

\* *Lund, Act. Soc. Hist. Nat.* I. p. 68.



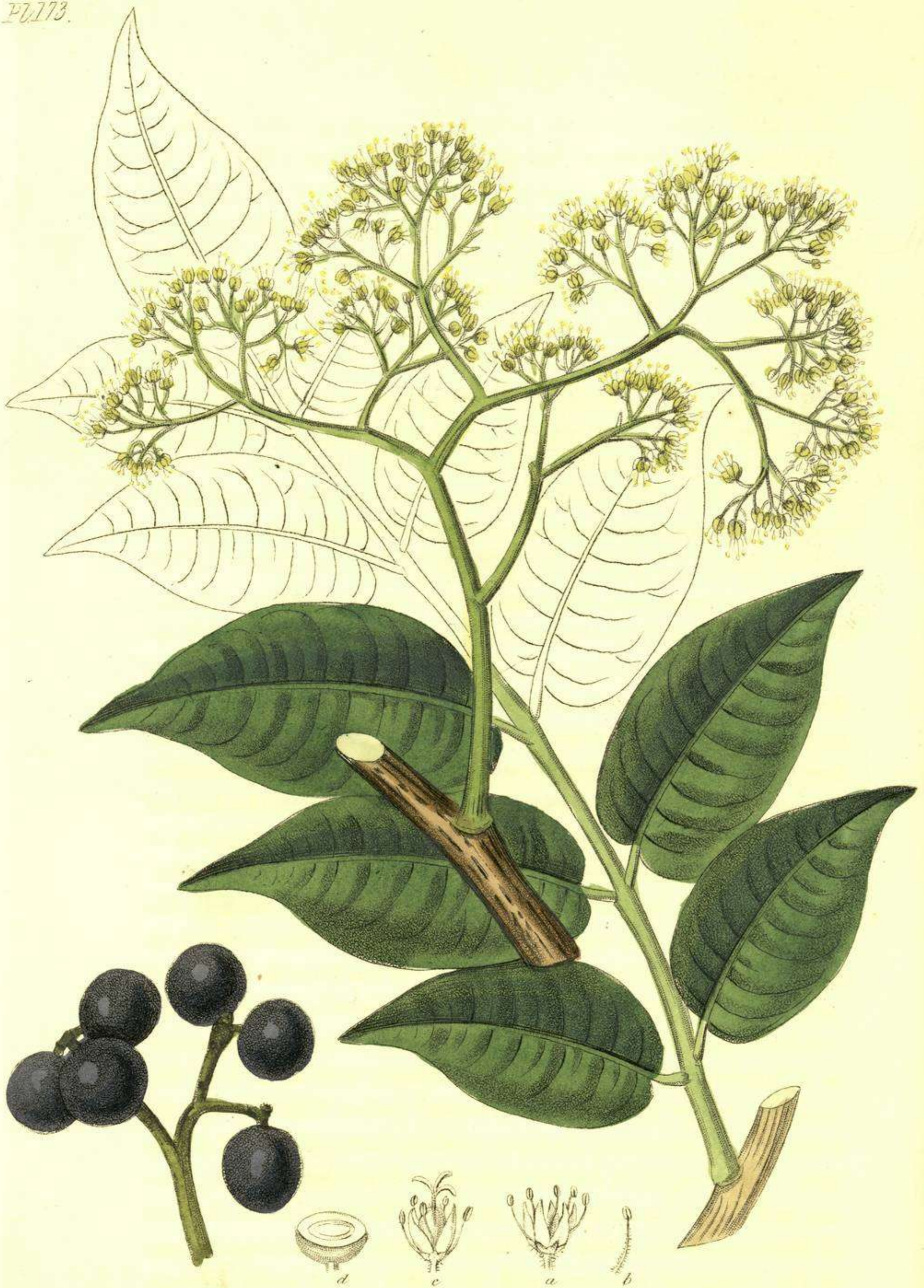
the base of each pair. The flowers are all hermaphrodite, of a bright scarlet colour, and terminate the branches in long spikes, drooping one way; the bractees, or floral leaves, are lanceolate, reflexed, coloured, and placed alternately upon the common peduncle. The calyx is small, persistent, and five-toothed. The corolla consists of five lanceolate, equal petals, which is never fully expanded, but the petals, as Mr. Curtis remarks, being twisted spirally, curl round one another, and open in an irregular manner. At the base of the corolla is placed the nectary, which consists of five roundish, coloured scales; the filaments are ten, slender, somewhat longer than the corolla, and crowned with simple anthers, placed transversely; the receptacle is fleshy, and orbicular; the germen is ovate, five-parted, supporting a slender style, longer than the stamens, and terminated by an awl-shaped stigma.

The generic name *Quassia*, was originally given by Linneus to this species, in honour of Quassi, a negro at Surinam, who discovered the virtues of the wood, in curing the malignant fevers of that country. In consequence of a valuable consideration this secret was disclosed to his patron, Governor Dalbergh, who sent specimens of the wood to Stockholm, in the year 1356; and since that time it became known in Europe, particularly by means of a Dissertation, printed in the *Amœnitates Academiæ*, first published in 1763.

**QUALITIES.**—The roots, bark, and wood of this tree, as its trivial name implies, are all intensely bitter; and it is observed, that the leaves, flowers, and other parts of the plant, possess similar qualities.

**MEDICAL PROPERTIES AND USES.**—Those are the same, in a superior degree, as the species hereafter described.





*Quassia excelsa.*

G. Reed. del.

Widdell. sc.

London, Published for the Author, Aug. 1830.



## QUASSIA EXCELSA.

*Lofty, or Ash-leaved Quassia.*

SPEC. CHAR. *Flowers* polygamous. *Stamens* 5.  
*Leaves* pinnate; leaflets opposite, petioled; common  
 stalk naked.

Syn.—*Quassia polygamia.* *Trans. Roy. Soc. Edin.* v. 3. p. 205. t. 6.

*Quassia excelsa.* *Swartz in Stockh. Trans.* for 1788, p. 302. t. 8; *Prodr.*  
*Ind. Occid.* v. 2. 742; *Willd. Sp. Pl.* v. 2. p. 569.

Unchte Quassie, *Nom. Triv.* Willd.

THIS species of *Quassia* grows spontaneously in the mountainous woods of Jamaica and the Caribbean Islands. It has been long known in the West Indies, not only as an excellent timber, but as a substitute for the *Quassia amara*, in the cure of intermittents, and bilious remittent fevers. By the English it is called *Bitter Wood*, and in the windward Islands the *Bitter Ash*. The bark has been much employed as an article of the materia medica, and the wood is imported into this country in considerable quantities for the purposes of the brewers of ale and porter. Sir Hans Sloane describes the *Quassia excelsa* in his catalogue, and refers to Plunkenet Pl. 205, f. 3, which, however, is a different plant. Dr. Patrick Brown, and after him Mr. Long, in their Histories of Jamaica, notice this tree by the names of *Xylopicrum*, *Xylopia Glabra*, *Bitter Wood*, or *Bitter Ash*. Dr. Wright, in his account of the Medicinal Plants growing in Jamaica, mentions this species of *Quassia* under the title of *Picrania amara*; and Dr. Olaaf Swartz, who examined most of the plants of Jamaica, and the other West India Islands, styles it *Quassia excelsa*. No accurate description of the tree had, however, been given, till Mr. John Lindsay, a surgeon,



resident in Jamaica, published an account of it, with a figure, in the 3rd volume of the Transactions of the Royal Society of Edinburgh. Our drawing, which represents a cluster of the flowers rather under the natural size, with a leaf and fruit, was made from a dried specimen in the herbarium of the illustrious Linneus, now in the possession of the Linnean Society of London.

The *Quassia excelsa* is a beautiful, tall, and stately tree, frequently 100 feet in height, and 10 feet in circumference, with a straight, tapering trunk, sending off its branches towards the top, and covered with a smooth grey, or ash-coloured bark. The bark of the roots is of a yellowish colour, somewhat like that of the simaruba. The wood is of a pale yellow colour, tough, but not very hard, and takes a good polish. The leaves are pinnate, and composed of from four to eight pairs of nearly opposite, elliptical, pointed, firm, entire, smooth leaflets, from two to four, or even five inches in length, on short footstalks, with a terminal leaflet; the ribs reddish; and the young leaves are covered with a fine brownish down. The flowers are in clusters, or panicles, from the lower part of the last shoot before the leaves, bearing numerous small, pale, yellowish green flowers, some male, the rest hermaphrodite, in the same cluster: the male flowers are nearly similar to the hermaphrodite, except that they have the rudiments only of a style: the calyx is very small, with five equal, ovate, pointed segments; the corolla consists of five equal, lanceolate petals, shorter than the filaments. Swartz describes the nectary of five minute, villous scales, contrary to the remark of Willdenow, under his *Swingera*, (Sp. Pl. v. 2. 569), where it is said to be wanting in this species of *Quassia*. The filaments are mostly five, seldom four or six, a little longer than the petals, downy, and supporting roundish anthers. The germen is ovate, with a slender style and trifid stigma. The fruit is a small black drupe, round, smooth, and of the size of a pea. These drupæ are usually three, sometimes two, and often only one, attached sideways to a round fleshy receptacle. It flowers in October and November, and the fruit is ripe in December and January. Fig. (a) exhi-



bits a male flower ; (b) a stamen ; (c) an hermaphrodite flower ; all somewhat magnified ; (d) a transverse section of the fruit.

QUALITIES AND CHEMICAL PROPERTIES.—This wood is sent to us in billets, of various sizes, which are reduced into shavings by the druggist. These shavings are of a pale yellow colour, perfectly inodorous, but intensely bitter. The bitterness is extracted equally by alcohol and water. When water is digested over Quassia for some time, and evaporated afterwards to dryness in a low heat, a brownish yellow substance remains, which retains a certain degree of transparency. It continues ductile for some time, but at last becomes brittle. This substance is called *Quassin* by its discoverer, Professor Thompson, of Glasgow, and is considered by him as Quassia in a state of purity. *Quassin* possesses the following properties :—

Its taste is intensely bitter. Its colour, brownish yellow. When heated, it softens, swells, and blackens ; then burns away without flaming much, and leaves a small quantity of ashes. It is very soluble in water and alcohol. It does not alter the colour of infusion of litmus. Lime-water, barytes-water, and strontian-water, occasion no precipitate ; neither is any precipitate thrown down by silicated potass, aluminated potass, or sulphate of magnesia. The alkalis produce no change in the diluted solution of the bitter principle. Oxalate of ammonia occasions no precipitate. Nitrate of silver renders the solution muddy, and a very soft flaky, yellow, precipitate falls slowly to the bottom. Neither corrosive sublimate nor nitrate of mercury occasion any precipitate. Nitrate of copper, and the ammoniacal solution of copper, produce no change ; but muriate of copper gives the white precipitate, which falls when this liquid salt is dropped into water. Sulphate and permuriate of iron occasion no change. Muriate of tin renders the solution muddy, but occasions no precipitate, unless the solution is concentrated ; in that case a copious precipitate falls. Acetate of lead occasions a very copious white precipitate ; but the nitrate of lead produces no change. Muriate of zinc occasions no change. Nitrate of bismuth produces no change, though when the salt is dropped into pure water a copious white precipitate appears. Tartar emetic produces no



change; but when the muriate of antimony is used, the white precipitate appears, which always falls when this salt is dropped into pure water. Muriate and arseniate of cobalt occasion no change. Arseniate of potass produces no effect. Tincture of nutgalls, infusion of nutgalls, and gallic acid produce no effect. These properties, remarks Dr. Thompson, are sufficient to convince us that the bitter principle differs considerably from all the other vegetable principles. The little effect of the different re-agents is remarkable; nitrate of silver and acetate of lead being the only two bodies which throw it down. These two salts are, therefore, incompatible in formulæ with it.

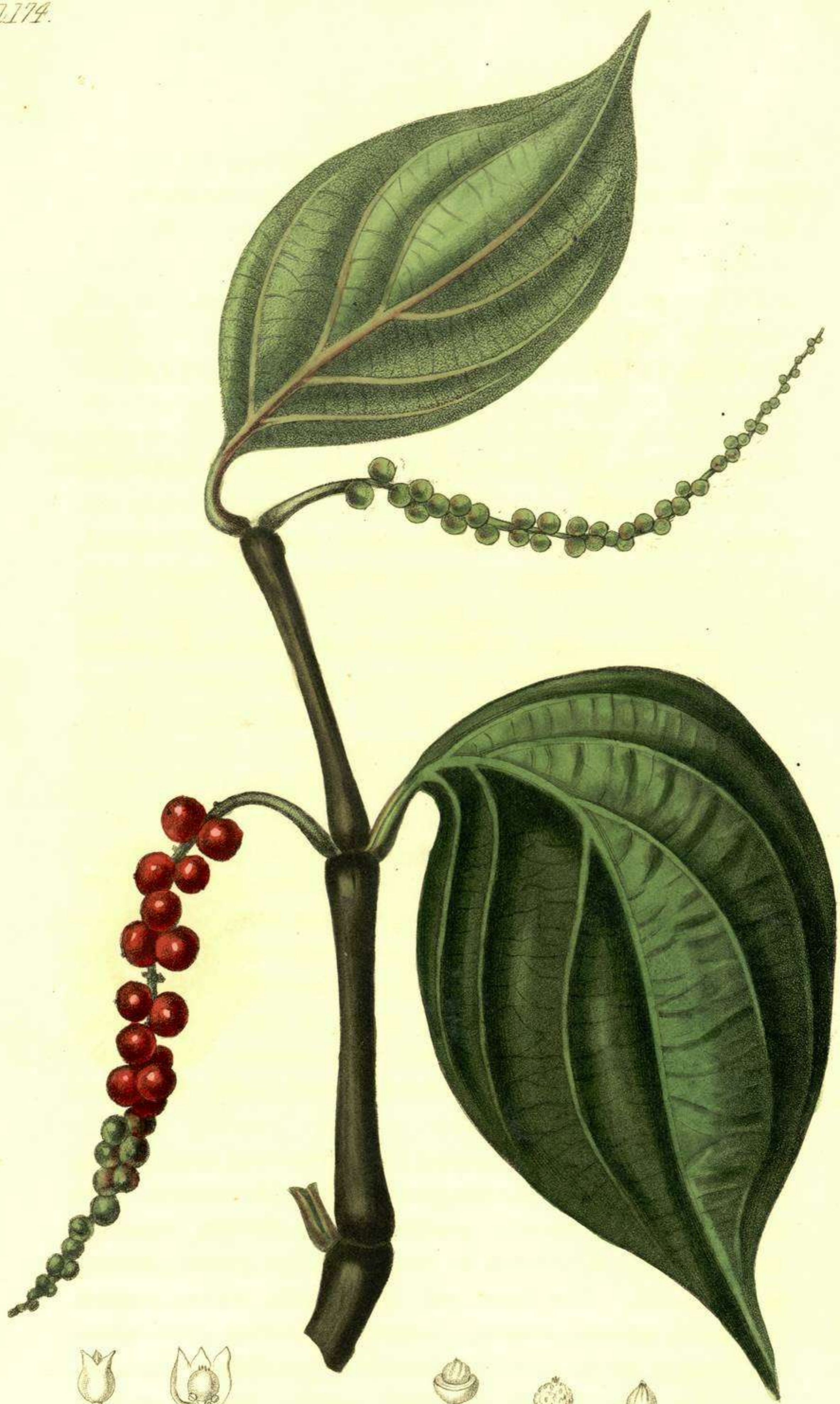
**MEDICAL PROPERTIES AND USES.**—Quassia is a simple and powerful bitter, possessing no aromatic principle. It is much employed as a cheap and useful tonic in dyspepsia, diarrhœa, remittent, intermittent, and continued fevers. It is usually given in the form of infusion, combined with neutral salts, or mineral acids. Orange-peel renders the infusion more grateful to the stomach. When recommended for intermittents it is prescribed in powder in doses from ten to thirty grains; but its bulk renders its nauseousness almost insupportable, so that it is seldom administered in this shape.

**OFF. PREP.**—Infusum Quassiaë, L.

Infusum Quassiaë Excelsæ, E.

Tinctura Quassiaë Excelsæ, E. D.





*Piper nigrum.*

G. Reid. del.

Weddell. sc.

London. Published for the Author. Aug. 1830.



## PIPER NIGRUM.

*Black Pepper.*

Class II. DIANDRIA.—Order III. TRIGYNIA.

Nat. Ord. PIPERITÆ, Lin. URTICÆ, Juss.

GEN. CHAR. *Calyx* 0. *Corolla* 0. *Berry* 1-seeded.  
*Spadix* simple.

SPEC. CHAR. *Leaves* broad-ovate, pointed, 7-nerved,  
coriaceous, smooth. *Joints* of the stem, tumid.

Syn.—*Piper rotundifolium nigrum*. *Bauh. Pin.* 411; *Raii Hist.* 1341; *Pluk. Almag.* 297. t. 437. f. 1; *Moris. Hist.* 3. p. 602. f. 15. t. 1. f. 1; *Blackw. t.* 348; *Burm. Zeyl.* 193.

*Melago codi*. *Rheede Malab. v.* 7. p. 23. t. 12.

*Piper nigrum*. *Ger. Em.* 1538; *Park. Theatr.* 1603; *Willd. Sp. Pl.* 1. p. 159; *Vahl. Enn. v.* 1. 329; *Woodv. v.* 3. t. 187.

FOREIGN.—*Poivre*, Fr.; *Pepe nero*, It.; *Pimiento*, Sp.; *Schwarzen pfeffer*, Ger.; *Gol-mirch*, Hind.; *Filfil Uswud*, Arab.; *Filfil seeah*, Pers.; *Ladda*, Malay.; *Hootseau*, Chin.

PIPER NIGRUM, the *tieo-bo* of the Cochin-Chinese, the *me-lago-codi* of the Hortus Malabaricus, is a perennial plant, a native of the East Indies; and is much cultivated in Malabar, Java, Borneo, Sumatra, and the Philippine islands, whence the whole of Europe is supplied. It grows in the greatest abundance in the province of Malabar, and constitutes one of their principal articles of export. One thousand plants yield from 500 to 1000 pounds of pepper.

It is a climbing plant, twining itself round any neighbouring support, and rising to the height of twelve or fifteen feet. The stems are round, smooth, jointed, woody, slender, branched, scandent, and if suffered to run along the ground, rooting at the joints. The leaves are broad-ovate, entire, pointed, coriaceous, smooth, shining, 7-nerved, of a deep green colour, and stand at the joints of the branches upon strong sheath-like footstalks. The flowers are small, sessile, whitish, without



calyx or corolla, and produced in long, slender, terminal spikes. The anthers are roundish, and placed opposite, at the base of the germen; the germen is ovate, and crowned with three rough stigmas. The fruit is a globular berry, green when young, but turning to a bright red when ripe and in perfection. Miller, from whose plate we have copied our dissections of the parts of the fructification, is the only author who describes a corolla, or calyx of one leaf, with three segments, in this plant. No person, says Sir James Smith, has been able to verify this representation, nor is it known whence Millar procured his drawing, unless perhaps from his son, a botanical artist, who visited India. His plate has always been considered as a valuable addition to the history of a plant so imperfectly known to botanists, and it is much to be regretted that any uncertainty should be attached thereto. Woodville's figure is a copy of Miller's. Our drawing was made from a dried specimen in the Linnean herbarium, gathered by Commerson, in Java. Fig. (a) represents the calyx, or corolla; (b) a flower cut open; (c) a section, to show the germen; (d) the fruit; (e) the same decorticated.

The Black Pepper, or pepper vine, as it is commonly called, is readily propagated by cuttings or suckers. If suffered to trail along the ground, the plant would not bear, prop-trees being necessary for encouraging it to throw out its prolific shoots. These prop-trees, called *chinkareens*, commonly planted for this purpose in India, according to Dr. Ainslie, are the betel nut palm, (*Areca catechu*;) the moochiè wood tree, (*Erythrina indica*;) the mango tree, (*Mangifera indica*;) the jack tree (*Artocarpus integrifolia*;) and the *Hyperantha moringa*; but it has been remarked, that the vines which cling round the two last thrive the best. The trees commonly preferred in the islands of the Eastern Archipelago, are the *Erythrina coralodendron*, and *mánghúdú* (*Morinda citrifolia*). The plant begins to bear about the third year, and is esteemed in its prime in the seventh, which state it maintains three or four years; it then gradually declines for about the same period. The vines generally yield two crops annually, the first in December, the second in July. As soon as any of the berries redden, the bunch is reckoned fit



for gathering, the remainder being generally full grown, although green. When gathered, they are spread on mats in the sun; in this situation they become black and shrivelled, and as the pepper dries, it is rubbed occasionally between the hands to separate the grains from the stalks.

