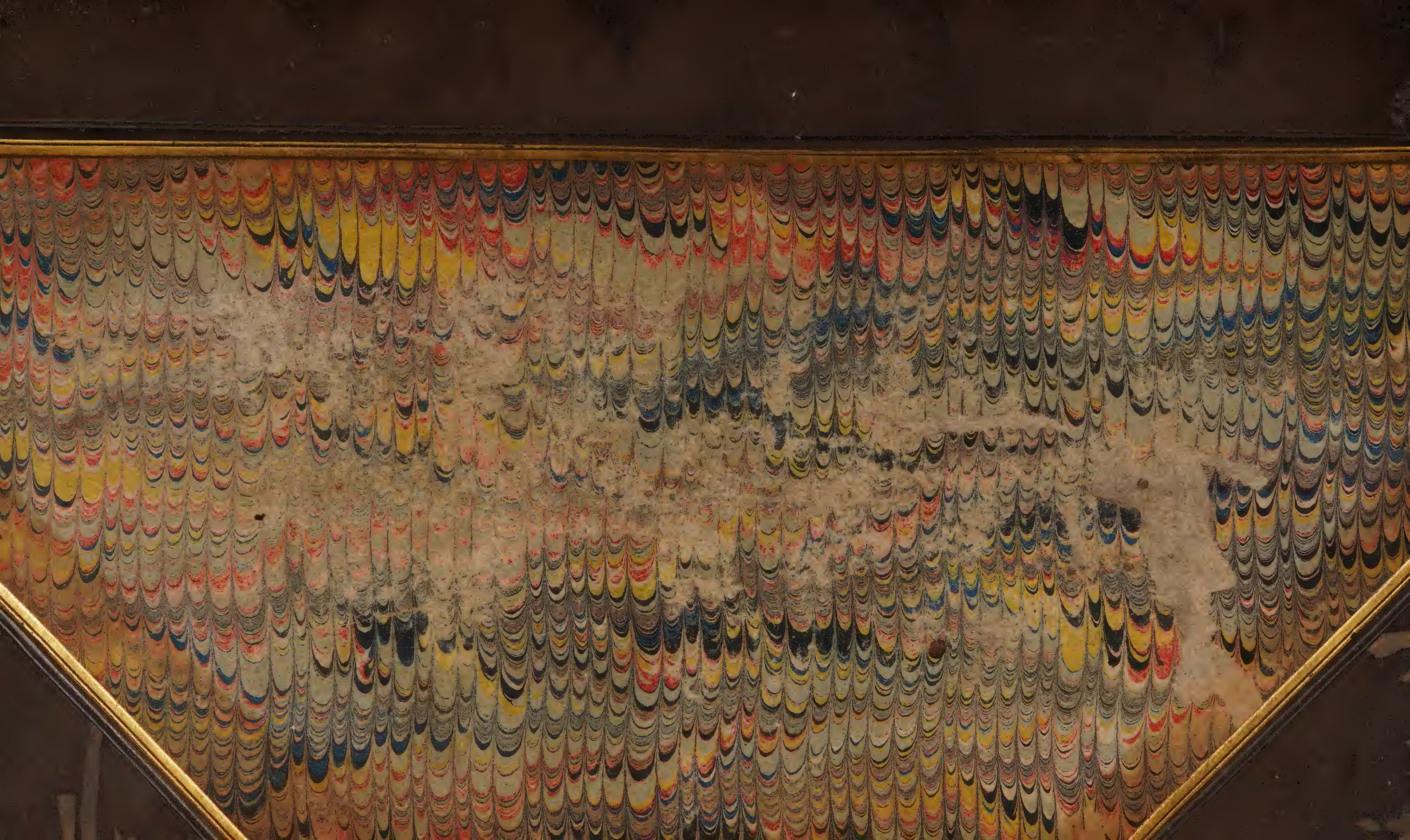

Bush

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.

BY JOHN STEPHENSON, M.D. F.L.S.

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VOL. III.

LONDON:

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MDCCCXXXI.

LONDON:
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Dodecandria Monogynia

Asarum Europeum — Aristolochiæ — Tormentaceæ
Canella Alba — Meliæ — Oleraceæ
Lythrum Salicaria — — Calycanthemæ
Garcinia Cambogia — — — Guttiferæ.
Stalagmitis Cambogioides — — — —

Dodecandria Trigynia

Euphorbia Officinarum — — — Tricoccæ.

Icosandria Monogynia

Eugenia Caryophyllata — — — Hesperidiæ
Myrtus Pimenta — — —
Punica Granatum — — — Pomaceæ
Amygdalus Communis — — Amygdaleæ
Prunus Lauro-cerasus — — —
— Domestica — — —

Icosandria Pentagynia

Pyrus Cydonia — — — Pomaceæ

Icosandria Polygynia

Rosa Gallica — — — Sentiosæ
— Centifolia — — —
— Canina — — —
Tormentilla Erecta — — —
Geum Urbanum — — —

Polyandria Monogynia

Papaver Rheas — — Papaveraceæ. Rhoadeæ
— Somniferum — — —
Chelidonium Majus — — —
Dryobalanops Camphora — — — Guttiferæ.