According to Mr. Milburn, the pepper countries extend from about the longitude of  $96^{\circ}$  to that of  $115^{\circ}$  E., beyond which none is to be found; and they reach from  $5^{\circ}$  lat. to about  $12^{\circ}$  N., where it again ceases. Within these limits are Sumatra, Borneo, the Malay peninsula, and certain countries lying on the east coast of the Gulph of Siam. The whole produce of Sumatra is estimated at 168,000 peculs. At Palembang, which is the principal depôt for the pepper from the north coast of Sumatra, there is now produced upwards of 15,000 peculs. The islands at the mouth of the straits of Malacca and Singapore, produce 10,000 peculs, and Lingga, about 2,000, most of which goes to the emporium of Singapore. The west coast of the Malay peninsula produces only 4,000 peculs, in the territory of Malacca; the east coast yields a considerable quantity; the ports of Patmi and Calantan about 16,000 peculs, and Tringana about 8,000. The east coast of the Gulph of Siam, from lat.  $10\frac{1}{2}^{\circ}$  to  $12\frac{1}{2}^{\circ}$  N., afford not less than 60,000 peculs, 40,000 of which go at once to the capital of Siam as tribute, and the whole finds its way to China in junks. The whole produce of Borneo is reckoned at about 20,000 peculs: adding this to the foregoing estimates, we find the aggregate production of pepper throughout the East to be 338,000 peculs, or 45,066,666 lbs. The average price of pepper lately has been about nine Spanish dollars the pecul, which gives the value of this spice, 3,142,000 dollars.

The pepper of Malabar is esteemed the best; next, that of the east coast of the Gulph of Siam; then follow those of Calantan; Borneo; the coast of Sumatra; and last of all, the pepper of Rhio; which, through the avidity of the cultivators and dealers, is plucked before it is ripe, and hence it is hollow and ill-coloured.

There are two sorts of pepper in commerce, black and white. The best black pepper is that which is well garbled and clean, having the stalks, bad grains, and other impurities taken out,



and is denominated heavy pepper; it is the sort usually brought to Europe. This pepper when dry assumes a dark appearance, and is called *black* pepper; divested of its external coat, by steeping the grains in water, and afterwards drying them in the sun, rubbing between the hands, and winnowing, it is termed *white* pepper.

QUALITIES AND CHEMICAL PROPERTIES.—Black pepper is aromatic, hot, and pungent. It yields its virtues to ether and alcohol, and partly to water. The infusion reddens vegetable blues. It is of a brown colour, which it owes to the outer coat. To analysis by M. Pelletier, black pepper yielded, 1st, piperin; 2d, green concrete very acrid oil; 3d, thick volatile oil; 4th, coloured gummy matter; 5th, extractive, analogous to that yielded by some leguminosæ; 6th, malic and uric acids; 7th, bassorine; 8th, various earthy and alkaline salts; 9th, woody fibre.\*

*Piperin*, a new principle, has been lately discovered in black pepper by M. Erstaedt, who believed it to be a vegetable alkali. This does not, however, appear to be the case; but it bears considerable analogy to the resins, especially to that of cubebs, which M. Vauquelin compares with the balsam of copaiba. The following is M. Pelletier's method of obtaining it: "After having digested the pepper repeatedly in alcohol, and evaporated the solutions, a fatty or resinous matter is obtained; this must be subjected to the action of boiling water, which must be repeated until it passes off colourless. Then by dissolving this fatty matter (purified by washing in alcohol) by the aid of heat, and leaving the solution to itself for some days, a multitude of crystals is obtained, which may be purified by solution in alcohol and ether, and by repeated crystallizations. The alcoholic mother-waters, left to themselves, will afford fresh crystals, which are *piperin*, under the form of prisms, with four faces: two of which, parallel to each other, are evidently broader. These crystals are colourless and transparent, inodorous, and almost insipid. They are totally insoluble in cold water; boiling water dissolves a small portion of them, which is precipitated on cooling. They are very

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\* *Jour. Pharm.* vii. 273.



soluble in alcohol, less so in ether. The peculiar properties of pepper appear to depend on an acrid volatile oil, which is associated with the piperin.

At page 286, vol. ii. of the Medical and Surgical Journal, another mode of obtaining *piperin*, by Mr. Carpenter, of the United States, is detailed.

**MEDICAL PROPERTIES AND USES.**—As a condiment, black pepper is too well known to need any explanation of its properties. Taken, however, in excess, it is injurious to persons of full habit, and is said to produce or aggravate hæmorrhoids. “As a medicine it is given to relieve nausea, or check vomiting, to remove singultus, and as a stimulant in retrocedent gout. Its dose is from 10 to 15 grains. Its infusion has been used as a gargle in relaxation of the uvula.”

According to Dr. Meli, piperine has the same febrifuge properties as the alkalies of the cinchonas. At the hospital of Ravenna he has cured a great number of cases of intermittent fever by it, and he goes so far as to affirm that its action is more certain, and more prompt than that of the sulphate of quinine. Dr. Elliotson, however, says, “Dr. Roots employed it at this hospital (St. Thomas’s) in five or six cases of ague, about three years ago, and ascertained that it cured the disease very well, but not better than quinine. There was no reason, therefore, to prefer it; and as it is far more expensive, none of us have employed it since.”\* Majendie suggests the use of it in gonorrhœa in place of cubebs. The *dose* is much smaller than that of the sulphate of quinine. It may be carried as far as twenty-four grains in twenty-four hours.

OFF. PREP.—*Confectio Piperis Nigri*, L.

*Unguentum Piperis Nigri*, D.

*Emplastrum Cantharidis vesicat. comp.* E.

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\* See Clinical Lecture, reported in the “Lancet,” page 409, No. 354.



## PIPER LONGUM.—*Long Pepper.*

SPEC. CHAR. Lower leaves cordate, stalked, 7-nerved; upper cordate-oblong, sessile, 5-nerved.

Syn.—*Piper longum orientale.* Bauh. Pin. 412.

Cattu-tirpali. Rheed. Hort. Malab. v. 7. p. 27. t. 14.

*Piper longum.* Ger. Em. 1539; Raii. Hist. 1343; Clus. Exot. 183; Blackw. t. 356; Rumph. Amb. v. 5. p. 335. t. 116. f. 2; Willd. Sp. Pl. 1. p. 161; Woodv. t. 188.

FOREIGN.—*Poivre longue*, Fr.; *Pepe lungo*, It.; *Pimienta larga*, Sp.; *Langer pffer*, Ger.; *Pipel*, Hind.; *Täbee*, Malab.; *Chabi-jawa*. Jav.

BLACK PEPPER is a native of the East Indies, particularly of the provinces of Malabar and Bengal. It is a perennial plant, with smooth, round, branched, slender climbing stems, that do not rise to any considerable height. The leaves differ considerably in size and form; the lower ones being cordate, pointed, 7-nerved, petioled; the upper cordate, oblong, and 5-nerved; they are alternate, smooth, entire, and of a deep green colour. The flowers are very minute, in dense, short, terminal spikes, which are nearly cylindrical. The parts of fructification, though less distinct, correspond with the description of the former species. The fruit consists of very small berries, lodged in a pulpy matter, which are at first green, and become red when ripe; the fruit is hottest to the taste in the immature state, and is therefore gathered while green, and dried in the heat of the sun. It is imported in the entire spikes, which are about an inch and a half long, cylindrical, and of a blackish, or dark grey colour.

MEDICAL PROPERTIES AND USES.—The medical properties of long pepper are precisely the same as those of black pepper. Louriero, in his *Flora Cochinchinensis*, v. 1. p. 32, speaks highly of the medicinal virtues of this spice; “calefaciens, stimulan, deobstruens.” Dr. Ainslie says, the root of the long pepper is highly prized as a medicine by the Hindoos: it possesses the same qualities as the fruit, only in an inferior degree, and is prescribed by them in cases of palsy, tetanus, and apoplexy.





*Piper cubeba* L.

G. R. R. del.

Weddell sc.

London, Published for the Authors, Sep. 1830.



## PIPER CUBEBA.

*Cubeb, or Java Pepper.*

SPEC. CHAR. *Leaves* elliptic-lanceolate, pointed, smooth, 5-ribbed, unequal at the base. *Spike* solitary, on a peduncle opposite to the leaves. *Berries* on partial stalks.

*Syn.*—Cubebæ, *Raii Hist.* 1813; *Park. Theatr.* 1583; *Clus. Exot.* 184.

*Piper caudatum.* *Ger. Em.* 1540; *Bauh. Hist.* 2. 185.

*Piper Cnbeba.* *Willd. Sp. Pl.* 1. p. 159; *Vahl. Enn. n.* 61; *Gærtn. de Fruct.* 2. p. 67. t. 92.

THE plant which affords the officinal Cubebs is a native of Java, Nepal, Sierra Leone, and the Isle of France. The stems are round, smooth, zigzag, creeping or rooting, and striated, with somewhat tumid joints. The leaves are elliptic-lanceolate, pointed, entire, unequal at the base, two or three inches long, and one broad, solitary at each joint, with the principal ribs proceeding in alternate order from the main rib, and placed on short channelled footstalks. The flowers are minute and closely crowded in lateral and terminal spikes, two inches long, solitary, round, simple, opposite the leaves, and supported on short petioles. The fruit is a smooth, globular 1-celled berry, on a short stalk, fleshy, and of a deep red colour at first, but becoming brown and coriaceous when dried; and containing a single roundish, ferruginous, wrinkled seed. With the exception of the fruit, we are not acquainted with any figure of this species of Piper. Our drawing was made from dried specimens in the Museum of the Hon. East India Company, collected in Java by Dr. Thomas Horsfield.—Fig. (a) exhibits the fruit detached; (b) a section of the same; (c) naked seed; (d) the embryo, from Gærtner.



QUALITIES AND CHEMICAL PROPERTIES.—These berries are nearly round, of a greyish brown colour, and exhibiting on their surface prominent lines, disposed like net-work. They have an aromatic odour, and are acrid and hot to the taste—properties which reside principally in the parenchyma. If dried, previously to being reduced to powder, they lose the principal part of their virtues.

By analysis, M. Vauquelin (*Journ. Pharm.* vi. 309,) found them yield:—

    Volatile oil, nearly concrete,  
    Resin, analogous to that of the balsam of copaiba,  
    Coloured resin, of a different nature,  
    Coloured gummy matter,  
    Extractive, analogous to that of the *leguminosæ*,  
    Various saline substances,

Two pounds and a half have been found to afford about two ounces two drachms of volatile oil, of the consistence of almond oil.

MEDICAL PROPERTIES AND USES.—Cubebæ are diuretic, and slightly purgative; they are used in India as a grateful condiment, carminative, and stomachic. A few years ago, Cubebæ were introduced into this country as a remedy for gonorrhœa. Mr. Crawford was the first who wrote on them: his communication appearing in the *Edinburgh Medical and Surgical Journal* for January, 1818. Twelve months afterwards, this was followed by one from Mr. Adams, in the same work. Both are very modest and well-written papers: each contains the history of a case in which Cubebæ were of decided use; and to the former is appended another by the Editor, where hernia humoralis supervened. Mr. Crawford also allows that, in a few cases, it has been said to produce that disease. Mr. Adams concludes his account by stating that, with his experience of the efficacy of this remedy, he is induced to offer the following conclusions, viz. “Cubebæ are not a specific for gonorrhœa. At the same time, they may be considered a valuable remedy, when of good quality, fresh, and finely powdered.”

The next authors are Mr. Jefferys, who published a little work on the subject; and Mr. Marley, who related several successful cases in the *Medical and Physical Journal*, for June, 1821. Mr. Jefferys considers it, “not only as a very safe remedy, but, in the generality of cases, infinitely more useful and expeditious than any which has ever yet been introduced into practice. It possesses what may be justly called a specific power in most



constitutions, especially when administered in the early and acute form of the disease. It moderates the inflammation and most painful symptoms, and suppresses the quantity of the discharge in a shorter time, and with more certainty, than any other remedy with which I am acquainted." Mr. Jeffreys, contrary to what has been advanced above, has not known it produce hernia humoralis; and in opposition to the opinion of Sir A. Cooper, who speaking of it says, "such expedients are improper where much inflammation exists, or the patient is of an irritable habit,"\* and asserts, that "it is in the more inflammatory forms of the disease in which its efficacy is most certainly displayed."

How are we to reconcile such conflicting sentiments? Mr. Marley writes, "In cases of a recent nature, I think it may be called a specific. . . . The head and stomach are always more or less affected during the exhibition of cubebs, and there is generally a tendency to constipation." The first part of the latter sentence accords with our own experience; while the last is at utter variance with it.

Dr. Traill, of Liverpool, in the *Edinburgh Medical and Surgical Journal*, April 1821, advances the following opinions: "As far as my experience goes, it is most useful in *old* and *obstinate* blenorrhœa." Here again is a variance of opinion: for while we have been recommended to use it in the early and most acute form of the disease by Messrs. Jeffreys and Marley, according to Dr. Traill it is most useful in the last, or when the discharge is of a gleet nature. He confirms its tendency to excite hernia humoralis, in opposition to Mr. Jeffreys' experience, but in confirmation of that of others. After this summary of its effects, which embraces nearly all that has been published respecting it, it must appear to every candid mind that much difference of opinion exists as to its curative powers. Swediaur states, that black pepper, taken internally, will sometimes bring on a purulent discharge from the urethra; thereby proving that medicines of this class are capable of exciting an influence on its mucous membrane; and from the numerous testimonials which

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\* See Mr. Syder's edition of Sir A. Cooper's *Surgical Lectures*.



have been adduced on behalf of cubebs, we seem to have no reason to doubt, that it has a specific effect on the diseased canal; but from the numerous trials we have given it, we are justified in maintaining the opinion which we published in 1822.\* We then stated, that we had been anxious to learn the opinions of our medical brethren; amongst whom we had been able to meet with but one, who placed any reliance on it, and conjoined it with copaiba. All the others have been obliged to give it up, on the ground of inefficacy.

“ Dr. Stephenson has not found it of any service; but met with two cases in which very distressing hæmorrhoids were induced by it. And a surgeon in the city informed us, that in two cases it produced hæmaturia. Those persons to whom we have administered it, complained individually of the deep-seated headache it produced; and distressing diarrhœa is often its concomitant. One person complained of a pricking sensation in the soles of the feet; another of intense itching; and a third, had a severe attack of urticaria febrilis; which it is well known is produced by a variety of substances, as shell-fish, mushrooms, almonds, &c. The nausea is likewise so great in some instances, as to preclude the possibility of continuing its use.”

By Dr. Fosbrooke,† cubebs have been much commended in cases of inflammation of the mucous membrane of the intestinal canal, conjoined with the oxide of bismuth: also in cases of chronic inflammation of the œsophagus, in union with carbonate of soda.

DOSE. From ʒj. to ʒij. every six hours, in a glass of milk.

TINCTURA PIPERIS CUBEBAE, Ph. D.

℞ Fructus Piperis Cubebæ ʒiv.

Spiritus Vini tenuioris ℥ij. Macerate for fourteen days, and strain.—Dose g<sup>tt</sup>. x. to ʒj.

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\* See “*Observations on the Diverse Treatment of Gonorrhœa Virulenta,*” &c. by J. M. Churchill.

† *Medical Repository*, p. 102.





*Chenopodium olidum.*

G. R. 176. 176.

Widdow.

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## CHENOPODIUM OLIDUM.

*Stinking Goose-foot.**Class V. PENTANDRIA.—Order II. DIGYNIA.**Nat. Ord. HOLERACEÆ, Lin. ATRIPLICES, Juss. CHENOPODEÆ, Decand.*GEN. CHAR. *Seed* lenticular, tunicated, superior.SPEC. CHAR. *Leaves* ovate, somewhat rhomboid, entire. *Spikes* dense, axillary, leafless.*Syn.*—*Blitum fœtidum, Vulvaria dictum. Raii Syn. 156.**Atriplex olida. Ger. Em. 327. f.**Atriplex fœtida. Bauh. Hist. v. 2. 974. f. 995; Moris. Hist. 2. t. 31. f. 6.**Garosmus. Dod. Pempt. 616. f.**Chenopodium. n. 1577; Hall. Hist. v. 2. 266.**Chenopodium vulvaria. Lin. Sp. Pl. 321; Willd. v. 1. p. 1305; Woodv. t. 145.**Chenopodium olidum. Fl. Brit. 277; Eng. Bot. v. 15. t. 1034; Curt. Lond. t. 20; Hook. Scot. 83.*FOREIGN.—*L'arroche fœtide, Fr.; Vulvaria; connina, It.; Stinkender gänsefuss, Ger.*

THIS species, which is readily distinguished from all others of the genus, by its procumbent stem, and strong fœtid smell, is an indigenous annual, growing on waste ground, especially among sand or rubbish near the sea. It occurs sparingly in several places in the neighbourhood of London, at the foot of walls or paling, where it flowers from July to September.

The root is small and fibrous. The stems are several, branched, spreading, or prostrate, channelled, and grow from six to twelve inches high. The leaves are numerous, acute, entire, ovate, or slightly rhomboid, scarcely an inch long, and stand alternately upon short footstalks. The whole herb is of a dull green colour, and sprinkled with a white pellucid meal, which, when touched, exhales a strong nauseous odour, like stale salt-fish. The flowers are small, of a pale green or yellowish colour, and placed in ob-



long interrupted spikes. The calyx consists of one pentagonal leaf, cut into five acute, ovate, concave, permanent segments : there is no corolla. The filaments are awl-shaped, about the length of the segments of the calyx, and furnished with round, 2-lobed anthers. The germen is orbicular, and supports two short styles, terminated with obtuse stigmas. The seed is solitary, lenticular, dotted, and inclosed by the calyx, which supplies the place of a capsule. Fig. (a) represents a flower; (b) the calyx enveloping the seed; (c) a naked seed :—slightly magnified.

**QUALITIES AND CHEMICAL PROPERTIES.**---According to MM. Chevalier and Lassaigne, this plant contains uncombined ammonia, on which its odour seems principally to depend. This odour is extremely nauseous, resembling that of putrid fish. Gerrard remarks, that "it is called stinking orrach by Cardus, *Garosmus*, because it smelleth like stinking fish; it is also called *tragium*, and *atriplex fœtidagarum olens* by Pena and Lobel, for it smelleth more stinking than the rammish male goat, whereupon some, by a figure, have called it *vulvaria*." When the plant is bruised with water, and the liquor expressed and afterwards distilled, we procure a liquid which contains the subcarbonate of ammonia, and an oily matter, which gives the fluid a milky appearance. If the expressed juice of the chenopodium be evaporated to the consistence of an extract, it is found to be alkaline. On analysis, it has been found to yield subcarbonate of ammonia, albumen, ozmazone, an aromatic resin, a bitter matter, nitrate of potass in large quantities, acetate and phosphate of potass, tartrate of potash. It is said that one hundred parts of the dried plant produce eighteen of ashes, of which half are potash.

**MEDICAL PROPERTIES AND USES.**—This species of chenopodium once obtained a place in the London and Edinburgh Pharmacopœias, and was considered by Cullen to be a valuable anti-spasmodic. He also gave it in hysteria, for which it is much commended by many old authors. Owing, however, to its losing its sensible qualities when dried, it gradually fell into disuse amongst medical men, and was discarded from our authorized materia medica.

Some years ago, Mr. Houlton, the present able Professor of Botany to the Medico-Botanical Society of London, being in the neighbourhood of Coggeshall, in Essex, learnt from an old gardener, that the poor people were constantly employing it with great success as an emmenagogue. As the celebrated



Dale lived in that neighbourhood, he thought it probable that this knowledge of its virtues had been handed down from him; and on reference to his *Pharmacologia*, p. 75, will be found the following statement 'Uterina est, menses provocat, foetum mortuum secundinamque expellit, in hystericis multum prodest.' On making inquiries in town, it was ascertained that our old ladies were also well acquainted with its virtues; and so regular is the demand for this herb at Covent Garden, that almost any quantity of it can be obtained from Mitcham, where it is regularly cultivated for the supply of the market. Under these circumstances, Mr. Houlton embraced several opportunities to put its merits to the test, and his success in *leuco-phlegmatic* habits has been eminently successful. In the *Medical and Surgical Journal*, of which he was one of the editors, he has satisfied himself by narrating one well-marked case of its successful operation; and during the last session of the *Medico-Botanical Society*, he sent some of the extract, or rather inspissated juice prepared by spontaneous evaporation, accompanied by a paper on its properties. Earl Stanhope, the noble president, whose admirable printed oration, proves both the extent of his information and his wish to promote the increase of knowledge on these subjects, anxious for further proofs of the efficacy of the *C. olibanum*, did Mr. Churchill the honour to send him a small quantity of the extract, accompanied by a request that he would try it, and communicate to the *Society* the result; and he found on experiment, that in three cases out of four of suppressed menstruation, it immediately succeeded in restoring the secretion, unaccompanied by any other sensible effects.

It is well known, that the suppression of this periodical secretion is generally supposed to arise from deficiency of action in the uterine vessels, which has led to the general practice of giving tonics, or diffusible and permanent stimuli. It is doubtful, however, as Dr. Murray remarks, whether there is further, any particular determination to these vessels; for although many substances, when received into the stomach, have their



stimulant operation determined more particularly to one organ than another, yet experience has not hitherto proved, that any of the substances styled emmenagogues, are capable of producing their effect from any specific power. These remarks of Murray were certainly true when they were penned; the only medicines that could be at all relied on, being hydragogue purgatives, which, from acting more particularly on the large intestines, communicate a stimulating effect to the vessels supplying the womb. Since his time, an indigenous vegetable substance, the *ergot*, or spurred rye, has been proved to exert its peculiar effects on the uterus; and our readers, by referring to No. 29 of "Medical Botany" will find a full account of its chemical and medical properties, accompanied by a botanical description of the plant. If ergot be capable of producing such extraordinary effects, we would ask, why we should despair of finding a *direct emmenagogue*, or a medicine capable of producing a flow of the menses by its own peculiar or specific action on the uterus? We are firmly convinced, that the *C. olidum* is possessed of such virtues; and those of our readers who may be inclined to try the inspissated juice or *extract* in doses of from five to fifteen grains, given at bed-time, may obtain any quantity of Mr. Barnes, Chemist, Brown Street, Bryanston Square, who has prepared several pounds of it. It must be borne in mind, that it does not succeed in plethoric habits, unless they have been reduced by venesection and saline purgatives; nor is its success to be so often expected even then, as in the pale or cachectic patient.





*Rheim undulatum.*

W. Clarke del.

W. Adell sc.

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## RHEUM UNDULATUM.

*Waved-leaved, or Chinese Rhubarb.*

SPEC. CHAR. *Leaves* villous, wavy; the sinus dilated at the base. *Petioles* flat above, with an acute edge.

*Syn.*—*Rheum sinense*, *Amm. Herb.* 206.

*Acetosa montana.* *Messerschm. in Amm. Ruth.* 226.

*Rheum Rhabarbarum.* *Lin. Syst. Veg.* 385; *Pallas It.* 2. 559.

*Rheum undulatum.* *Lin. Sp. Pl.* 531; *Amœn. Acad.* 3. p. 212. t. 4; *Willd.* 2. 489; *Hort. Kew.* 2. 430; *Plenck. Ic.* t. 321.

FOREIGN.—*Wellenblättriger Rhabarber*, Ger.; *Hai Houng*, Chin.

THIS plant is a native of China and Tartary. Like the *Rheum palmatum*, already fully described (Art. XXV.) it yields the roots which in our shops are known under the names of Chinese and Turkey rhubarb; although other species of *Rheum*, especially *compactum*, possess similar medicinal properties. The roots of this, as well as the other species, has been cultivated with success in this country, with a view of supplying the London market; but such is the prejudice in favour of the foreign article, that these attempts have generally failed.

The root is composed of numerous thick fibres, running farther into the ground than the *palmatum*, and of a deep yellow colour. The flower stem is erect, three or four feet in height, and of a pale brownish colour. The leaves are numerous, large, oblong, somewhat tapering, villose above, much waved at their edges, and strongly veined beneath; they are supported on moderately thick footstalks, channelled on their under side, and plain on their upper. The flowers are white, in loose pannicles or bunches, which appear in May, and are succeeded by trian-



gular seeds of a rusty brown colour, like those of *R. palmatum*, which ripen earlier in the season. Fig. (a) represents a flower magnified; (b) the pistil; (c) seed.

QUALITIES AND USES.—The same as those of *Rheum palmatum*. Dr. Pulteney remarks, that if these two species are planted near each other, they produce a hybrid variety, more excellent in kind than the parent plants.

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### RHEUM COMPACTUM.—*Thick-leaved Rhubarb.*

SPEC. CHAR. *Leaves* somewhat lobed, very obtuse, shining, sharp-toothed, smooth.

*Syn.*—*Rheum foliis cordatis glabris marginibus sinuatis, &c.*; *Mill. Ic. 2. t. 218.*  
*Rheum compactum.* *Willd. Sp. Pl. 2. 489. Ait. Kew. 2. 431.*

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This species of *Rheum* is a native of Tartary, and is frequently substituted for the true rhubarb. The root is large, much branched, and internally yellow. The stems are five or six feet high, of a pale green colour, branched at the upper part, and having at each joint one sessile leaf of the same shape with those of the root, but smaller. The radical leaves are large, smooth, heart-shaped, broad at the base, coriaceous and compact, rather waved, petioled, and having a sharp acid flavour. The flowers, which appear in the latter end of May, are white, forming an erect panicle or spike. The seeds resemble those of the preceding species.

About three years ago, another species of this genus, found on the Hamalaya Mountains, has been supposed to yield the true rhubarb. It was described by Mr. Don, under the name of *Rheum australe*, but it is not yet determined whether this or some other species yields the finest Turkey rhubarb. From some trials made with the roots dried at the Botanic Garden, Chelsea, it appears to possess but little or no cathartic power.





*Wintera aromatica.*

Wied. del.

Weddell sc.

London. Published for the Authors. Sep. 1830.



## CLXXVIII

### WINTERA AROMATICA.

*Officinal Winter's Bark Tree.*

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*Class XIII. POLYANDRI.—Order III. TRIGYNIA.*

*Nat. Ord. MAGNOLIÆ, Juss.*

**GEN. CHAR.** *Calyx* 2 or 3-cleft. *Petals* numerous. *Stamens* club-shaped, with terminal 2-lobed anthers. *Style* 0. *Berries* superior, aggregate. *Seeds* several, disposed in two rows.

**SPEC. CHAR.** *Leaves* elliptical, obtuse, coriaceous. *Flower-stalks* aggregate, terminal. *Pistils* about four.

*Syn.*—*Laurifolia magellanica cortice acri. Raii. Hist.* 1801; *Bauh. Pin.* 461.

*Periclymenum rectum, foliis laurinis, cortice aromatico acri. Sloane in Phil. Trans.* v. 17. 923. t. 1. f. 1. 2.

*Winteranus cortex. Clus. Exot.* 75; *Dale Pharmacol.* 324.

*Drymis Winteri. Forst. Act. Ups.* v. 3. 181; *Lin. Suppl.* 269; *Decand. Syst. Veg.* 1. p. 443; *Prodr.* 1. p. 78.

*Wintera Aromatica, Willd. Sp. Pl.* 2. 1239; *Murray in Lin. Syst. Veg. ed.* 14. 507. *Forst. Pl. Magell.* 24. t. 7; *Comm. Gætt.* v. 9. 34. t. 7; *Soland. in Med. Obs. & Enq.* v. 5. 41. t. 1.

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THIS tree is a native of the straits of Magellan, growing in valleys exposed to the sun, where it was first observed by Capt. Winter, and has since been found by several other navigators; but no one has brought living plants, or seeds, to Europe. Dr. Solander has given an accurate botanical description of it, illustrated by a figure, in "Medical Observations and Enquiries," vol. vi. p. 46.

The Winter's-bark tree, *Wintera aromatica*, is one of the largest trees upon Terra del Fuego, and often rises to the height of fifty feet. It is a handsome evergreen, with many twisted knotty branches which do not spread horizontally, but bend upwards, and form an elegant head of an oval shape. The trunk is covered with a thick gray rugged bark, which on the branches is green and smooth. The leaves are alternate, crowded about the ends of the branches, elliptical, obtuse, entire, about two inches in length, and one and a half wide, of a bright green colour,



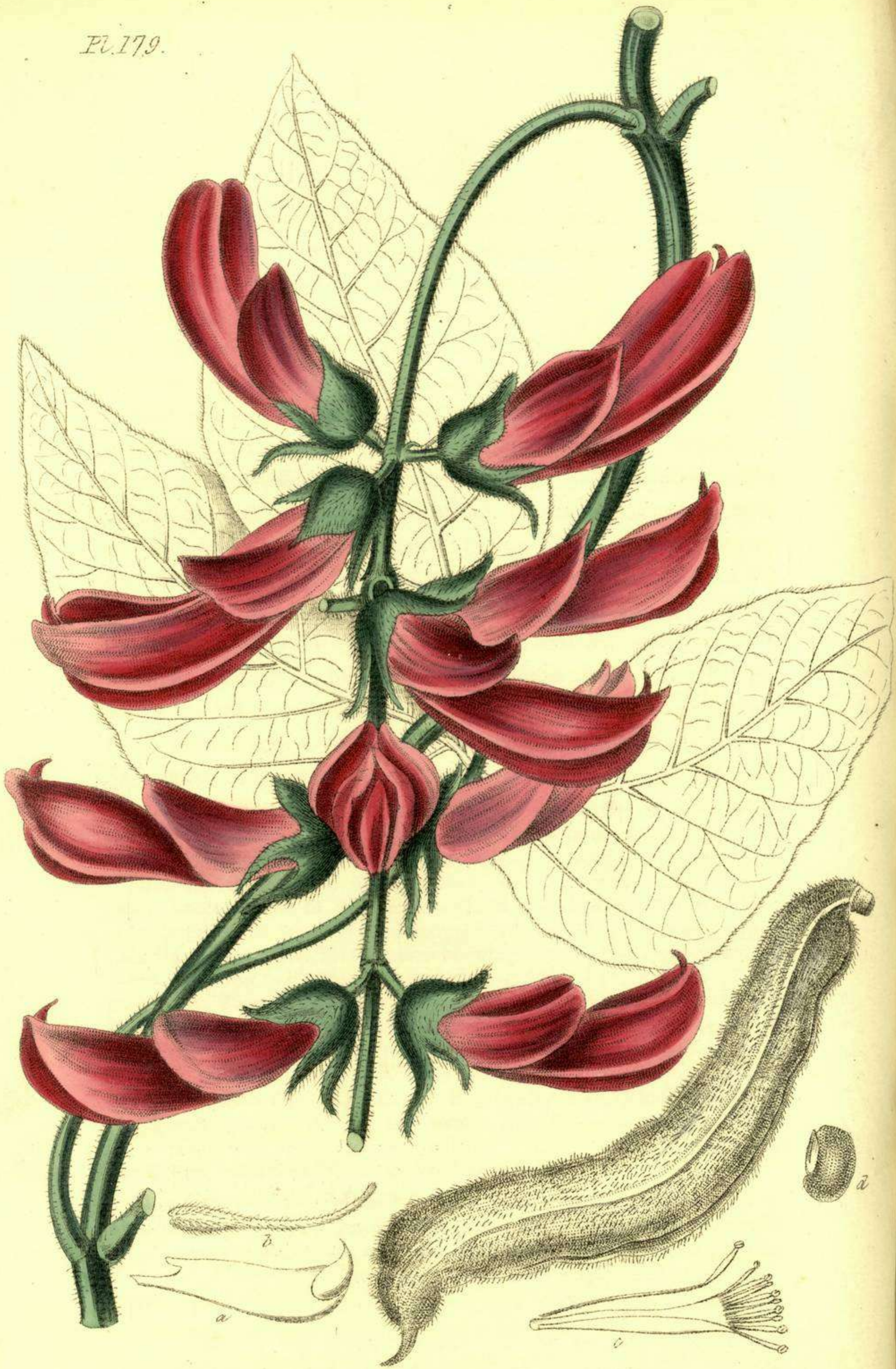
coriaceous, somewhat revolute, with a stout midrib, and scarcely visible veins, very smooth on both sides, usually somewhat glaucous beneath, and stand on broad, short, smooth footstalks. The pedicles of the flowers are axillary, near the extremity of the branches, two or three together, simple or three-cleft, smooth, not half the length of the leaves, and accompanied at their base by several ovate, pale, deciduous bracteas. The flowers are small, of a milk-white colour, with the odour of jasmine. The calyx is green or reddish, coriaceous, and unequally three-lobed. The corolla consists of seven petals, which are unequal, ovate, obtuse, concave, and erect: the filaments are from fifteen to thirty, shorter than the petals, supporting large ovate anthers. The germen are from three to six, turbinated, and terminating in as many sessile, flat stigmas. The berries are ovate, of a greenish colour, spotted with black, each containing four triangular seeds. Fig. (a) exhibits the calyx; (b) a petal, magnified; (c) anther, back and front, both magnified; (d) the germen; (e) a germen detached; (f) section of the same, showing the rudiments of the seed.

The generic name, *WINTERA*, was given in memory of the companion of Sir Francis Drake, Captain William Winter, who brought the bark to Europe, from the straits of Magellan, about the year 1579. "Linneus, meaning to commemorate the discovery, established a genus by the name of *Winterana*, G. Pl. 238, the bark of which he considered to be what Winter introduced. But the Linnean plant is *Canella alba*, to the fructification of which alone the description applies. Browne had already founded this genus by the name of *Canella*; and Swartz, as well as Murray, have confirmed it. Meanwhile Foster, having found and investigated the fructification of the Winter's bark tree, described it by the name of *DRYMIS*, alluding to its hot and pungent flavour. This is retained by the younger Linneus, in his *Supplementum*, with a remark properly distinguishing it from the *Canella alba*; though his father, like Professor Bergius, *Mat. Med.* vol. i. 381, had confounded them." Five species, belonging to this genus, have been described by Decandolle.

**QUALITIES.**—Winter's bark is of a dark cinnamon colour, has an aromatic smell, and a warm, pungent, spicy taste, depending principally on an essential oil, which can be separated in distillation with water. The watery infusion strikes a deep black with sulphate of iron.

**MEDICAL PROPERTIES AND USES.**—This bark is carminative and tonic; and though much celebrated as an antiscorbutic by its first discoverers, is with us unknown in practice. In substance, the dose may be from gr. x. to ℥j.





*Dolichos pruriens*

G. Reid del.

Weddell sc.

London, Published for the Authors, Oct 1830.



## CLXXIX

### DOLICHOS PRURIENS.

*Cow-itch Dolichos.*

*Class XVII. DIADELPHIA.—Order IV. DECANDRIA.*

*Nat. Ord. PAPILIONACEÆ, Lin. LEGUMINOSÆ, Juss.*

**GEN. CHAR.** *Vexillum* with two calli at the base.

**SPEC. CHAR.** *Legume* racemose; valves keeled, hairy.  
*Peduncles* in threes.

*Syn.*—Phaseolus Zurattensis, siliqua hirsuta, Couhage dicta. *Raii Hist.* 887.

Phaseolus siliquis hirsutis. *Park. Theatr.* 1056.

Stinging Beane. *Ger. Em.* 1205.

Phaseolus Americanus. *Pluk. Alm.* 292; *Phyt. t.* 214. *f.* 1.

Cacara pruritus. *Rumph. Amb.* 393; *t.* 142.

Nai corana. *Rheede Malab.* 8. *p.* 61. *t.* 35.

Phaseolus utriusque Indiæ. *Herm. Prodr.* 364; *Sloane Hist.* 1. 37.

Stizolobium. *Browne Jam.* 290. *t.* 31. *f.* 4.

Carpopogon pruriens. *Roxb. MSS.* 235.

Dolichos pruriens. *Willd. Sp. Pl. v.* 3. *p.* 1041; *Jacq. Amer. p.* 201. *t.* 122;

*Mill. Ic. n.* 3; *Ait. Kew.* 4. *p.* 293; *Woodv.* 3. *t.* 172; *Stokes Bot. Mat.*

*Med.* 4. *p.* 22.

**FOREIGN.**—*Pois à gratter*, Fr.; *Cacara*; *Naicorana*, Port.; *Juckende*;  
*Faseln*; *Kratzbohnen*, Ger.; *Nai-corana*, Malab.; *Kiwách*, Hind.; *Cad-*  
*juct*, Beng.

THE Cow-itch Dolichos, the hairy pods of which have been long celebrated as an anthelmintic, grows spontaneously in the mountainous woods of Martinique, on the banks of rivers; and in the East Indies, where it flowers in the cool months, from September to March. It appears to have been cultivated in England in the time of Ray, and it is not now an uncommon inhabitant of our stoves; but the plant seldom blossoms in this country. For the figure which accompanies the following description, we are indebted to the liberality of Dr. Thomas Horsfield, F.R.S., the highly respectable author of the "Zoological Researches in Java," in whose herbarium, in the museum of the Honourable East India Company, we found several specimens of the plant in a high state of preservation.



The root is perennial and fibrous. The stem is herbaceous, climbing, cylindrical, tomentose, divided into many branches, which twist round the neighbouring trees, and rise to a considerable height. The leaves are ternate, upon footstalks, from six to fourteen inches long, placed alternately at the distance of a foot from each other; the central leaflet is rhomboidal, the two lateral ones oblique, and all of them entire, pointed, from three to five inches long, waved on the edges, smooth on the upper surface, and hairy beneath. The flowers are papilionaceous, large, inodorous, of a purplish, or rich violet colour, and placed mostly in ternaries, upon short pedicels, in pendulous, solitary spikes, about a foot in length, which hang from the axillæ of the leaves, and make a magnificent appearance. The proper flower-stalks are about half an inch long, furrowed, hairy, and furnished with small stipulæ. The calyx is bell-shaped, gibbous at the base, downy, divided into two lips, of which the upper is smaller, semiovate; the under separates into three lanceolate segments. The corolla consists of a vexillum, or standard, which is roundish, entire, concave, obtuse, and double the length of the calyx; a carina, which is sythe-shaped, of the length of the alæ, compressed, and at the apex furnished on each side with a short spur. The filaments are ten, nine of which are united at the base, the four alternate ones being longer, and supporting incumbent anthers; in the shorter filaments the latter are placed vertically. The germen is oblong, villous, and supports a slender style, about the length of the filaments, terminated by a small orbicular stigma. The fruit is a coriaceous pod, about four inches long, compressed, curved like the letter S, thickly set with bristly, short, reddish, prurient hairs; and containing four, five, or six oval seeds, of a brown colour. Fig. (a) represents the carina; (b) anthers; (c) pistil; (d) seed.

**MEDICAL PROPERTIES AND USES.**—The pods of the *Dolichos pruriens* are brought from the West Indies. They are densely covered externally with short hairs, which penetrate the skin when touched, and cause a very troublesome itching. Advantage has been taken of this irritating quality to expel worms from the human intestines; for this purpose they have been long



advantageously employed in the West Indies, especially for the removal of the round worm, *lumbricus teres*, L. One of the earliest accounts, published in this country, of the vermifuge powers of the hair of the pods of the cow-itch, is that by Mr. Kerr, in the Edinburgh Medical Commentaries. Sir Hans Sloane notices the diuretic qualities of the roots and pods of this plant, but takes no notice of the vermifuge effects of the cow-itch. Dr. Patrick Brown, however, informs us, that in the Windward Islands, a syrup is made of the pods, which is a very effectual remedy against worms. But the most complete account, showing the efficacy of this medicine as an anthelmintic, is that of Dr. Bancroft, in 1759, who resided many years in Guiana, a Dutch settlement in South America, where the inhabitants, particularly the slaves, are much afflicted with intestinal worms. After stating the frequency of worms in that country, and endeavouring to account for it, he adds, that from whatever cause these worms originate, their number is so great, and their power so prolific, that the usual remedies are insufficient for their destruction; for which reason the planters in general have recourse to cow-itch for that purpose. The part used is the setaceous hairy substance, growing on the outside of the pod, which is scraped off, and mixed with the common syrup, or molasses, to the consistence of a thin electuary, of which a tea-spoonful to a child two or three years old, and double the quantity to an adult, is given in the morning fasting, and repeated the two succeeding mornings; after which, a dose of rhubarb is usually subjoined. This is the empirical practice of the planters, who usually, once in three or four months, exhibit the cow-itch in this manner to their slaves in general, but especially to all the children, without distinction; and in this manner I have seen it given to hundreds, from one year and upwards, with the most happy success; the patients, after the second dose, usually discharging an incredible number of worms, even to the amount of more than twenty at a time, so that the stools consisted of little else than these animals. But though these were indisputable proofs of its efficacy, I was far from being convinced of its safety. I observed, that the substance



given consisted of an assemblage of spiculæ, exquisitely fine, and so acutely pointed, that when applied to the skin they excited an intolerable itching, and even inflammation; from whence I apprehended dangerous consequences from their contact with the coats of the stomach and intestines. Indeed, when mixed into an electuary, in the manner in which they are given, their elasticity is so impaired, that they do not produce the same sensible irritation; but yet I could conceive no other quality on which their efficacy depended, especially after I had prepared both a tincture and decoction from cow-itch; and yet can, with the greatest truth, declare, that, though prejudiced to its disadvantage, I was never able, either by my own observations, or diligent inquiry, to discover a single instance of any ill consequence resulting from its use; which has been so extensive, that several thousands must have taken it; and as no ill effects have been observed, I think, not only its efficacy, but safety, are sufficiently evinced, to entitle it to general use, especially when we reflect on the uncertainty, and even danger, which attends on vermifuges.\* Whether this remedy is equally deleterious to the *ascarides*, he says, he cannot speak, as he has not seen it tried against them. For this last purpose, Dr. Mason Good suggests its employment in the form of mucilaginous injections. It was a favourite remedy with Dr. Macbride, who, in his introduction to the "Theory and Practice of Physic," has strongly recommended it. It is a fact well-known to entomologists, that the hairs of the caterpillars of several moths occasion a most violent itching, particularly those of the procession moth (*Lasiocampa proccessionea*), of which Reaumur has given so interesting an account. Hence it has been supposed, that the hair of the caterpillars here alluded to, might probably be found equally efficacious as an anthelmintic.†

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\* *Essay on the Natural History of Guiana*, p. 390.

† Kirby and Spence's *Introduction to Entomology*, v. 1, 5th ed. p. 130.





*Aristolochia Serpentaria.*

G. Reid. del.

Weddell. sc.

London. Published for the Authors. Oct. 1830.



## ARISTOLOCHIA SERPENTARIA.

*Virginia Birthwort, or Snake-root.**Class XX. GYNANDRIA.—Order IV. HEXANDRIA.**Nat. Ord. SARMENTACEÆ, Lin. ARISTOLOCHIÆ, Juss.*

GEN. CHAR. *Calyx* 0. *Corolla* monopetalous, ligulate, ventricose at the base. *Capsule* 6-celled, inferior.

SPEC. CHAR. *Leaves* cordate-oblong, acuminate. *Stems* weak, flexuous, round. *Flowers* solitary; peduncles solitary; lip of the corolla lanceolate.

*Syn.*—Pistolochia, sive Serpentaria virginiana. *Ger. Em.* 847. 5; *Clus. Hist.* 72; *Catesb. Carol. t.* 29; *Raii. Hist.* 3. p. 394; *Dod. Pempt.* 525.

*Aristolochia, polyrrhizos virginiana. Moris. Hist.* 3. p. 310. t. 17.

*Aristolochia Serpentaria. Lin. Sp. Pl.* 1363; *Willd. v.* 4. p. 159; *Jacq. Schænbr.* 3. t. 385; *Hort. Kew. v.* 5. p. 226; *Michaux Bor. Amer.* 2. p. 162.

FOREIGN.—*Serpentaire, Fr.*; *Serpentaria de Virginia, Port.*; *Verginische Schlangen—oder Vipernwurzel; Arzeneykräftige Osterluzey, Ger.*; *Slang-rod, Dan.*; *Ormrot, Swed.*

SNAKE-ROOT is a native of North America, growing in the woods, according to Pursh, from Pennsylvania to Florida; flowering in May and June, and ripening its seeds in September.

It is a perennial plant of humble growth, being most commonly under a foot in height. The root is composed of bundles of small fibres, of a yellowish colour, which changes to brown on drying, attached to a contorted horizontal head, and sends up several small slender stems. These are simple, or slightly branched, somewhat downy, round, flexuous, jointed, about ten inches in height, and often of a reddish tinge. The leaves are alternate, on short petioles, oblong, entire, acuminate, heart-shaped at the base, and three-nerved. The flowers are monopetalous, of a stiff leathery texture, and of a dull brownish purple



colour; they are solitary, and placed upon long, sheathed, jointed peduncles, which proceed from the lower articulations of the stem. There is no calyx: the corolla, like others of this singular genus, consists of a long contorted tube, bent in the form of the letter S, ventricose at the base, contracted in the middle, having its throat surrounded by an elevated ridge, or border, expanded into a broad triangular lip. The anthers are six in number, sessile, and attached to the under side of the stigma: the germen is inferior, oblong, angular, downy, and covered with a roundish, spreading, convoluted stigma, divided into six parts, and almost sessile. The fruit is a globose, hexagonal, 6-celled capsule, containing several small, flat, greyish seeds. Fig. (a) exhibits a section of the flower; (b) the capsule.

The generic term, *Aristolochia*, is derived from *αριστος*, and *λόχια*, or *λοχεια*, from the suppositious use of the plants it comprises, in disorders attendant on parturition. The genus contains about forty-one species, of which our plant, and nineteen others, are indigenous to the tropical regions of America. One of these, which grows on the borders of Madelena, is said by Humboldt to produce flowers so large as to afford hats for children.

QUALITIES AND MEDICAL PROPERTIES.—The fibrous roots, which proceed from a short, gibbous, horizontal trunk, are of a yellow-ochre colour, when fresh, and become deep brown, or black, when dry. The thick and knotty portion of the root is brown.\* It is said that the roots of the *Asarum virginicum*, and of the *Collinsonia præcox*, are sometimes mixed with snake-root. The former are easily detected by being black, and devoid of the odour of snake-root. This odour is aromatic and penetrating, somewhat like that of camphor, or valerian: indeed, Dr. Bidgelow obtained a considerable quantity of crystals of camphor, by distillation. Snake-root has a pungent, bitter taste, and communicates its properties both to spirit and water. Its infusion is not altered by the metallic salts, the mineral acids, nor by alkalies; nor is it precipitated by gelatine

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\* Barton's *Vegetable Materia Medica*, v. 2. p. 76.



or tannin. The tincture is rendered turbid by the addition of water.

To an analysis by M. Chevallier (Journ. Pharm. v. 565,) it yielded,

Essential oil (Camphor?)

Bitter yellow matter, soluble in water and alcohol.

Resinous matter.

Gum.

Albumen.

Starch.

Various salts.

**MEDICAL PROPERTIES AND USES.** — As the name *Snake-root* implies, the medical virtues of this plant were supposed to be its power of arresting the effects of serpents' venomous bites. At the end of a book on the plants of Canada, by Cornutus, published at Paris, in 1635, he states that a root had been sent to him from "Notha Anglia," which was called *Serpentaria*, and in the vernacular tongue, *Snagröel*. This root was a very sure safeguard against the bite of a huge serpent in that country, which proved inevitably fatal within twelve hours, unless a good portion of the antidote was swallowed in season; which being done, no one was ever known to be in danger of his life from this cause. Dr. Bidgelow argues, that the honour of being "a specific" in these cases is one of cheap acquisition; there being so many articles which are said to be uniformly successful in destroying the influence of the venom after the bite, that we naturally conclude, that the wounds inflicted by the rattle-snake, and other venomous serpents,\* although attended with severe and alarming symptoms, are not so often fatal as is generally supposed.

The opinion formerly prevailed, that a morbid matter pervaded the system in malignant fevers analagous to that of the poison of serpents, and that those medicines which acted beneficially in preventing or arresting the effects of the latter, must

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\* A detailed account of the peculiar structure and natural history of this tribe of animals, and the remedies which have been suggested to counteract the effects of the poison on the human system, will be given in a SUPPLEMENT to the present work.



necessarily be adapted for the former. It was to this exploded doctrine that we are indebted for the employment of snake-root in all fevers of a typhoid character. In this country, serpentaria has been highly extolled by Cullen, Monro, and other eminent physicians, while, in America, it has received its due meed of praise from Rush, Barton, Bidgelow, &c. By us it is simply employed as a powerful tonic and diaphoretic, and it occasionally acts as an antispasmodic and anodyne.

In some exanthematous diseases, and in the advanced stage of fevers, this root is highly prized, administered alone, or in combination with other tonics. It appears to support the powers of life, and to allay those irregular actions of the nervous system, the consequences of fever, as subsultus tendinum, picking of the bed-clothes, low delirium, and watchfulness. It is supposed that the camphor which it contains contributes to produce these salutary effects. It is generally combined with cinchona, or with wine and opium; and enters into Huxham's, or the compound tincture of bark. We are not aware that it is capable of curing intermittents by itself; but Sydenham states, that in all cases where it is expedient to combine wine with bark, the effects will be much increased by adding serpentaria. It also better enables the stomach to retain the bark. In remittent fever, especially when the remission is obscure, or not easily discerned, snake-root is by some preferred to cinchona, as it is seldom offensive to the stomach, and is free from mischief. In America, where bilious vomiting is a frequent disease, it is found an efficacious remedy, checking the nausea and tranquillizing the stomach. It is given for this purpose in decoction, in doses of a table-spoonful at a time, frequently repeated. Externally, it is used as a gargle in cynanche maligna.

The most common form of exhibiting it, is in infusion, made by pouring a pint of boiling water on half an ounce of the root, and allowing it to steep for two hours in a covered vessel. The dose is an ounce and a half every four hours. Boiling dissipates its volatile qualities. In powder, its usual dose is from gr. x. to ʒss.

OFF. PREP.—Tinctura Serpentariæ, L. E. D.

Tinctura Cinchonæ composita, L. E. D.

Electuarium Opiatum, E.





*Garcinia Cambogia.*

G. Roid. del.

Weddell sc.

London, Published for the Authors, Oct. 1830.



## GARCINIA CAMBOGIA.

*Gamboge Mangostan.*

Class XI. DODECANDRIA.—Order I. MONOGYNIA.

Nat. Ord. GUTTIFERÆ, Juss.

GEN. CHAR. *Calyx* inferior, of 4 leaves. *Petals* 4.  
*Berry* coriaceous, of several cells, crowned with  
 the stigma. *Seeds* solitary.

SPEC. CHAR. *Leaves* elliptical, acute at each end,  
 their veins rather distant. *Stigma* 8 or 10-lobed.  
*Fruit* furrowed. *Branches* round.

Syn.—*Cambogia gutta*. *Lin. Sp. Pl.* 728.

*Carcapuli*. *Clus. Exot.* 286.

*Coddam-pulli*. *Rheede Hort. Malab.* v. 1. 41. t. 24.

*Mangostana Cambogia*. *Gærtn.* v. 2. 106.

*Garcinia Cambogia*. *Willd. Sp. Pl.* v. 2. p. 848.

ALTHOUGH the gamboge of the materia medica is principally obtained from the *Stalagmitis Cambogioides*, hereafter described, yet there is some reason to believe that the *Garcinia Cambogia* of Linneus, and several other plants of the natural order of the guttiferæ, yield a substance very nearly, if not entirely similar to that of the shops. This tree is a native of Malabar, growing in the forests of Travancore, where it is known to the natives by the names *Ghorkapuli*; flowering in March, and ripening its fruit in June and July.

It is a tall tree, with a trunk about four inches in diameter, and widely spreading, round, smooth branches. The leaves are opposite, three or four inches long, elliptical, entire, tapering at each extremity, smooth, paler beneath; their lateral veins, few and distant, forming very acute angles with the midrib, and placed on short channelled footstalks. The flower stalks, which are nearly an inch long, grow in pairs just below the insertion of each leaf, and are by no means terminal. The calyx is 4-leaved, consisting of two opposite pairs of leaflets, the ex-



terior pair rather smaller; all nearly round, firm, fleshy, smooth on both sides, and permanent. The petals are four, roundish, twice the length of the corolla, and of a yellow colour. The filaments are from fifteen to twenty, shorter than the germen, slightly united at the base, and bearing roundish anthers. The germen is superior, round, 8-10 lobed, 8-10 celled, with one ovule in each cell. There is no style. The stigma is peltate, with as many divisions as there are cells in the germen. The fruit is pendulous, the size of a small orange, but furrowed like a melon, and crowned with the tumid crenate remains of the stigma; it is of a yellow colour when ripe, and containing a sweetish pulp, with some degree of acidity. The seeds are said to be from eight to ten, each enveloped in its own proper, succulent, yellowish aril.—Fig. (a) exhibits a flower with the germen removed; (b) fruit; (c) section of the same; (d) seed.

From the trunk and branches, when wounded, exudes a viscid, but tasteless juice, which hardens into a brownish yellow gum-resin, which, according to Kœnig and Roxburgh, is much inferior in colour to the true gamboge.

**MEDICAL PROPERTIES AND USES.**—See the article, STALAGMITIS.

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### STALAGMITIS CAMBOGIOIDES.—*Gamboge Tree.*

*Class XXIII. PGLYGAMIA.—Order I. MONŒCIA.*

*Nat. Ord. GUTTIFERÆ, Juss.*

**GEN. CHAR.** *Calyx* 4-leaved. *Corolla* 4-petalled. *Stamens*, about thirty, inserted into a fleshy 4-angled receptacle. *Style*, thick. *Stigma*, 4-lobed. *Berry*, 1-celled, crowned by the style, 3-seeded.

*Syn.*—*Arbor indica, quæ gummi guttæ fundit. Herm. litt. in Hort. Malab. cit.*

*Arbor polygama fructu cerasiformi eduli. Kœnig, in Retz. Obs. Bot. 4. p. 6.*

*Guttifera vera. Kœnig, in MSS. Banks.*

*Stalagmatis Cambogioides. Murray Comm. Gött. v. 9. p. 173; Willd. Sp. Pl. 4. p. 980.*

**FOREIGN.**—*Indischer guttabaum, Ger.; Ghokkatu, Cing.*

THE Gamboge-tree is a native of the kingdom of Siam, and of the island of Ceylon. According to Murray, it is of middling sta-



ture, with an erect trunk, covered with a pale ash-coloured bark, and moderately branching. The leaves are on short petioles, ovate, opposite, pointed, entire, smooth, rigid, and of a dark green colour. The flowers are axillary, or lateral, whorled; the male ones either intermixed with the others, or in clusters by themselves. The calyx consists of four or six ovate leaflets, the two exterior of which are smaller than the interior, and both are striated with yellow lines; the petals are four, obovate, rather coriaceous, fringed, spreading, twice the length of the calyx, of a pale yellow colour, and rosaceous at the base. The stamens are about thirty, affixed to a quadrangular fleshy receptacle, and bearing subquadrangular club-shaped anthers; sometimes there is the rudiment of a style, and an echinated, unequal, sterile stigma. The *hermaphrodite* flowers are in axillary whorls, or on the joints of the smaller branches, sometimes mixed with the male flowers. The calyx, corolla, and stamens, are the same in both: the germen is globular, with a short style, and an inversely heart-shaped, 4-lobed, spreading, permanent stigma. The fruit is a smooth, globular, whitish, or rosaceous berry, crowned with the lobes of the style and stigma; and containing several long triangular seeds.

**QUALITIES AND CHEMICAL PROPERTIES.**—In Siam this gum-resin is obtained in drops, by wounding the shoots; in Ceylon it exudes from wounds in the bark. It is brought to Europe in large cakes, or rolls. Its colour is yellow; it is opaque, brittle, and breaks vitreous. It has no smell, and very little taste. With water it forms a yellow turbid fluid. Alcohol dissolves it almost completely, and when mixed with water becomes turbid, unless the solution contains ammonia: in that case, acids throw down an insoluble yellow precipitate. Its specific gravity is 1.221. It forms a fine yellow paint, and stains hot marble a beautiful lemon yellow.

Braconnot, on analysis, found it composed of one part of a gum possessing the properties of cherry-tree gum, and four parts of a reddish brittle resin. It dissolved in alcohol, and alkalies, and by nitric acid was converted into a yellowish bitter matter. Chlorine deprived it of its dark colour, and a combination took



place between it and muriatic acid, in which it neutralized that acid. It is often adulterated with an inferior article, the produce of *GARCINIA Cambogia*, which is obtained from incisions made in the trunk, and in those roots which are exposed to the sun.

**MEDICAL PROPERTIES AND USES.**—Gamboge is a violent cathartic, and is apt to produce vomiting, griping, and tenesmus. To obviate these unpleasant effects Dr. Cullen was accustomed to give it in small and frequently repeated doses, as three or four grains, rubbed with a little sugar, every three hours, and found it operate gently, evacuating in three or four exhibitions, a great quantity of water, both by stool and urine. It is as a hydragogue purgative that it is prescribed in dropsical affections, and is then generally combined either with calomel, cream of tartar, or squills. It has been supposed to be peculiarly efficacious in expelling the tape worm; but as a remedy in this case, its use is now very generally superseded by the oil of turpentine. It is soluble in a solution of potass, and is sometimes preferred in this form in doses of from thirty to forty drops, twice a day.

Orfila classes it amongst the acrid poisons, and considers that it does not produce death by its being absorbed, but by its exerting a powerful local action, in which the nervous system sympathizes.

**DOSE.**—The usual dose is from two to ten grains

**OFF. PREP.**—*Pilulæ Cambogiæ compositæ*. L. E.





*Coffea arabica.*

G. Reid. del.

W. Dill. sc.

London, Published for the Authors, Oct. 1830.



## COFFEA ARABICA.

*Arabian Coffee-Tree.**Class V. PENTANDRIA.—Order I. MONOGYNIA.**Nat. Ord. STELLATÆ, Lin. RUBIACEÆ, Juss.*

GEN. CHAR. *Calyx* 5-toothed; teeth deciduous.  
*Corolla* salver, or funnel-shaped. *Stamens* inserted  
 into the tube of the corolla. *Anthers* sagittate.  
*Berry* 2-seeded. *Seeds* with an arillus.

SPEC. CHAR. *Leaves* oblong, ovate, acuminate. *Pe-  
 duncles* axillary, aggregate. *Corolla* 5-cleft.

*Syn.*—Bon vel Bam. *Alpin. Ægypt. ed. 3. p. 36 t. 16; Bauh. Hist. 1. 422; Pluck.  
 Alm. 69; Phyt. t. 272. f. 1; Park Theatr. 1622.*

*Euonymo similis Ægyptiaca, fructu lauri simili. Bauh. Pin. 498.*

*Jasminum arabicum. Till. Pis. 87. t. 32; Jussieu Act. Paris, 1713. p. 291.  
 t. 7.*

*Coffea. Hort. Cliff. 59; Blackw. t. 37; Lamarck Ill. t. 160.*

*Coffea arabica. Lin. Sp. Pl. 245; Willd. v. 1. p. 973; Gært. Fr. 1. 118.  
 t. 25; Hort. Kew. 1. p. 374; Bot. Mag. v. 32. t. 1303; Tussac. Fl. Antill.  
 p. 121. t. 18.*

FOREIGN.—*Caffayer arabique, Fr.; Arabische Kafferbaum, Ger.; Cay caphe,  
 Cochinch.*

FEW vegetable substances have been more generally esteemed for their medicinal and dietetic properties than the berries of the coffee-tree. The plant is fully described by Ellis and several other writers, and Gærtner has given an elaborate description of the fruit. The coffee-tree is generally regarded as a native of Arabia, but Bruce says, it derives its name from Caffee, a province of Narea, in Africa, where it grows spontaneously in great abundance. The plant does not appear to have been known to the Greeks or Romans, nor are there any facts on which we can rely respecting its origin in the East. It has been well ascertained, however, that the berries were imported into every part of Europe, and used as a favourite beverage, long before it was known of what plant they were the product. Prosper Alpinus had seen the coffee-tree without fructification, in some gardens



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in Egypt; but the first intelligible botanical account was published by Anth. de Jussieu, in the Memoirs of the Academy of Sciences in Paris, in 1713. We are informed by Boerhaave, in his "Index to the Leyden Garden," that it was first introduced into Europe by Nicholas Wisten, a Burgomaster of Amsterdam, and chairman of the Dutch East India company, who gave directions to the governor of Batavia, to procure seeds from Mocha in Arabia Felix. These being sown in the island of Java, several plants were procured, and one was transmitted by Wisten, about the year 1690, to the botanic garden at Amsterdam. From the progeny of this plant, not only the principal botanic gardens in Europe, but also the West India islands, were supplied with this valuable tree. Soon after its introduction into Holland, it was cultivated by Bishop Compton, at Fulham.

The coffee-plant is an evergreen shrub, rising from fifteen to twenty feet in height. The trunk is erect, seldom exceeding two or three inches in diameter, and covered with a brownish bark. The leaves are opposite, ovate-lanceolate, pointed, entire, wavy, smooth, shining; bright green on the upper surface, paler beneath, and placed on short petioles. At each knot of the branches are two awl-shaped, opposite, interfoliaceous stipules. The flowers are white, sweet-scented, sessile, disposed in clusters of four or five together, in the axillæ of the leaves, and soon falling off. The calyx is superior, very small, 5-toothed. The corolla is monopetalous, funnel-shaped, and divided into five lanceolate, spreading segments. The filaments are five, inserted into the tube of the corolla, and supporting yellow, linear anthers. The germen is ovate, inferior, bearing a simple style the length of the corolla, and two awl-shaped, reflexed stigmas. The berry is globular, about the size of a cherry, umbilicated at the summit, 2-celled, and containing a somewhat gelatinous pulp. The seeds are hemispherical, convex on one side, flat and furrowed longitudinally on the other, of a pale glaucous colour, and involved in a thin, elastic, pellucid aril. Fig. (*a*) exhibits a flower cut open; (*b*) the pistil with the calyx; (*c*) single berry; (*d* and *e*) different sections of the same; (*f*) the seed.



The coffee-tree is frequently cultivated in our gardens as an ornamental evergreen, and will both flower and ripen its fruit. It is propagated by the berries, which must be sown soon after they are gathered, or they will not vegetate. Being an intra-tropical plant, it must be kept in the stove, and should be allowed a free circulation of air, to prevent the attacks of insects.

In Arabia, the fruit is dried in the sun upon mats, and the outer coat is separated by means of a large stone cylinder. It is again placed in the sun, winnowed, and packed up in bales. In the West India islands, as soon as the fruit is of a deep red colour, it is reckoned to be ready for being gathered. A large linen bag, kept open by means of a hoop round its mouth, is suspended to the neck by the negroes, who pull the berries with their hands, and, after filling the bag, empty it into a large basket. A single negro can easily collect three bushels in a day. As the berries do not ripen together, they are collected at three different gatherings. One thousand pounds of good coffee is produced from one hundred bushels of *cherries* just from the tree. The coffee-berries may now be dried in two different ways. The first method is to place them in the sun, in layers of four inches thick, on inclined planes. In a few days, the pulp is discharged by fermentation, and in about three weeks the coffee is completely dry. The skin of the berries, already broken, is removed by mills, or in wooden mortars. The second method, is to separate the grain from the pulp at once, by means of a mill, and the grains are then left to soak in water for twenty-four hours. They are afterwards dried, and then stripped of the pellicle, or parchment, as it is called, by means of appropriate mills. The grains of coffee are afterwards winnowed, and mingled with the grindings and dust of the parchment, in which state they are put into bags for sale.

**QUALITIES AND CHEMICAL PROPERTIES.**—When the berries of coffee are roasted, a portion is converted into tannin by the action of the heat, and an agreeable aromatic substance is developed, the nature of which has not been ascertained. The same principle is also developed by roasting barley, beans, and many other vegetables, which on that



account, are occasionally employed as substitutes for coffee, and suit some stomachs better. The infusion of unroasted coffee in boiling water, is of a yellowish green colour; but the decoction, by continuing the boiling, becomes brown. It becomes turbid on cooling. The alkalies render it more brown. It strikes a black with sulphate of iron, but does not precipitate with gelatin. Chlorine nearly destroys the colour; but if an alkali be added, the liquid becomes red. When water was distilled from coffee, what came over had an aromatic odour, and a few drops of a substance, similar to myrtle wash, swam on the surface of it; the residual liquid became milky when mixed with alcohol, and let fall a substance possessing the properties of gum. From experiments made, chiefly by Cadet,\* it appears that coffee contains an aromatic principle, a little oil, gallic acid, mucilage, extractive and bitter principle. The result of Cadet's experiments on sixty-four parts of coffee, was as follows:—

Gum	.	.	.	8.0
Resin	.	.	.	1.0
Extract and bitter principle	.	.	.	1.0
Gallic acid	.	.	.	3.05
Albumen	.	.	.	0.14
Fibrous and insoluble matter	.	.	.	45.05
Loss	.	.	.	6.86

From 1920 parts of Levant and Martinique coffee, Hermann obtained the following proportions respectively:

	Levant.	Martinique.
Gum	. 130	. 144
Resin	. 74	. 68
Extractive	. 320	. 310
Fibrous matter	. 1335	. 1386
Loss	. 61	. 12*

Other analyses have been made by chemists. M. Grindel found it contain kinic acid; and M. Payssé has discovered, what he has endeavoured to show as a peculiar acid, to which he has given the name of coffee-acid. More recently M. Robiquet is said to have demonstrated another principle which, he

\* *Ann. de Chim.* lviii. 226.

† *Crell's Ann.* 1800, ii. 108.

‡ *Hist. Paris*, iv. 545.



names *cafféine*. It is in silk-like acicular crystals, bearing a resemblance to benzoic acid. It liquifies by the aid of a gentle heat: in close vessels, it volatilizes and sublimes in needles. Caffeine is neither acid nor alkaline. It furnishes a great quantity of azote. It dissolves with difficulty in ether, but quickly in water and alcohol.

**MEDICAL PROPERTIES AND USES.**—It is evident that we are indebted to the Arabians for our use of this pleasant berry, as the first right of eastern hospitality is the presentation of a bowl of coffee. In Europe, it is said to have been first used in Italy in the year 1650; and, according to Dulaine, was introduced at the court of Paris in 1669, by Soliman Aga, ambassador from the Porte. An Armenian named Pascal, opened the first *café*, and Procope, the second in “Rue des Fossés, Saint Germain des Prés.” Nearly about the same time coffee was introduced into the British metropolis.

By some coffee is supposed to be best suited to the aged; and its abuse, as when taken too strong, is said to impair digestion instead of promoting it; and it stimulates, heats, and produces watchfulness in certain constitutions. The Mahometans of India, who use a great deal of coffee in the same way as we do, with the exception of combining milk with it, believe it to have the effect of soothing and allaying nervous irritation, and prescribe it to stop the vomiting in cholera morbus. Dr. Ainslie also states, that it is often employed for the same purposes by the Spaniards at Manilla. It is said that Sir John Floyer, during his residence at Lichfield, found great benefit in his own person by the use of coffee in asthma. Sir John Pringle confirms its success, in a letter to Dr. Percival. “On reading the section on coffee,” says he, “in the second volume of your Essays, one quality occurred to me which I had observed of that liquor, confirming what you had said of its sedative powers. It is the best abater of periodic asthma that I have seen. The coffee ought to be the best Mocha, newly burnt, and made very strong, immediately after grinding it. I have commonly ordered an ounce for one dish, which is to be repeated



fresh, after the interval of a quarter of an hour, without milk or sugar.”\*

As a general palliative, strong coffee is often serviceable in various kinds of head-ache, and where its own sedative power is unavailing, it forms one of the best vehicles for the administration of laudanum. It diminishes in some degree the hypnotic power of the latter, but counteracts its distressing secondary effects. When laudanum is intermixed with strong coffee for the cure of many modifications of head-ache, tranquillity and ease are produced, though there may be no sleep: when laudanum, on the contrary, is taken alone, sleep will, perhaps, follow, but is mostly succeeded by nausea, and a return of pain. Hence, the Turks and Arabians make strong coffee their common vehicle for opium, from its tendency to counteract the narcotic principle of the latter; and on the same account, it is plentifully administered after the stomach has been evacuated of its contents, in cases of poisoning by opium.

For common purposes, infusion of coffee is the most agreeable method of preparing it, as the aromatic and volatile principles are dissipated by boiling.

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\* See Perceval's Essays, vol. iii.





*Cinchona condaminea.*

G. Reich. del.

Weddellsc.

London. Published for the Authors. Nov. 1830.



## CINCHONA CONDAMINEA.

*Laurel-leaved Cinchona.*


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Class V. PENTANDRIA.—Order I. MONOGYNIA.

Nat. Ord. allied to CONTORTÆ, Lin. RUBIACEÆ, Juss.

GEN. CHAR. *Corolla* funnel-shaped. *Capsule* inferior, 2-celled, bipartite with a parallel partition. *Seed* winged.

SPEC. CHAR. *Leaves* ovate-lanceolate, smooth, shining, with a little pit in the axillas of the nerves on the under surface. *Segments* of the calyx ovate-acuminate; *limb* of the corolla woolly. *Stamens* included. *Capsules* ovate.

Syn.—*Cinchona officinalis*. Lin. *Syst. Veg.* ed. 10. p. 924; *Condamine* in *Mém. de l'Acad. de Paris* 1738, p. 114; *Lamarck Ill.* t. 146, f. 1; *Vahl. Skrist af. Natur. Selfkab.* 1. t. 1.

*Cinchona lanceolata*. *Fl. Peruv.* 3. p. 1. t. 223.

*Cinchona lancifolia*. *Mutis Papel Periodici de Santa Fe*, p. 465; *ejud. Fl. Bogot. MSS.*

*Cinchona nitida*. *Fl. Peruv.* 2. p. 50. t. 191.

*Cinchona augustifolia*. *Ruiz. et Pavon, Quinol. Suppl.* p. 14. c. tab. f. a.

*Cinchona glabra*. *Ruiz. Quinol.* 2. p. 64.

*Cinchona Condaminea*. *Humboldt Pl. Æquinoc.* 133. t. 10; *Lambert Cinchon.* t. 1.

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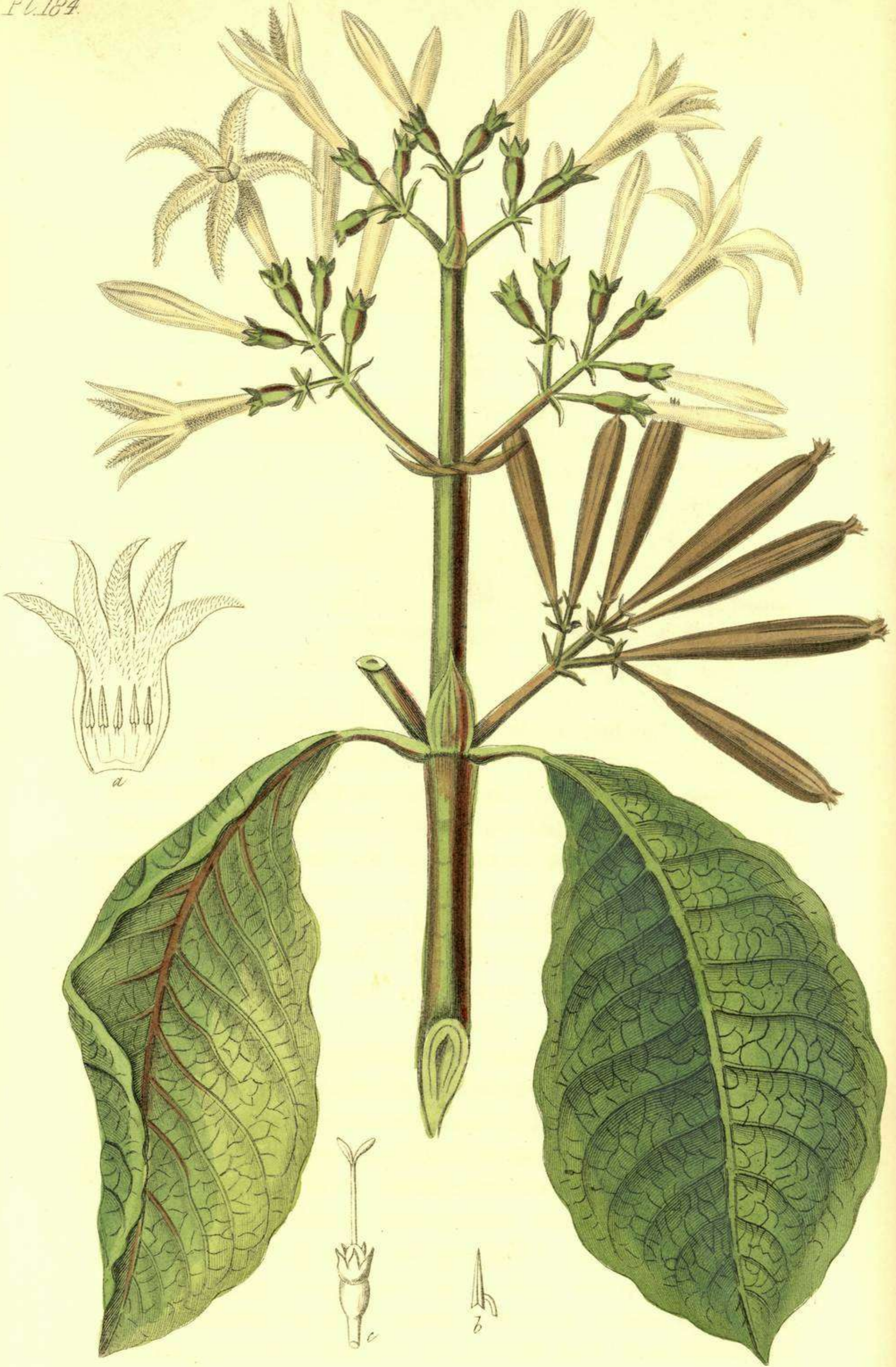
ALTHOUGH it is probable that several species of this important genus afford the Peruvian bark of the shops, of these three only are admitted into our national pharmacopœias, to which the specific names of *lancifolia*, (the *condaminea* of Humboldt and Bonpland,) *oblongifolia*, and *cordifolia*, have been applied, designating respectively, the pale, the red, and the yellow bark. Twenty-seven species have been described by botanists as natives of South America, the Phillipine, the West India, and the South Sea Islands.

The *Cinchona condaminea*, first described and figured by the astronomer Condamine, in 1738, in the *Mem. de l'Academie*, and



named by Linneus *officinalis*, is found on the mountainous forests, at heights from 6,000 to 8,300 feet, where the mean temperature varies between 59 and 62 degrees, on a soil of micaceous schistus, in the neighbourhood of Loxa and Ayvaca, in the kingdom of Quito; also, in New Granada, between Guaduas and Santa Fe de Bogota. It is described by Baron Humboldt as a lofty, handsome, evergreen tree, from thirty to forty feet in height, and standing generally single, and exuding, wherever it is wounded, a yellow, astringent juice. The trunk is about eighteen feet in height, and fifteen inches in diameter, erect, with a cracked ash-coloured bark. The branches are round, in opposite pairs, erect, brachiated, with the younger ones obscurely quadrangular at the sides. The leaves are of a bright green, shining, ovate-lanceolate, about three inches long, petio- late, with a little pit in the axillas of the nerves, or the under surface, which is filled with an astringent aqueous fluid, and having the orifice shut with minute hairs; they stand on short foot- stalks, one-sixth of their length, flat above, and convex below; but the form of the leaf varies extremely, so that no specific dis- tinction can be derived from their figure alone. The stipules are two, acute, sericeous, contiguous, and caducous. The panicles are terminal, branched, leafy, and trichotomous. The flowers are of a pale rose-colour, furnished with little bractees, and are produced in terminal, brachiated, leafy, trichotomous panicles, supported on round peduncles and pedicels, that are powdered and silky. The calyx is bell-shaped, globular, five-toothed, pow- dered, and silky, like the peduncles, with the teeth ovate, acute, very short, and contiguous. The corolla is somewhat salver- shaped, longer than the calyx, with the tube obscurely five-angled, silky, frequently of a rose-colour; the limb wheel-shaped, with linear-lanceolate segments, much shorter than the tube, white, and woolly above. The anthers are twice the length of the free portion of the filaments. The germen is globular, with an erect style, and bifid stigma. The capsule is ovate, woody, striated longitudinally, crowned with the calycinal teeth, two-celled, many seeded, oppositely twice furrowed, and opening from the base to the apex with two valves.—Fig. (a) exhibits a flower cut open; (b) germen and pistil; (c) capsule; (d) section of the same.





*Cinchona oblongifolia.*

G. Reid. del.

Weddell sc.

London. Published for the Authors Nov. 1830.



## CINCHONA OBLONGIFOLIA.

*Oblong-leaved Cinchona.*

SPEC. CHAR. *Leaves* broad, oblong, ovate, smooth and shining above, tomentose beneath. *Panicles* brachiate, corymbose, woolly. *Calyx* with short, acute teeth. *Segments* of the *corolla* lanceolate, spreading, hairy within. *Capsules* linear, cylindrical.

*Syn.*—*Cinchona magnifolia*. *Flor. Peruv.* 2. p. 52. t. 196 (non Humboldt et Bonpl.)  
*Cascarilla amarilla*. *Ruiz Quinologia*, p. 71.  
*Cinchona oblongifolia* (non Mutisii). *Humboldt Magaz. der Gessell Naturf. Freunde, Berl.* 1807, p. 118.

MM. RUIZ and Pavon, in their celebrated work, the “*Flora Peruviana et Chilensis*,” inform us that this species of *Cinchona*, which is regarded as yielding the red bark of the shops, is found on the Andes, growing in woods on the banks of the mountain streams in great abundance, at Chinchao, Cuchero, and Chacahuassi; flowering in May, June, and July. As we have taken our figure of this plant from the above-mentioned work, we shall here also avail ourselves of the author’s accurate description.

The tree is spreading, much branched, and rises to the height of about forty feet. The trunk is single, erect, round, and covered with a somewhat smooth, brownish ash-coloured bark, internally yellow, and having a bitter, acidulous, not ungrateful taste. The older branches are round, smooth, and of a rusty colour; the younger are obtusely quadrangular, leafy, and of a diluted reddish hue. The leaves are opposite, large, the full-sized ones being one or two feet in length, of an oblong oval shape, and supported on short, roundish, purple petioles. They are entire, pale, and shining, on the upper surface; on the



under, transversed with several inflexed purplish veins; at the base of each are numerous bundles of white bristles; the stipules are supra-axillary, interfoliaceous, opposite, contiguous, united at the base, obovate, acuminate, and caducous. The flowers are produced in large, erect, compound, terminal panicles, somewhat branched, on long, brachiated, many-flowered peduncles. At the base of each flower-stalk are a pair of small ovate, pointed, deciduous bracteas. The calyx is small, five-toothed, and of a purple colour; the corolla scarcely an inch long, white, and fragrant, with the limb spreading, and hairy within. The filaments are very short, and inserted below the middle of the tube of the corolla, with oblong anthers, bifid at the base. The capsules are large, oblong, obscurely striated, slightly curved, and crowned with the calyx. The seeds are ovate, and surrounded with a rough, unequal, yellow margin.—Fig. (a) represents a flower cut open; (b) an anther detached; (c) the calyx, germen, and pistil.

Mr. Lambert, in his valuable "Illustration of the Genus Cinchona," p. 11, says, "The celebrated authors of the "Flora Peruviana," have, in that work, confounded this species with that called by the natives, *Flor de Azahar*, the *C. oblongifolia* of Mutis, a very different plant, the bark of which had been first sent to Spain by Don Sebastian Joseph Ruiz, a physician of Santa Fe de Bogota.\* M. Bonpland has confounded it with his *C. caduciflora*, which he at first described under the name of *C. magnifolia* of the Flora Peruviana; but he very properly altered his opinion afterwards in his note to *C. scrobiculata*, *Plantæ Æquinoc*, i. p. 167. The present species differs from Bonpland's plant by the form of its leaves, by the acute teeth of its calyx, by its larger corolla, whose lanceolate lacininæ are equal to the length of the tube; by the anthers being included in the tube, by the style being exerted, and especially, by its linear cylindrical capsules."

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\* Vernaculæ Flor de Azahar propter corolla odorem Citri florum odori simillimum. Hujus corticem D. Sebastianus Josephus Lopez Ruiz primus e Regno novo Granatensi in Hispaniam attulit, unde cum Galliæ, Italiæ, et Angliæ Academiis per clar. Casimirum Ortega communicatus est, ejusque usus variis experimentis institutis ubique propagatus. *Flora Peruv.* v. 2. p. 53.





*Cinchona cordifolia.*

G. Reid. del.

W. H. & A. Co. sc.

London. Published for the Authors. Nov. 1830.



## CINCHONA CORDIFOLIA.

*Heart-leaved Cinchona.*

SPEC. CHAR. *Leaves* roundish-ovate, acute, heart-shaped at the base. *Panicles* brachiated, spreading, pubescent. *Calyx* 5-toothed; segments broad, roundish, terminating in short spines. *Stigma* 2-lobed. *Capsules* smooth, without ribs.

*Syn.*—*Cinchona* species nova, vulgo palo blanco. *Pavon MSS.*

*Quina amarilla. Bogotensium.*

*Cinchona cordifolia. Mutis MSS.; Humboldt in Magazin der Gessel. Naturf. Freunde. Berl. 1807, p. 112; Rohde Monogr. p. 58; Humb. Bonpl. et Kunth, Nova Gen. et Spec. Plant. 3. p. 401; Lambert Illustr. p. 4.*

THIS tree, the bark of which is known to the natives by the name of *Quina amarilla*, *Cascarilla de Loxa*, and *Cascarilla amarilla*, and is the yellow, or orange bark of the shops, is found on the mountains of Loxa, in the kingdom of Quito, and those of Santa Fe de Bogota, at heights from 900 to 1,440 toises; flowering from May to September. It is described as a middling-sized spreading tree, having a single, round, erect stem, of moderate thickness, and covered with a smooth, brownish grey bark. The younger branches are quadrangular, smooth, leafy, sulcated, and tomentose. The leaves are large, opposite, spreading, somewhat roundish-ovate, pointed, or cordate, and attenuated at the base, entire, shining on the upper surface, ribbed, and pubescent on the under; with the petioles flat on one side, and roundish on the other, about an inch in length, and of a purple colour. The flowers appear in large, brachiated, leafy panicles, supported on long, compressed, tetragonous, downy peduncles. The calyx is five-toothed, downy, and of a dull purple colour, with the segments broad, roundish, and terminating in minute, awl-shaped spines. The corolla is hairy within;



the tube of a diluted red colour ; the limb shaggy, white above and purplish below, and the segments spreading, with reflexed tips. The filaments are short, supporting linear anthers, bifid at the base. The germen is tomentose, with a two-lobed stigma. The capsules are oblong, ovate, cylindrical, smooth, and without ribs. Our figure was made from a specimen in the cabinet of Aylmer Bourke Lambert, Esq. F.R.S., and Vice-President of the Linnean Society, in whose magnificent herbarium, nearly the whole of the plants collected by the authors of the "Flora Peruviana," and their pupils, in Peru, Chili, and Mexico, consisting of five thousand seven hundred species, are now preserved. The specimens of this species were examined and named by M. Bonpland while in England. It differs from the *Cinchona purpurea*, *hirsuta*, and *ovata*, of the Flora Peruviana, and from the *C. pubescens* of Vahl, with which it has the greatest affinity ; it is distinguished by its shorter petioles, by the broader round teeth of its calyx, by the filaments being twice longer, and by its capsules being smooth and without ribs.

All the species of the genus *Cinchona* vary very much in the shape and smoothness of their leaves, according to the altitude in which they grow, to the severity or mildness of the climate, to the trees standing singly, or being closely surrounded by other plants, to the luxuriance of growth, and greater or less humidity of the soil. "Whoever," says Humboldt, "determines single specimens of dried collections, and has had no opportunity to examine or observe them in their native forests, will, as is the case with the *Bronzonettia papyrifera*, be led to discover different species by leaves which are of one and the same branch. The yellow bark, *C. pubescens*, Vahl, we have found at one and the same time with *fol. ovato-oblongis*, *ovato-lanceolatis*, and *ovato-cordatis*. Mutis calls it *C. cordifolia*, because it is the only kind on which sometimes cordate leaves are found. The same species varies like the white *Cinchona* *C. ovalifolia*, Mut. (*C. macrocarpa*, Vahl,) *foliis untrunque levibus*, and *foliis utrinque pubescentibus*. Even the laurel-leaved *C. condaminea*, the finest bark from Uritusinga, has very diversified leaves, according to the altitude at which it grows, and which equals that of



Saint Gothard's, or Mount Ætna." In the shoots and very young trees, we frequently find the leaves broad, ovate, and ovate-lanceolate. The older the tree is, the narrower are its leaves. In great luxuriance of growth, the little grooves frequently vanish, which appear on the upper surface of the leaf as convex glands. On very broad leaves, in which the parenchyma is considerably extended, they are almost entirely wanting. *C. cordifolia* has two varieties. Var.  $\beta$  *foliis vix cordatis utrinque glabris*;  $\gamma$  *foliis utrinque hirsutis*. By the common people in the kingdom of New Granada, it is called velvet bark. It grows under the fourth degree north latitude, in heights between 900 and 1,440 toises. Cordate leaves occur but seldom: however, almost every branch exhibits some of them.

Cinchona bark appears to have been long known as a medicine in Peru; but we have no satisfactory account at what period, nor by what means, the febrifuge virtues of this valuable remedy were first discovered. Some say, a patient had been cured of an intermittent fever by having drunk the waters of a lake, which had acquired a bitter taste from Cinchona trees which had lain in them; others, that a lion had cured himself of the ague by instinctively chewing Cinchona bark, and had directed the attention of the Indians to this tree. "That animals," observes Humboldt, in his "Dissertation on the Cinchona Forests of South America," "have taught men, is a very common form of the traditions of nations. The valuable antidote *Bijuco del guaco*, a plant described by Mutis, which is related to the *Mikania*, and has been erroneously confounded with the *Ayapana* of Brasil, is also said to have attracted the notice of the Indians, as is affirmed of the *Falco serpentarius*, by the *Falco guaco* of New Granada fighting with serpents. However, that the great American lion, without mane, *Felis concolor*, should be subject to the ague, is just as bold an hypothesis as the assertion of the inhabitants of the pestilential valley, Gualla Bamba, (near to the town of Quito,) than even the vultures, *Vultur aura*, in their neighbourhood were subject to that disorder. Indeed, in the regions of the Cinchona forests, there is not even a *Felis concolor* so fond of warmth to be found; but



at the most, the cat *Puma*, not yet properly described, and which we have met with in heights of 2,500 toises.”

“ The story, so often copied, respecting the Countess Chinchon, vice-queen of Peru, is probably still more doubtful than it is generally supposed to be. There certainly was a Count Chinchon, Don Geronimo Fernandez de Cabrera Bobadella y Mendoza, who was Viceroy of Lima, from 1629 to 1639. It is very probable that his wife, after her return to Spain, in 1640, was the first who introduced the Cinchona bark into Europe. The name of *Pulvis Comittissa* appears even more ancient than that of *Pulvis Jesuiticus*, or *Pulvis Patrum*. But I do not believe (and M. Olmedo, in “ Loxa,” is of the same opinion with me) that the corregidor of Loxa, Don Juan Lopez de Cannizares,\* who is said to have cured the Countess of the ague, received this remedy from the Indians. In Loxa, there is no tradition whatever of this kind ; nor is it probable that the discovery of the medicinal power of the Cinchona belongs to the primitive nations of America, if it is considered that these nations (like the Hindoos) adhere with unalterable pertinacity to their customs, to their food, and to their nostrums ; and that, notwithstanding all this, the use of the Cinchona bark is entirely unknown to them in Loxa, Guancabamba, and far around. In the deep and hot valleys of the mountains of Catamango, Rio Calvas, and Macara, agues are extremely common. But the natives there, as well as in Loxa, of whatever cast, would die rather than have recourse to Cinchona bark, which, together with opiates, they place in the class of poisons exciting mortification. The Indians cure themselves by lemonades, by the oleaginous aromatic peel of the small, green, wild lemon, by infusions of *Scoparia dulcis*, and by strong coffee. In Malacatis only, where many bark-peelers live, they begin to put confidence in the Cinchona bark. In Loxa, there is no document to be found which can elucidate the history of the discovery of the Cinchona : an old tradition, however, is current there, that

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\* *Flora Peruviana*, tom. ii. p. 2.



the Jesuits, at the felling of the wood, had distinguished, according to the custom of the country, the different kinds of trees by chewing their barks, and that on such occasions they had taken notice of the considerable bitterness of the cinchona. There being always medical practitioners among the missionaries, it is said they had tried an infusion of the cinchona in the tertian ague, a complaint which is very common in that part of the country. This tradition is less improbable than the assertion of European authors, and among them the late writers, Ruiz and Pavon, who ascribe the discovery to the Indians. The medicinal powers of the cinchona was likewise entirely unknown to the inhabitants of the kingdom of New Granada."

Cinchona bark is stripped from the trunk and branches in the dry season, from September to November; it is dried by exposure to the sun, and after being imported into Europe is sorted for sale. It is brought to this country in chests, each of which contains from one hundred to two hundred pounds weight of bark, mixed with dust, and other impurities. According to Humboldt, the quantity of this drug annually exported from America is 12,000 or 14,000 quintals. The kingdom of Santa Fé furnishes 2000 of these, which are sent from Carthagena; 110 are furnished by Loxa; and the provinces of Huamanga, Cuenca, and Jean de Bracamoros, with the thick forests of Guacabamba and Ayavaca furnish the rest, which is shipped from Lima, Guayaquil, Payta, and other ports on the south sea.

The *pale bark* of the shops, the *Quina Naranjada*, and *Cascarilla fina de Uritusinga* of the Spaniards, which is obtained from the *C. Condaminea*, is preferred in South America to all the other species of bark. It is in pieces, five or six inches long, singly or doubly convoluted, externally of a greyish-brown colour, to which a crust of lichens often adheres, and is internally, when fresh broken, of a bright cinnamon hue. There are often intermixed with this, others of a coarser texture, thicker, and nearly flat, which appear to be obtained from the trunk and larger branches. The fracture is smooth and even; its powder is of a pale colour. Its taste is bitter and astringent; its smell peculiar, but aromatic. The *yellow bark*, named *Quina*



*amarilla*, *Cascarilla de Loxa*, and *Cascarilla amarilla*, is less rolled than the pale bark, and the pieces are larger and thicker. Externally it is of a greyish-brown colour, and covered with lichens; internally of a much deeper orange than the pale bark. It has a more bitter taste, with a less aromatic odour, and with scarcely any sensible degree of astringency. The *red bark* is sometimes rolled, but more commonly in flat thick pieces, covered with a rough, entire, reddish-brown epidermis. It has a smooth fracture. It is composed of three layers, the inner one being of a dark ferruginous colour. It is more bitter and astringent than the pale and yellow bark.

M. von Bergen, a drug-broker at Hamburg, who has written a valuable monograph on the Cinchonas, enumerates eight kinds of bark as distinguished in commerce: \*—1. *China rubra* red bark. This is almost universally regarded as the bark of the *C. oblongifolia*; but M. Von Bergen is decidedly of opinion that the species which furnishes it is not yet ascertained, and that *C. oblongifolia* yields the *China nova* of Santa Fé. 2. *C. Huanuco*, silver Huanuco. This is said by Hayne to be the bark of *C. cordifolia*, but it is doubtful whether it does not belong to a new species. 3. *C. regia*, yellow bark, which M. von Bergen refers to an undescribed species. 4. *C. flava dura*, hard Carthagena bark. This Von Bergen considers, without doubt, as the bark of the *C. cordifolia*. 5. *C. flava fibrosa*, woody Carthagena bark, from an unknown species. 6. *C. Huamalies*, rusty bark, also derived from an unknown source. 7. *C. Loxa*, crown bark, so called from its having been destined for the Spanish court, and has only been in use since 1804. This is obtained principally from the *C. condaminea*. 8. *China jaen*, ash-coloured bark. 9. *China Pseudo-Loxa*, the bark of the *C. lancifolia*, or of the *C. nitida*, and *lanceolata* associated with it. The first of these, the *China rubra* contains both the alkaloids, with an excess of cinchonine. The *China Huanuco* contains only cinchonine; the *China regia*, *C. Loxa*, and *C. Huamalies*

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\* *Versuche: ner Monographie der China.* Von Henrich von Bergen. Ham. 1826.



contain only quinine, and the *flava* contains both alkaloids, with a superabundance of cinchonine.

QUALITIES AND CHEMICAL PROPERTIES.—Few vegetable substances have undergone so many analyses, by the most eminent chemists, as the different varieties of Peruvian bark. The basis of all of them is woody fibre, combined with which are various principles capable of being extracted by different solvents. The taste of all is more or less bitter and astringent. Boiling water extracts all their active principles, affording a solution of a pale brown colour; this infusion is transparent when hot, but on cooling becomes turbid, and a precipitate is deposited, which is soluble in alcohol. The decoction has a very astringent taste, and a deep brown colour. By long boiling, the virtues of the bark are nearly destroyed, owing to the chemical change and precipitation of its active matter. Alcohol, in all its modifications, is a powerful solvent of the active principles of cinchona. A saturated solution of ammonia is also a solvent of them, but acetic acid acts less imperfectly than even water. Vauquelin found that an infusion of the *pale bark* reddened litmus paper; was copiously precipitated by solution of galls, and in a smaller degree in yellowish flocculent flakes by solution of isinglass. A solution of tartar emetic was rendered turbid and slowly precipitated by it; solution of superacetate of lead produces quickly a copious precipitate. The addition of a solution of the sulphate of iron to the infusion, changed the colour to a bright olive-green, but was scarcely precipitated. The powder macerated in sulphuric acid afforded a golden-yellow tincture, which reddened litmus paper, and left a pellicle of bitter resin when evaporated on the surface of water, to which it gave the colour of the tincture. This coloured water did not precipitate the solution of galls and of tartar emetic, and occasioned no precipitate on the addition of the solution of sulphate of iron. With alcohol, it produced a deep orange-coloured tincture, which precipitated sulphate of iron, tartarized antimony, and tannin. The agency of the different menstrua on the red and yellow varieties of the cinchona, produce nearly the same results as on the com-



mon or pale bark. The filtered solution of yellow bark has a pale golden hue, with a shade of red; it is bitter, reddens litmus paper, and precipitates solution of galls. On adding a solution of isinglass, a pinkish yellow precipitate is produced; superacetate throws down a precipitate; tartarized antimony gives a precipitate in pale yellowish flakes. A solution of the sulphate of iron changes its colour to a bluish green, and slowly lets fall a precipitate of the same colour. The alcoholic tincture appears to be in every respect the same as that afforded by the pale bark. The *red bark* has a more nauseous taste than the barks of the other species. The aqueous infusion is of a pale ruby colour; its action on the solutions of galls and of isinglass, are nearly the same as those of the two former species, but it is not altered by tartarized antimony, nor by the superacetate of lead; and the solution of iron occasions a dirty yellow colour only, little being precipitated. The alcoholic tincture is of a deep brownish-red colour, and precipitates the solution of the sulphates of iron, and of tartarized antimony, the former of a black colour, and the latter red. From the experiments of Vauquelin, Fabroni, and others, it appears that the active principles of cinchonas consist chiefly of cinchonin, resin, extractive, gluten, a very small portion of volatile oil, and tannin. Vauquelin has determined the presence of a peculiar acid, to which he gives the name of *kinic acid*, in some varieties of the bark. The following are the most important results that have been obtained by M.M. Pelletier and Caventou, respecting the composition of the three officinal species:—1. In *pale bark*, they found acidulous kinate of cinchonine, a green fatty matter which they term red cinchonine, tannin, a yellow colouring matter, kinate of lime, gum, starch, and woody fibre. 2. In *yellow bark* they found that the alkaline base differs from cinchonine, in being uncrystallizable, very soluble in ether, and forming salts with the acids different from those formed by cinchonine. The chemical constituents of *yellow bark* are, an acidulous kinate of this salt, which they have named *quinine*, a deep yellow, fatty matter, red cinchonine, tannin, yellow colouring matter, kinate of lime, starch, and woody fibre. 3. *Red bark*



contains acidulous kinate of cinchonin, kinate of quinine, reddish fatty matter, red cinchonin, tannin, kinate of lime, yellow colouring matter, starch, and woody fibre. The difference between the pale, the red, and the yellow barks, depends principally on the quantity of the two alkaline bodies, *cinchonin* and *quinine*, found in them. The pale bark contains cinchonine, but a very small portion of quinine; the alkali, again, which predominates in the yellow bark, is quinine, while in the red bark, and some spurious kinds, there is a combination of both these substances. The presence of cinchonine, as a distinct vegetable principle, was first discovered in Peruvian bark by Dr. Duncan, of Edinburgh.

The separation of the *cinchonine* from the pale bark, and of the *quinine* from the yellow, is a very simple operation. It consists in digesting the bark, coarsely powdered in weak sulphuric acid, and then to repeat this digestion with about half the quantity of liquid, till all the soluble matter is extracted. To this decoction a small quantity of powdered slacked lime is added, somewhat greater than is necessary to saturate the acid; the precipitate that ensues (a mixture of cinchonine and the sulphate of lime) is collected, dried, and boiled for a few minutes in alcohol, which takes up the cinchonine, but will not dissolve the sulphate of lime; the solution is decanted off *while still hot*, and fresh portions successively added for the repetition of the same operation, until it ceases to act on the residuum, which is then merely sulphate of lime. The different alcoholic solutions are then put into a retort, and considerably evaporated, during which, and on cooling, acicular crystals of cinchonine are deposited. By repeating the solution once or twice, in boiling alcohol, and again crystallizing, the cinchonine will be obtained in a perfectly pure state. Its crystals are semi-transparent, have a pearly lustre, and are usually obtained in the form of small needles. It has but little taste, and requires 700 parts of water for its solution, but boiling alcohol dissolves it much more abundantly; it is sparingly soluble in oils, and sulphuric ether. At a moderate heat it is partly volatilized, and partly decomposed. It combines with different acids, forming neutral salts. Mr.



Brande found that it contains no oxygen, 100 parts consisting of about 86 parts of carbon + 13 of nitrogen + 7 hydrogen. It has an intensely bitter taste, and exerts the same action on the animal economy as the bark itself, but it is less generally used in medicine than the other active principle of bark, quinine, because the yellow bark from which it is procured is more plentiful; the quinine, therefore, is cheaper than cinchonine, and equally efficacious.

*Quinine* may be obtained from the yellow bark in the same manner as cinchonine is prepared from the pale bark, or by adding an alkali to a solution of the sulphate of quinine. Quinine is not crystallizable like cinchonine, but on the application of heat it melts into a kind of paste. It has a much more bitter taste than the other, and is very sparingly soluble in water. They differ also remarkably in their chemical composition, cinchonine containing no oxygen, while in quinine there is a notable proportion of this element. According to Mr. Brande, it consists of about 5.55 parts of oxygen + 7.65 hydrogen + 13 nitrogen + 73.80 carbon. By digesting quinine in a weak solution of sulphuric acid, we obtain the *sulphate of quinine*, which is the salt now generally used for medicinal purposes. The most approved process for preparing this salt was pointed out by M. Henry. A kilogramme of bark (2 lbs., 3 oz., 5 dr.) is reduced to a coarse powder, and boiled twice for about a quarter of an hour in fourteen or fifteen pints of water, two ounces of sulphuric acid being added to it each time. The decoctions containing the sulphate of quinine are of a reddish colour, which gradually acquire a yellow tint, and have a very strong bitter taste. They are to be filtered through a linen cloth, and about half a pound of powdered quicklime added to the solution. The sulphate of quinine is decomposed in this manner, the alkali being precipitated along with the sulphate of lime. This is digested repeatedly in alcohol, till it no longer imparts any bitter taste to this fluid: the alcoholic solutions are then evaporated till a very bitter viscid substance is obtained, which becomes brittle as it cools. This is the quinine separated from almost all the other ingredients of the bark; and by digest-



ing it in dilute sulphuric acid, a solution of the sulphate of quinine is obtained, which crystallizes on evaporation. It is a white pulverulent substance; it crystallizes in small white 4-sided prisms, which are distinguished by their pearly lustre. It is not very soluble, therefore not affording a very bitter taste; but by adding a drop or two of acid to the solution, its solubility is increased, and it then becomes intensely bitter. It is decomposed by the alkalies and earths; it volatilizes at a moderate heat, and it can unite with an excess of acid, forming a *bisulphate of quinine*.

The sulphate of quinine is frequently adulterated with starch, pipe-clay, and various other substances. To determine its purity, the simple process of heating it is sufficient: if it evaporate entirely, without charring and melting, it is pure; but if it should turn black, or smell sweetish, it is probable that sugar or starch is present.

Pure quinine is seldom used in medicine, but the sulphate possesses, in a very eminent degree, the medicinal properties of Peruvian bark, one grain, or one grain and a half, being equivalent to a drachm of the bark in substance. In Paris, it has superseded in a great measure the Peruvian bark, and is now extensively used in this country in all cases where that valuable medicine is indicated, in doses of from two to five grains.

**MEDICAL PROPERTIES AND USES.**—Peruvian bark has been long known as one of the most powerful and valuable tonics we possess, and may be administered with great freedom in all cases where that class of remedies is indicated. The only effects of an overdose, are headach and nausea. It also possesses antiseptic and astringent powers in a very eminent degree, and is universally employed as a febrifuge in the cure of intermittent and remittent fever, in diseases of debility, such as typhus, cynanche maligna, in passive hæmorrhagies, confluent small-pox, in dysentery, in some cutaneous diseases, as lichen agrius and livida, in purpura, in some varieties of erysipelas, in gangrene, in dyspepsia, and even in acute rheumatism and gout. The decoction of yellow cinchona bark given in large quantities, is the best antidote to the poison of tartar emetic.



“The effects” says Dr. Murray, “of Peruvian bark are those of a powerful and permanent tonic, so slow in its operation as to be scarcely perceptible by any alteration in the state of the pulse, or of the temperature of the body. Its tonic power is inferred, therefore, principally from obviating states of debility; and it is one of those medicines, the efficacy of which in removing disease, is much greater than could be expected, *à priori*, from its effects on the system in a healthy state. The only effects arising from too large a dose are nausea and headach.

“Intermittent fever is the disease for the cure of which bark was introduced into practice, and there is still no remedy which equals it in power,—a superiority of which, from its known operation, it is difficult to give any explanation. Little diversity of opinion now exists with regard to the rules regulating its administration. It is given freely in the earliest stage of the disease, and without any previous preparation, farther than the exhibition of an emetic to evacuate the stomach. And it may be employed with safety and advantage in every period of the fever. It has been supposed rather more effectual when given before the recurrence of the paroxysm, and that, from this mode of employing it, less is required for the cure. The usual practice, however, is to give it in doses of a scruple or half a drachm every fifth or sixth hour during the interval of the paroxysm; it may be even given with safety during the hot fit, but is then more apt to excite nausea. It requires to be given for some time, and continued after the fever has been removed, in order more effectually to guard against a relapse.

“In remittent fever it is given with equal freedom, even though the remission of the fever may be obscure, and frequently with advantage. The remissions become more distinct, and the febrile state is at length subdued.

“In those forms of continued fever which are connected with debility, as in typhus, cynanche maligna, and confluent small-pox, &c. Peruvian bark has been regarded as one of the most valuable remedies. It is difficult, however, to give it in such quantities as to obtain much sensible effect from it, as from the weakened state of the organs of digestion, it remains in the stomach unaltered, and is liable to produce nausea and irritation. In modern practice, therefore, bark is less employed in typhus, preference being given to the more powerful exciting operation of opium and wine. It has been regarded as even hurtful in those forms of fever, where the brain or its membranes are inflamed, or where there is much irritation, marked by subsultus tendinum, and convulsive motions of the extremities. Advantage is sometimes derived from it in the convalescent stage of the disease.

“Even in fevers of an opposite type, where there are marks of inflammatory action, particularly in acute rheumatism, bark has been found useful, blood-letting being generally previously employed.

“In erysipelas, in gangrene, in extensive suppuration, and in scrofulous and venereal ulceration, the free use of cinchona has been regarded as of the greatest advantage. In some of these diseases, however, the slowness of its operation renders it less effectual, and



this is not easily obviated by any increase which can be made in the dose.

“ In the various forms of passive hæmorrhagy, in many other diseases of chronic debility, dyspepsia, hypochondriasis, paralysis, rickets, scrofula, dropsy, and in a variety of spasmodic affections, epilepsy, chorea, and hysteria, cinchona is administered as a powerful and permanent tonic, either alone, or combined with other remedies suited to the particular case. The more common combinations of it are with sulphuric acid as an astringent, with preparations of iron as a tonic, with mercury in syphilis, in spasmodic diseases with valerian, and with cicuta in scrofula and extensive ulceration.

“ Its usual *dose* is half a drachm. The only inconvenience of a larger dose is its sitting uneasy on the stomach. It may, therefore, if necessary, be frequently repeated, and in urgent cases may be taken to the extent of an ounce or even two ounces in twenty-four hours, though from such large doses probably no adequate advantage is derived. If it excite nausea, smaller doses may be taken and repeated more frequently, and may be reconciled to the stomach by the addition of any grateful aromatic.”

OFF. PREP.—Decoctum Cinchonæ, L. E. D.

Infusum Cinchonæ, L. E. D.

Extractum Cinchonæ, L. E. D.

Ext. Cinchonæ resinosum, L. D.

Tinctura Cinchonæ, L. E. D.

Tinctura Cinchonæ, Comp. L. D.

Vinum Gentianæ, Comp. E.

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It is very agreeable to us, to close the concluding article of our Medical Botany, with an intimation, the subject of which we trust may prove a valuable acquisition to the materia medica. We have had information that Sir Robert Kerr Porter, the British Resident at Caraccas, in South America, and who first introduced the knowledge of the *Guaco* plant (a nondescript species of *Mikania*) with some of its seeds and extract, into this country,—has liberally shipped off a large quantity of the plant



from that country, entirely at his own expense, for England, so prepared, as to enable our medical men to give full experiment to its alleged virtue, as an antidote to the poison of venomous reptiles, and as a preventive or cure of that terrific malady the hydrophobia.

The first experiment was made in the year 1792, by the late Dr. John Hunter, who was the first to give it a trial. He was informed by a French physician, that he had seen a man who had been bitten by a mad dog, and who had recovered after the use of a certain preparation. Dr. Hunter was desirous to see the man, and to examine the preparation. He accordingly went to France, and saw the man, who was now blind, and who had been bitten on the neck by a mad dog. Dr. Hunter examined the preparation, and found it to be a mixture of the blood of a mad dog, and of the blood of a man who had been bitten by a mad dog. He then gave it to a man who had been bitten by a mad dog, and who was now blind, and who had been bitten on the neck by a mad dog. The man recovered after the use of the preparation.

Dr. Hunter's experiment was repeated by other physicians, and it was found that the preparation was indeed a cure for the hydrophobia. The preparation was then given to a man who had been bitten by a mad dog, and who was now blind, and who had been bitten on the neck by a mad dog. The man recovered after the use of the preparation. The preparation was then given to a man who had been bitten by a mad dog, and who was now blind, and who had been bitten on the neck by a mad dog. The man recovered after the use of the preparation.

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**TABULAR INDEX**

**OF THE**

**LATIN NAMES.**



## TABULAR INDEX OF THE LATIN NAMES.

VOL. IV.

The following Table exhibits at one view the name, duration, and habit of each plant, the class and order to which it belongs in the Linnean system, the natural order, the time of flowering, native country, the parts used, its operation, medical properties and uses, and the volume in which the figure and description is given. The sign ♀ signifies that the plant is a shrub or tree; ♂ that it is a perennial; ☉ that it is an annual; ♂ that it is biennial.

Name, Duration, and Habit.	Volume and Plate.	Class and Order.		Time of Flowering.	Native Country.	Parts Used.	Operation.	Uses.
		Linneus.	Jussieu.					
Acacia Catechu ♀ . . . .	ii. 76.	Polygam. Monoc.	Leguminosæ.	June.	E. Indies.	Extract.	Astringent.	In diarrhoea, dysentery.
Acacia vera ♀ . . . .	ii. 77.	—	—	July.	Africa.	Gum.	Demulcent.	Coughs, diarrhoeas.
Aconitum Napellus ♂ . . .	i. 28.	Polyand. Pentagyn.	Ranunculaceæ.	June, July.	Germany.	Leaves.	Narcotic, diuretic.	Rheumatism, scirrhus.
Acorus Calamus ♂ . . . .	i. 32.	Hexand. Monogyn.	Aroidæ.	June.	England.	Root.	Stomachic.	Dyspepsia, flatulent colic.
Æsculus Hippocastanum ♀ .	ii. 68.	Heptand. Monogyn.	Acera.	May.	N. of Asia.	Bark.	Tonic.	Intermittent fevers.
Æthusa Cynapium ☉ . . . .	i. 8.	Pentand. Digyn.	Umbelliferæ.	June, July.	Britain.	Not used.	Acro-narcotic poison.	Not used medicinally.
Agaricus bulbosus . . . .	iv. 166.	Cryptogam. Fungi.	Fungi.	- - - -	—	—	As above.	As above.
Agaricus semiglobatus . . .	iv. 165.	—	—	- - - -	—	—	—	—
Allium sativum ♂ . . . .	iii. 111.	Hexand. Monogyn.	Asphodeli.	July.	Sicily.	Bulb.	Expectorant, anthelmintic.	Asthma, worms.
Aloe Socotrina ♂ . . . .	iii. 110.	—	—	—	Africa.	Extract.	Cathartic, anthelmintic.	Dyspepsia, chlorosis, worms, &c.
Aloe vulgaris ♂ . . . .	iii. 109.	—	—	May, June.	Levant.	—	As above.	As above.



Name, Duration, and Habit.	Volume and Plate.	Class and Order.		Time of Flowering.	Native Country.	Parts Used.	Operation.	Uses.
		Linneus.	Jussieu.					
<i>Althæa officinalis</i> 2 . . .	ii. 51.	Monadelph. Polyand.	Fungi.	July, Sept.	Britain.	Leaves & Root.	Demulcent.	In coughs, nephritis.
<i>Amanita muscaria</i> . . .	iv. 163 & 164.	Cryptogam. Fungi.	Malvaceæ.	—	—	Pileus.	Acro-narcotic poison.	Not used medicinally.
<i>Amygdalus communis</i> 2 . . .	i. 43.	Icosand. Monogyn.	Rosaceæ.	March, Apl.	Barbary.	Kernel.	Demulcent, sedative.	In coughs.
<i>Amyris gilcadensis</i> 2 . . .	iv. 157.	Octand. Monogyn.	Terebintaceæ.	—	Arabia.	Balsam.	Stimulant, expectorant.	Pulmonary complaints.
<i>Anagallis arvensis</i> ☉ . . .	i. 16.	Pentand. Monogyn.	Lysimachiæ.	June, July.	Britain.	Not used.	Acrid, poisonous.	Not used medicinally.
<i>Anchusa tinctoria</i> 2 . . .	iii. 122.	—	Boragineæ.	June, Oct.	S. of Europe.	Root.	Astringent.	To colour oils.
<i>Anethum graveolens</i> ♂ . . .	iii. 137.	Pentand. Digyn.	Umbellifereæ.	June, July.	Britain.	Seeds.	Carminative.	Flatulent colic.
<i>Angelica Archangelica</i> ♂ . . .	ii. 83.	—	—	June, Sept.	—	Root.	Tonic, stimulant.	Dyspepsia.
<i>Anthemis nobilis</i> 2 . . .	i. 38.	Syngenes. Poly. S.	Corymbifereæ.	Aug. Sept.	—	Flowers.	Stomachic, emetic.	Dyspepsia, hysteria.
<i>Anthemis Pyrethrum</i> 2 . . .	iii. 97.	—	—	June.	S. of Europe.	Root.	Sialagogue.	Toothache, dysphagia.
<i>Arbutus Uva Ursi</i> 2 . . .	ii. 91.	Decand. Monogyn.	Ericæ.	—	Britain.	Leaves.	Astringent, tonic.	Calculus, catarrhus vesicæ.
<i>Aristolochia Serpentaria</i> 2 . . .	iv. 180.	Gynand. Hexand.	Aristolochiæ.	May, June.	N. America.	Root.	Tonic, diaphoretic.	Dyspepsia, typhus.
<i>Arnica montana</i> 2 . . .	iii. 123.	Syngenes. Polyg. S.	Corymbifereæ.	June, July.	Europe.	Flowers & root.	Narcotic, diaphoretic.	Paralysis, rheumatism,
<i>Artemisia Absinthium</i> 2 . . .	ii. 58.	—	—	August.	Britain.	Leaves & tops.	Tonic, anthelmintic.	Dyspepsia, worms.
<i>Artemisia maritima</i> 2 . . .	ii. 58.	—	—	—	—	Tops.	As above.	Same as above.
<i>Artemisia Santonica</i> 2 . . .	ii. 58.	—	—	September.	Persia.	Tops.	Stimulant, anthelmintic.	Worms, chlorosis.
<i>Arum maculatum</i> 2 . . .	i. 13.	Monœc. Polyand.	Aroidæ.	May.	Britain.	Recent root.	Stimulant, expectorant.	Rheumatism, asthma.



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		Linneus.	Jussieu.					
Asarum europæum 2 . . .	i. 23.	Dodecand. Monogyn.	Aristolochiæ.	May.	Britain.	Leaves.	Emetic; errhine.	In cephalic snuffs.
Astragalus creticus h . . .	iv. 161.	Diadelph. Decand.	Leguminosæ.	—	Greece.	Gum.	Demulcent.	Coughs, diarrhœas.
Atropa Belladonna. 2 . . .	i. 1.	Pentand. Monogyn.	Solanææ.	June, July.	Britain.	Leaves.	Narcotic.	Scirrhus, cancer, neuralgia.
Bonplandia trifoliata h . . .	iv. 149.	—	Simarubææ.	—	S. America.	Bark.	Tonic, stimulant.	Dyspepsia, dysentery.
Boswellia serrata h . . .	— 147.	—	Meliis.	—	E. Indies.	Gum-resin.	Stimulant.	Chiefly in plasters.
Bryonia dioica 2 . . .	ii. 64.	Monœc. Pentand.	Cucurbitacææ.	May, Sept.	Britain.	Root.	Cathartic, diuretic.	Dropsies, mania.
Canella alba h . . .	— 66.	Dodecand. Monogyn.	Meliacææ.	—	W. Indies.	Bark.	Stimulant, tonic.	Dyspepsia.
Capsicum annuum ⊙ . . .	i. 44.	Pentand. Monogyn.	Solanææ.	July, Aug.	Both Indies.	Seeds.	Stimulant, rubefacient.	Atonic gout, paralysis.
Carum Carui ♂ . . .	ii. 59.	Pentand. Digyn.	Umbelliferæ.	June.	Europe.	—	Carminative.	Dyspepsia, colic.
Cassia Fistula h . . .	iv. 155.	Decand. Monogyn.	Leguminosæ.	May, June.	Both Indies.	Pulp.	Laxative.	Constipation.
Cassia Senna ⊙ . . .	i. 30.	—	—	July, Aug.	Egypt.	Leaves.	Cathartic.	Constipation, dropsy.
Centaurea benedicta ⊙ . . .	iii. 128.	Syngenes. Frust. F.	Cinacrocephalæ.	June, Sept.	S. of Europe.	—	Tonic.	Dyspepsia, gout.
Cephaelis Ipecacuanha 2 . . .	ii. 62.	Pentand. Monogyn.	Aggregatæ.	Dec. March.	Brasil.	Root.	Emetic, expectorant.	Fevers, asthma, dysentery.
Cetraria islandica 2 . . .	— 69.	Cryptogam. Algæ.	Lichenes, Hoff.	—	Britain.	Herb.	Nutritive, demulcent.	Coughs, phthisis.
Chelidonium majus 2 . . .	— 86.	Polyand. Monogyn.	Papaveracææ.	May, June.	—	Juice.	Acrid, poisonous.	To destroy warts.
Chenopodium olidum ⊙ . . .	iv. 176.	Pentand. Digyn.	Atriplices.	August.	—	Extract.	Antispasmodic, emmenagogue.	Amenorrhœa, hysteria, chlorosis.
Cicuta virosa 2 . . .	ii. 89.	—	Umbelliferæ.	—	—	Not used.	Acro-narcotic poison.	Not used medicinally.

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		Linneus.	Jussieu.					
Cinchona Condaminea h	iv. 183.	Pentand. Monogyn.	Rubiaceæ.	August.	Quito.	Bark.	Tonic, antiseptic, febrifuge.	In intermittent and continued fevers, cyananche maligna, spha-celus, and general debility.
— cordifolia h . .	— 185.	—	—	May, Sept.	Peru.	—	—	
— oblongifolia h . .	— 184.	—	—	May, July.	Quito.	—	—	
Citrus Aurantium h . .	i. 14.	Polyadel. Icosand.	Aurantii.	May, Aug.	India.	Rind.	Stomachic.	Dyspepsia.
— medica h . . . .	ii. 92.	—	—	—	Asia.	Rind, oil, juice.	Refrigerant, stomachic.	Fevers, scurvy; bark in dyspepsia.
Cocculus palmatus ʒ . . .	iv. 160.	Dicec. Hexand.	Menispermæ.	— . . . .	Africa.	Root.	Tonic, stomachic.	Dyspepsia, cholera.
Cochlearia Armoracia ⊙ . .	iii. 114.	Tetradyn. Silicul.	Siliculosæ.	May.	Britain.	Root.	Stimulant, rubefacient.	Paralysis, rheumatism.
Coffea arabica h . . . .	iv. 182.	Pentand. Monogyn.	Rubiaceæ.	Aug. Oct.	Arabia.	Seeds.	Antispasmodic.	Asthma, &c.
Colchicum autumnale ʒ . .	ii. 70.	Hexand. Trigyn.	Junci.	September.	Britain.	Bulb.	Narcotic, diuretic.	Gout, rheumatism.
Conium maculatum ♂ . . .	i. 13.	Pentand. Digyn.	Umbelliferæ.	June, July.	—	Leaves.	Narcotic.	Cancer, scrofula.
Convolvulus Jalapa h . .	— 47.	Pentand. Monogyn.	Convolvuli.	Aug. Sept.	Mexico.	Root.	Cathartic, hydragogue.	Dropsy, worms.
— — Scammonia h	ii. 60.	—	—	—	Syria.	Gum-resin.	As above.	As above.
— — sepium ʒ . . . .	i. 2.	—	—	July Aug.	Britain.	Extract.	—	—
Copaifera officinalis h . .	iv. 158.	Decand. Monogyn.	Leguminosæ.	— . . . .	S. America.	Balsam.	Stimulant, diuretic.	Gonorrhœa, fluor albus.
Coriandrum sativum ⊙ . .	ii. 94.	Pentand. Digyn.	Umbelliferæ.	June.	Britain?	Seeds.	Carminative.	Flatulent colic.
Crocus sativus ʒ . . . .	iii. 101.	Triand. Monogyn.	Irides.	October.	—	Stigmas.	Stimulant.	Chiefly used for colouring.
Croton Eleuteria h . . . .	iv. 150.	Monœc. Monadel.	Euphorbiæ.	— . . . .	Bahamas.	Bark.	Stimulant, stomachic.	Dyspepsia, colic, dysentery.



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		Linneus.	Jussieu.					
Croton Tiglium ℥ . . .	i. 4.	Monœc. Monadel.	Euphorbiæ.	- - - -	Moluccas.	Oil.	Drastic, cathartic.	In apoplexy, mania.
Cucumis Colocynthis ☉ . . .	iii. 138.	Monœc. Syngenes.	Cucurbitaceæ.	May, Aug.	Cape of Good Hope.	Pulp.	Drastic, cathartic.	Dropsy, mania.
Curcuma Zedoaria ℥ . . .	— 107.	Monand. Monogyn.	Caneæ.	- - - -	Ceylon.	Root.	Carminative, tonic.	Dyspepsia, colic.
Daphne Mezereum ℥ . . .	ii. 65.	Octand. Monogyn.	Thymeleæ.	March.	Britain.	Bark of the root.	Diaphoretic.	Rheumatism, lepra.
Datura Stramonium ☉ . . .	i. 6.	Pentand. Monogyn.	Solaneæ.	July.	N. America.	Herb.	Narcotic, antispasmodic.	Asthma, mania, epilepsy.
Daucus Carota ♂ . . .	ii. 56.	Pentand. Digyn.	Umbelliferæ.	June, July.	Britain.	Root & seeds.	Antiseptic, diuretic.	As a cataplasm to ill-conditioned ulcers.
Delphinium Staphisagria ♂ . . .	— 55.	Polyand. Trigyn.	Ranunculaceæ.	April, Aug.	Greece.	Seeds.	Violently emetic, &c.	To destroy pediculi.
Digitalis purpurea ♂ . . .	i. 18.	Didynam. Angiosp.	Scrophulariæ.	June, July.	Britain.	Leaves.	Sedative, diuretic.	Phthisis, dropsies.
Diosma crenata ℥ . . .	iii. 121.	Pentand. Monogyn.	Rutaceæ.	August.	Cape of Good Hope.	—	Sudorific, diuretic.	Catarrhus vesicæ.
Dolichos pruriens ℥ . . .	iv. 179.	Diadelph. Decand.	Leguminosæ.	Sept. Mar.	Both Indies.	Hairs of the pods.	Anthelmintic.	Worms.
Dorstenia Contrayerva ℥ . . .	iii. 155.	Monœc. Diand.	Urticeæ.	May, Aug.	S. America.	Roots.	Stimulant, sudorific.	Typhus, dysentery.
Dryobalanops Camphora ℥ . . .	iv. 170.	Polyand. Monogyn.	Guttiferæ.	- - - -	Sumatra.	Camphor.	Narcotic, diaphoretic.	Typhus, variola, gangrene.
Eryngium maritimum ℥ . . .	— 143.	Pentand. Digyn.	Umbelliferæ.	July, Aug.	Britain.	Roots.	Aperient, aphrodisiac?	Probably inert.
Erythraea Centaurium ℥ . . .	iii. 118.	Pentand. Monogyn.	Gentianeæ.	—	—	Herb.	Stomachic, tonic.	Dyspepsia, intermittents.
Eugenia caryophyllata ℥ . . .	ii. 95.	Icosand. Monogyn.	Myrti.	June, Jan.	Moluccas.	Flower buds.	Stimulant.	Dyspepsia, atonic gout.
Euphorbia officinarum ℥ . . .	iii. 142.	Dodecand. Trigyn.	Euphorbiæ.	June, July.	Africa.	Gum-resin.	Errhine.	Amaurosis, lethargy.
Ferula persica ℥ . . .	iv. 169.	Pentand. Digyn.	Umbelliferæ.	June.	Persia.	—	Antispasmodic.	Hysteria, dyspnœa, worms.



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		<i>Linneus.</i>	<i>Jussieu.</i>					
<i>Ficus Carica</i> h . . . .	iv. 154.	Pologyn. Tricec.	Urticæ.	June, July.	Asia.	Fruit.	Nutritive, demulcent.	In <i>Decoction</i> in coughs.
<i>Fraxinus Ornus</i> h . . . .	ii. 53.	Pologyn. Dicec.	Jasmineæ.	May.	Italy.	Manna.	Laxative.	Constipation in children
<i>Fucus Helminthocortos</i> ʒ . . . .	iii. 108.	Cryptogam. Algæ.	Algæ.	- - - -	Britain.	Herb.	Anthelmintic?	In worms.
— vesiculosus ʒ . . . .	—	—	—	Mar. April.	—	Fruit.	Discutient.	Scrofulous swellings.
<i>Garcinia Cambogia</i> h . . . .	iv. 181.	Dodecand. Monog.	Guttifera.	March.	Malabar.	Gum-resin.	Cathartic, hydragogue.	Dropsy, tænia.
<i>Gentiana lutea</i> ʒ . . . .	iii. 132.	Pentand. Digyn.	Gentianeæ.	June, July.	Germany.	Root.	Stomachic, tonic.	Dyspepsia.
<i>Geoffroya inermis</i> h . . . .	iv. 144.	Diadelph. Decand	Leguminosæ.	- - - -	Jamaica.	Bark.	Anthelmintic.	In worms.
<i>Geum urbanum</i> ʒ . . . .	i. 36.	Icosand. Polygyn.	Rosaceæ.	May, Aug.	Britain.	Root.	Astringent, tonic.	Dysentery, general debility.
<i>Glycyrrhiza glabra</i> h . . . .	iii. 134.	Diadelph. Decand.	Leguminosæ.	August.	S. of Europe.	—	Demulcent.	Coughs, hoarsenesses.
<i>Gratiola officinalis</i> h . . . .	i. 33.	Diaand. Monogyn.	Personatæ.	June, July.	—	Herb.	Anthelmintic, diuretic.	Worms; dropsy.
<i>Guaiacum officinale</i> h . . . .	ii. 90.	Decand. Monogyn.	Rotaceæ.	June, Aug.	Jamaica.	Wood & resin.	Stimulant, diaphoretic.	Chronic rheumatism, syphilis.
<i>Helleborus foetidus</i> ʒ . . . .	i. 21.	Polyand. Pologyn.	Ranunculaceæ.	Mar. April.	Britain.	Root.	Cathartic, anthelmintic.	In worms.
— niger ʒ . . . .	— 11.	—	—	Jan. Mar.	Austria.	—	Cathartic, emmenagogue.	Mania, dropsy, amenorrhœa.
— Orientalis ʒ . . . .	ii. 87.	—	—	- - - -	Greece.	—	As above.	As above.
<i>Humulus Lupulus</i> ʒ . . . .	i. 41.	Pentand. Dicec.	Urticæ.	July.	Britain.	Strobiles.	Narcotic, diuretic.	Gout, rheumatism.
<i>Hyoscyamus niger</i> ♂ . . . .	— 9.	Pentand. Monogyn.	Luridæ.	—	—	Leaves.	Narcotic.	Epilepsy, hysteria, scirrhus.
<i>Inula Helenium</i> ʒ . . . .	ii. 49.	Syngenes. Pologyn.	Corymbifera.	July, Aug.	—	—	Tonic, diuretic.	Dyspepsia, dropsies.



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		Linneus.	Jussieu.					
<i>Iris florentina</i> 2 . . . .	i. 27.	Triand. Monogyn.	Iridæ.	May, June.	S. of Europe.	Fresh root.	Cathartic.	In dropsies.
<i>Juniperus communis</i> 2 . . . .	iv. 141.	Diœc. Monadel.	Coniferæ.	May.	Britain.	Berries.	Diuretic, carminative.	Dropsies, cutaneous diseases.
<i>Krameria triandra</i> 2 . . . .	ii. 72.	Tetrand. Monogyn.	Polygalææ.	- - - -	S. America.	Root.	Astringent, tonic.	Dysentery, dyspepsia.
<i>Lactuca virosa</i> 2 . . . .	i. 12.	Syngenes. Polygyn.	Cichoracææ.	Aug. Sept.	Britain.	Leaves.	Narcotic, diaphoretic.	Coughs, phthisis.
<i>Laurus Cinnamomum</i> 2 . . . .	iii. 127.	Enneand. Monogyn.	Holoracææ.	Jan. Feb.	Ceylon.	Bark and Flower buds.	Stimulant, tonic.	Dyspepsia, diarrhoea.
— nobilis 2 . . . .	— 125.	—	—	April, May.	S. of Europe.	Berries.	Carminative, narcotic.	Flatulent colic, hysteria.
— Sassafrass 2 . . . .	— 126.	—	—	May, June.	N. America.	Wood, bark.	Diaphoretic, diuretic.	Chr. rheumatism, cutaneous diseases.
<i>Lavandula Spica</i> 2 . . . .	i. 40.	Didyn. Gymnosp.	Labiataæ.	July, Sept.	S. of Europe.	Flowers.	Stimulant.	Chiefly as a perfume.
<i>Leontodon Taraxacum</i> 2 . . . .	— 5.	Syngenes. Polyg. Æq.	Cichoracææ.	April, July.	Britain.	Root & Leaves.	Aperient, diuretic.	Chr. hepatitis, dropsy, jaundice.
<i>Linum catharticum</i> 2 . . . .	ii. 61.	Pentand. Pentagyn.	Caryophylleæ.	June, Aug.	—	Herb.	Cathartic.	Constipation.
— usitatissimum 2 . . . .	— —	—	—	July.	—	Seeds and oil.	Demulcent.	In pulmonary complaints.
<i>Lolium temulentum</i> 2 . . . .	i. 3.	Triand. Trigyn.	Gramina.	—	—	Not used.	Acro-narcotic poison.	Not used medicinally.
<i>Lythrum Salicaria</i> 2 . . . .	iv. 146.	Dodecand. Monog.	Salicariæ.	July, Aug.	—	Herb.	Astringent, tonic.	Diarrhoea, dysentery.
<i>Marrubium vulgare</i> 2 . . . .	iii. 135.	Didyn. Gymnosp.	Labiataæ.	June, Sept.	—	Leaves.	Tonic, laxative.	Asthma, hysteria.
<i>Matonia Cardamomum</i> 2 . . . .	— 106.	Monand. Monogyn.	Cannæ.	April, May.	Malabar.	Seeds.	Carminative, stomachic.	Flatulent colic.
<i>Melaleuca Cajuputi</i> 2 . . . .	ii. 84.	Polyadel. Icosand.	Myrti.	- - - -	Amboyna.	Oil.	Stimulant, diaphoretic.	Hysteria, paralysis.
<i>Mentha piperita</i> 2 . . . .	i. 45.	Didyn. Gymnosp.	Labiataæ.	Aug. Sept.	Britain.	Leaves.	Stomachic, carminative.	Flatulence, cramp of the stomach.



Name, Duration, and Habit.	Volume and Plate.	Class and Order.		Time of Flowering.	Native Country.	Parts Used.	Operation.	Uses.
		Linneus.	Jussieu.					
<i>Mentha Pulegium</i> ʒ . . .	i. 45.	Didyn. Gymnosp.	Labiatae.	Sept.	Britain.	Herb.	Stomachic, carminative.	In flatulent colic, hysteria.
— <i>viridis</i> ʒ . . .	—	—	—	August.	—	—	Stimulant, diaphoretic.	Flatulent colic, anorexia.
<i>Menyanthes trifoliata</i> ʒ . . .	ii. 85.	Pentand. Monogyn.	Gentianeae.	June, July.	—	Leaves.	Tonic, diuretic.	Intermittents, dyspepsia, herpes.
<i>Mercenialis perennis</i> ʒ . . .	— 78.	Diœc. Enneand.	Euphorbiae.	April, May.	—	—	Acro-narcotic poison.	Not used medicinally.
<i>Momordica Elaterium</i> ʒ . . .	i. 34.	Monœc. Monadel.	Cucurbitaceae.	June, July.	S. of Europe.	Insp. Juice.	Cathartic, hydragogue.	Dropsies.
<i>Morus nigra</i> ʒ . . . . .	— 39.	Monœc. Tetrand.	Urticæ.	June.	Italy.	Fruit.	Refrigerent, laxative.	Inflammatory fevers.
<i>Myristica moschata</i> ʒ . . . . .	iii. 104.	Diœc. Monadel.	Lauri.	— . . . .	Moluccas.	Fruit.	Stimulant, narcotic.	Vomiting, diarrhoea.
<i>Myroxylon peruiferum</i> ʒ . . . . .	— 102.	Decand. Monogyn.	Leguminosæ.	Aug. Oct.	Mexico.	Balsam.	Stimulant, expectorant.	Chronic asthma, gleet.
<i>Myrtus Pimenta</i> ʒ . . . . .	— 124.	Icosand. Monogyn.	Myrti.	May, June.	W. Indies.	Berries.	Aromatic, stimulant.	Chiefly as a condiment.
<i>Nicotiana Tabacum</i> ⊙ . . . . .	i. 37.	Pentand. Monogyn.	Solanæ.	July, Sept.	N. America.	Leaves.	Sedative, diuretic, errhine.	Hernia, dropsy.
<i>Oenanthe crocata</i> ʒ . . . . .	— 35.	Pentand. Digyn.	Umbelliferae.	July.	Britain.	— . . . . .	Acrid, poisonous.	Not used medicinally.
<i>Olea europæa</i> ʒ . . . . .	— 14.	Diaand. Monogyn.	Jasmineae.	—	S. of Europe.	Oil.	Demulcent, laxative,	Catarrhs, acrid poisons.
<i>Origanum vulgare</i> ʒ . . . . .	iii. 131.	Didyn. Gymnosp.	Labiatae.	July, Aug.	Britain.	Leaves.	Stimulant, stomachic.	As a snuff in cephalalgia.
<i>Oxalis Acetosella</i> ʒ . . . . .	ii. 63.	Decand. Pentagyn.	Geraniae.	April.	—	Herb.	Refrigerant.	In febrile complaints
<i>Papaver Rhœas</i> ⊙ . . . . .	i. 31.	Polyand. Monogyn.	Papaveraceae.	June, July.	—	Petals.	Laxative ?	To impart a red colour.
— <i>somniferum</i> ⊙ . . . . .	iv. 159.	—	—	—	—	Capsules. ( <i>opium</i> .)	Anodyne, stimulant, sedative.	To relieve pain, &c.
<i>Paris quadrifolia</i> ʒ . . . . .	i. 19.	Octand. Tetragyn.	Asparagi.	May.	—	— . . . . .	Acro-narcotic poison.	Not used medicinally.



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		Linneus.	Jussieu.					
Pastinaca Opopanax ℥ . . .	iii. 98.	Pentand. Digyn.	Umbelliferae.	July.	S. of Europe.	Gum-resin.	Antispasmodic.	In hysteria, chlorosis.
Phellandrium aquaticum ♂	i. 10.	—	—	June, July.	Britain.	Seeds.	—	—
Pimpinella Anisum ⊙ . . .	iv. 156.	—	—	—	Egypt.	Seeds.	Carminative.	Dyspepsia, colic.
Pinus Abies ℥ . . . . .	ii. 75.	Monœc. Monadel.	Coniferae.	April.	N. of Europe.	Resin.	Rubefacient.	Catarrh, pertussis, phthisis.
— Balsamea ℥ . . . . .	— 74.	—	—	May.	N. America.	Balsam.	Stimulant, diuretic.	Leucorrhœa, gleet.
— sylvestris ℥ . . . . .	— 73.	—	—	—	Britain.	Turpentine, resin, tar.	As above, anthelmintic.	Rheumatism, tape-worm.
Piper Cubeba ℥ . . . . .	iv. 175.	Diand. Trigyn.	Urticæ.	—	Java.	Dried fruit.	Stimulant, cathartic.	Gonorrhœa.
— nigrum ℥ . . . . .	— 174.	—	—	—	E. Indies.	Fruit.	Stimulant, carminative.	Singultus, paralysis.
Pistacia Lentiscus ℥ . . . . .	iii. 130.	Dicœc. Pentand.	Terebintaceæ.	April.	S. of Europe.	Mastic.	Stimulant, diuretic.	Chronic coughs, gleet.
— Terebinthus ℥ . . . . .	— 129.	—	—	May, June.	—	Turpentine.	As above, cathartic.	Rheumatism, catarrhus vesicæ.
Polygala Senega ℥ . . . . .	— 103.	Diadelph. Octand.	Pediculares.	June, Aug.	N. America.	Root.	Sudorific, expectorant.	Rheumatism, asthma.
Polygonum Bistorta ℥ . . . . .	i. 47.	Octand. Trigyn.	Polygonæ.	August.	Britain.	—	Astringent, tonic.	Chr. dysentery, and diarrhœa.
Prunus Lauro-cerasus ℥ . . . . .	iii. 117.	Icosand. Monogyn.	Rosaceæ.	April, May.	Levant.	Leaves.	Sedative, antispasmodic.	Coughs, dyspepsia, angina pectoris.
Pterocarpus erinaceus ℥ . . . . .	iv. 168.	Diadelph. Decand.	Leguminosæ.	December.	Africa.	Kino.	Astringent.	Diarrhœa, hæmorrhages.
Punica Granatum ℥ . . . . .	ii. 57.	Icosand. Monogyn.	Myrti.	July, Sept.	S. of Europe.	Bark and Flowers.	—	Diarrhœa, dysentery.
Pyrola umbellata ℥ . . . . .	— 93.	Decand. Monogyn.	Ericæ.	June.	N. America.	Herb.	Tonic, diuretic.	Acute rheumatism, dropsy.
Pyrus Cydonia ℥ . . . . .	iii. 115.	Icosand. Pentagyn.	Rosaceæ.	May, June.	Germany.	Seeds.	Demulcent.	Aphthæ, coughs.



Name, Duration, and Habit.	Volume and Plate.	Class and Order.		Time of Flowering.	Native Country.	Parts Used.	Operation.	Uses.
		Linneus.	Jussieu.					
Quassia amara $\mathfrak{h}$ . . .	iv. 172.	Decand. Monogyn.	Magnoliæ.	July.	Surinam.	Wood.	Tonic, stomachic	In bilious fever, hysteria, gout.
— excelsa $\mathfrak{h}$ . . .	— 173.	—	—	Oct. Nov.	Jamaica.	—	As above.	As above.
— Simaruba $\mathfrak{h}$ . . .	— 171.	—	—	Nov. Dec.	S. America.	Bark & Wood.	Tonic.	As above; dyspepsia.
Quercus infectoria $\mathfrak{h}$ . . .	— 152.	Monœc. Polyand.	Amentaceæ.	— — —	Asia.	The Galls.	Astringent.	Intestinal hæmorrhagies, piles.
— — — Robur $\mathfrak{h}$ . . .	— 151.	—	—	April.	Britain.	Bark.	Astringent, tonic.	Intermittents, fluor albus.
Ranunculus acris $\mathfrak{L}$ . . .	ii. 82.	Polyand. Pologyn.	Ranunculaceæ.	June, July.	—	Leaves.	Rubefacient, epispastic.	As counter-irritants.
— — — Flammula $\mathfrak{L}$ . . .	— —	—	—	— Aug.	—	Fresh Herb.	As above.	The same as R. acris.
Rhamnus catharticus $\mathfrak{h}$ . . .	iii. 119.	Pentand. Monogyn.	Rhamni.	May.	—	Berries.	Violently cathartic.	Dropsies, worms.
Rheum palmatum $\mathfrak{L}$ . . .	i. 25.	Enneand. Monog.	Polygonæ.	—	Tartary.	Root.	Cathartic, astringent.	Constipation.
— — — undulatum $\mathfrak{L}$ . . .	iv. 177.	—	—	—	China.	—	As above.	As above.
Rhododendron chrysanthum $\mathfrak{h}$ . . .	ii. 80.	Decand. Monogyn.	Rhododendra.	June, July.	Siberia.	Leaves.	Stimulant, narcotic.	Rheumatism, gout.
Rhus toxicodendron $\mathfrak{h}$ . . .	iv. 167.	Pentand. Trigyn.	Terebintaceæ.	—	N. America.	—	As above.	Paralysis, herpes.
Ricinus communis $\odot$ . . .	ii. 50.	Monœc. Monadel.	Euphorbiæ.	August.	Both Indies.	Seeds & Oil.	Cathartic.	Constipation.
Roccella tinctoria $\mathfrak{L}$ . . .	— 69.	Cryptogam. Algæ.	Lichenes, Hoff.	— — —	Britain.	Herb.	— — —	Phthisis, and for preparing <i>Litmus</i> .
Rosa canina $\mathfrak{h}$ . . .	iii. 100.	Scosand. Pologyn.	Rosaceæ.	June.	—	Pulp.	Laxative.	For making the Confec-tion.
— gallica $\mathfrak{h}$ . . .	— 99.	—	—	June, July.	S. of Europe.	Petals.	Astringent.	As a vehicle; and in diarrhoea.
Rosmarinus officinalis $\mathfrak{h}$ . . .	i. 24.	Diand. Monogyn.	Labiata.	Feb. Mar.	—	Tops.	Stimulant.	Nervous headachs, chlorosis.



Name, Duration, and Habit.	Volume and Plate.	Class and Order.		Time of Flowering.	Native Country.	Parts used.	Operation.	Uses.
		Linneus.	Jussieu.					
Rumex Hydrolapathum ʒ.	iii. 133.	Hexand. Trigyn.	Polygonæ.	July, Aug.	Britain.	Root.	Astringent.	In ichthyosis, lepra.
Ruta graveolens ℥ . . .	ii. 71.	Decand. Monogyn.	Rutaceæ.	June, Sept.	S. of Europe.	Leaves.	Stimulant, antispasmodic.	Hysteria, convulsions.
Saccharum officinarum ʒ	iv. 148.	Triand. Digyn.	Gramina.	- - - -	E. Indies.	Sugar.	Laxative; escharotic.	Antidote for verdigris.
Salix Russelliana ℥ . . .	iii. 139.	Dioec. Diand.	Amentaceæ.	April, May.	Britain.	Bark.	Tonic, astringent.	Intermittents; general debility.
Sambucus nigra ℥ . . .	ii. 79.	Pentand. Trigyn.	Caprifoliæ.	July.	—	Flowers, berries and bark.	Bark; cathartic.	Dropsy, hæmorrhoids.
Scilla maritima ʒ . . .	iv. 153.	Hexand. Monogyn.	Asphodeli.	Apr. July,	S. of Europe.	Bulb.	Diuretic, expectorant.	Asthma, pertussis, dropsy.
Secale cereale ⊙ } Secale cornutum. }	iii. 113.	Triand. Digyn.	Gramina.	July.	Crete?	Spur, or Ergot.	Stimulant; septic.	To accelerate parturition.
Sinapis alba ⊙ } — nigra ⊙ }	i. 42.	Tetradyn. Siliq.	Cruciferae.	June.	Britain.	Seeds.	Stimulant; emetic; rubefacient.	Dyspepsia, chlorosis, apoplexy.
Smilax Sarsaparilla ℥ . . .	iv. 162.	Dioec. Hexand.	Asparagi.	July, Aug.	S. America.	Root.	Demulcent, alterative.	Syphilis, elephantiasis.
Solanum Dulcamara ℥ . . .	i. 17.	Pentand. Monogyn.	Solanæ.	June, Aug.	Britain.	Stalks.	Narcotic, sudorific.	Lepra, asthma.
Solidago Virgaurea ʒ . . .	iii. 105.	Syngenes. Polyg. S.	Corymbiferae.	July, Sept.	—	Flowers and leaves.	Astringent, tonic.	Chr. dysentery, urinary calculus.
Spartium scoparium ℥ . . .	ii. 67.	Diadelph. Decand.	Leguminosæ.	May, June.	—	Tops & seeds.	Diuretic; emetic.	Dropsies.
Spigelia marilandica ʒ . . .	i. 7.	Pentand. Monogyn.	Gentianæ.	July.	N. America.	Root.	Anthelmintic.	Worms.
Strychnos Nux-vomica ʒ . . .	ii. 52.	— — — —	Luridæ.	- - - -	India.	Seeds.	Tonic; poisonous.	Dyspepsia; paralysis.
Styrax benzoin ℥ . . .	iii. 112.	Decand. Monogyn.	Guaiacinae.	- - - -	Sumatra.	Balsam.	Expectorant?	Asthma, and for preparing the acid.



Name, Duration, and Habit.	Name and Place.	Class and Order.		Time of Flowering.	Native Country.	Parts used.	Operation.	Uses.
		<i>Linneus.</i>	<i>Jussieu.</i>					
Styrax officinale ℥ . . .	i. 47.	Decand. Monogyn.	Guaiacinae.	---	Italy.	Balsam.	Stimulant.	In chr. catarrh, asthma.
Swietenia febrifuga ℥ . . .	ii. 81.	-----	Meliaceae.	July.	E. Indies.	Bark.	Astringent, tonic.	Intermittent fevers.
Tamarindus indica ℥ . . .	— 88.	Monadel. Triand.	Leguminosae.	June, July.	Both Indies.	Preser. fruit.	Refrigerant, laxative.	Inflammatory fevers.
Tanacetum vulgare ℥ . . .	iii. 116.	Syngenes. Polyg. S.	Corymbiferae.	July, Aug.	Britain.	Leaves.	Tonic, anthelmintic.	Hysteria, gout, worms.
Tormentilla erecta ℥ . . .	i. 26.	Icosand. Polygn.	Rosaceae.	June, July.	---	Root.	Astringent.	Diarrhoea in phthisis.
Triticum hybernum ☉ . . .	iii. 113.	Triand. Digyn.	Gramina.	July, Aug.	Asia.	Starch.	Demulcent.	Dysentery, tenesmus.
Tussilago Farfara ℥ . . .	i. 20.	Syngenes, Polyg. S.	Corymbiferae.	March, Apr.	Britain.	Leaves.	Demulcent.	Coughs; cutaneous diseases.
Valeriana officinalis ℥ . . .	ii. 54.	Triand. Monogyn.	Dipsaceae.	June.	---	Roots.	Antispasmodic.	Epilepsy, hysteria.
Veratrum album ℥ . . .	iii. 136.	Polygam. Monoc.	Junci.	June, Aug.	Europe.	Root.	Emetic; errhine.	Mania, apoplexy; scabies.
Viola odorata ℥ . . .	i. 29.	Pentand. Monogyn.	Cysti.	March, Apr.	Britain.	Recent flower.	Slightly laxative.	As a test of acids.
Vitis vinifera ℥ . . .	iii. 140.	-----	Vitis.	May, June.	Greece.	Raisins, wine.	Laxative; cordial.	In typhus, &c.
Ulmus campestris ℥ . . .	— 120.	Pentand. Digyn.	Amentaceae.	April.	Britain.	Bark.	Tonic; alterative.	Chronic cutaneous diseases.
Wintera aromatica ℥ . . .	iv. 178.	Polyand. Trigyn.	Magnoliae.	---	Terra del Fuego.	Bark.	Tonic; carminative.	Colic, dyspepsia.
Zingiber officinale ℥ . . .	iii. 96.	Monand. Monogyn.	Cannae.	Sept.	E. Indies.	Root.	Stimulant, carminative.	Colic, dyspepsia, gout.



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Spurge, officinal . . . . .	IV. 142	— hemlock . . . . .	II. 89
—, Olive . . . . .	II. 65	Wheat . . . . .	III. 113
Squill . . . . .	IV. 153	Willow, Bedford . . . . .	— 139
Stavesacre . . . . .	II. 55	—, crack . . . . .	— —
Stramonium . . . . .	I. 6	—, great round-leaved . . . . .	— —
Styrax . . . . .	II. 47	—, white . . . . .	— —
Sweet Bay . . . . .	III. 125	Willow-herb . . . . .	IV. 146
— Flag . . . . .	I. 32	Winter-green . . . . .	II. 93
Sugar-cane . . . . .	IV. 148	Winters'-bark . . . . .	IV. 178
Sumach, trailing . . . . .	— —	Wolf's-bane . . . . .	I. 28
		Wood-sorrel . . . . .	II. 63
Tamarind . . . . .	II. 88	Worm-grass, Maryland . . . . .	I. 7
Tansy . . . . .	III. 116	— Moss, Corsican . . . . .	III. 108
Thorn, Egyptian . . . . .	II. 77		
Thorn-apple . . . . .	I. 6	Zedoary . . . . .	— 107
Tobacco . . . . .	— 37		



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