Polyandria Trigynia

Delphinium Staphisagria — — — Multisiliquæ
Clematis Vitalba — — Ranunculaceæ —
Tinctura Aromatica — — — Magnoliæ

Polyandria Polygynia

Ranunculus Acris — — — Multisiliquæ
— Flammula — — —
Helleborus Niger — — —

Helleb. Fœtidus do do Multifloro
" Orientalis do do "

Didynamia Gymnospermia

Mentha Piperita do Labiata Verticillata
" Viridis do do "
" Pulegium do do "
Lavandula Spica do do "
Marrubium Vulgare do do "
Origanum Vulgare do do "
" Majorana do do "

Didynamia Angiospermia

Digitalis Purpurea do Scrophularineæ Lucidæ

Tetradynamia Siliculosæ

Cochlearia Armoracia do Cruciferæ Siliquosæ
" Officinalis do do "

Tetradynamia Siliquosa

Sinapis Alba do do Siliquosa
" Nigra do do "

Monadelphia Triandria

Tamarindus Indica do Leguminosæ Lomentaceæ

Monadelphia Polyandria

Althæa Officinalis Columniferæ

Diadelphia Octandria

Polygala Senega Lomentaceæ
" Rubella "

Diadelphia Decandria

Ptero carpus Erinaceus do Leguminosæ Papilionaceæ
" Santalinus do do "
Spartium Scoparium do do "
Dolichos Pruriens do do "
Astragalus Creticus do do "
Glycyrrhiza Glabra do do "
Geoffroya Inermis do do "

Polyadelphia Icosandria

Citrus Aurantium do Aurantiaceæ Pomaceæ
" Medica do do "

Polyadelphia Polyandria

Ecballium Elaterium do Cucurbitaceæ Herpestideæ

Asarum europæum.

W. Clark, del. et sculp.

London. Published by John Churchill, Leicester Square, June 1827.

ASARUM EUROPÆUM.

Common European Asarabacca.

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

Nat. Ord. TARMENTACEÆ, *Lin.* ARISTOLCHIÆ, *Juss.*

GEN. CHAR. *Calyx* 3-cleft, superior. *Corolla* 0. *Capsule* coriaceous, 6-celled.

SPEC. CHAR. *Leaves* two on each stem, kidney-shaped.

Syn.—Asarum, *Raii. Syn.* 158.; *Ger. Em.* 836. *f.*; *Bauh. Pin.* 197.
Asarum vulgare, *Park. Theatr.* 266.
Asarum, *n.* 1547, *Hall, Hist. v.* 2. 252.
Asarum europæum, *Lin. Sp. Pl.* 633; *Willd. v.* 2. 838; *Fl. Brit.* 509; *Hook, Fl. Scot.* 146; *Fl. Dan. t.* 633; *Bull. Fr. t.* 69.
FOREIGN.—*Asaret; Cabaret,* Fr.; *Asaro la bacchera,* Ital.; *Asaro de Europa,* Span.; *Haselwurtzel,* Ger.; *Hasselört,* Swed.; *Asaroon,* Arab.
PROVINCIALLY.—*Common Asarabacca; Fole's-foot; Hazelwort; Wild Nard.*

THIS is the Ασαρον of Dioscorides, and other ancient authors. It is a perennial plant, a native of England, and other parts of Europe, but extremely local in this country, being confined chiefly to a few places only, in the northern counties. It was found many years ago, as we learn on the authority of the celebrated Ray, in several woods in Lancashire. It was observed also in considerable abundance by Dr. Batty near Kirkby Lonsdale, in Westmoreland, where it is collected by the peasantry for medical use; by Mr. Hutchinson, near Keswick, in Cumberland; by the Rev. Dr. Abbot, in Berkshire, by the side of the road between Henley and Maidenhead; by our friend, Mr. Fernie, in a wood near Kimbolton, Huntingdonshire; and, according to Professor Hooker, by Miss Liston at West Binny,

near Linlithgow, in Scotland. The flowers, which are partly concealed by the herbage, have a singular lurid aspect, and appear early in May.

The Asarabacca grows wild in moist, shady situations. The root is creeping, fleshy, and fibrous. The stem is very short, seldom exceeding an inch; is simple, round, pubescent, bearing a single flower and a pair of leaves only, which spring almost immediately from the root. The leaves are opposite, kidney-shaped, smooth, dark, green, shining, and stand upon long downy footstalks. The flower is solitary, rather large, drooping, of an herbaceous colour externally, and dusky purple within, standing upon a short peduncle at the base of the leafstalks. The calyx supplies the place of a corolla; it is large, bell-shaped, coriaceous, and divided at the mouth into three rather deep, pointed segments, which are turned inwards. The stamens are twelve, about half the length of the calyx, and produced beyond the anthers into a little hook. The style is simple, crowned with a stigma divided into six radiated recurved segments. The capsule is coriaceous, six-celled, crowned with the substance of the calyx, and containing many ovate seeds.—Fig. (*a*) represents a perpendicular section of the flower, showing the position of the cells, and six of the filaments, the calyx being removed; (*b*) the pistil.

The generic name Asarum, is derived from *a, priv,* and *σαιρω, orno,* to adorn, *quoniam in coronis non addatur,* because, says Pliny, it was not admitted into the ancient coronal wreaths.

It appears, from Pliny, that the *Asarum* was formerly confounded with the *Baccharis,* (*Inula dysenterica,* Lin.) and the English name is a compound of both—Assara-bacca.

The roots of Asarabacca are brought to us from Leghorn, and the dried leaves from Dauphiny, Languedoc, and Auvergne.

Qualities.—The leaves and roots, when recent, are nearly inodorous; their taste is acrid, bitter, somewhat aromatic, and nauseous. By keeping the leaves, they lose much of their power, and should be dried without heat. By coction they are rendered inert, but the watery infusion possesses the sensible qualities of the leaves. The recent root, when distilled, yields

a volatile oil, which smells like camphor; but this is not obtained from the dried root.

Medical Properties and Uses.—Both the roots and leaves are emetic, cathartic, and diuretic; and previously to the introduction of ipecacuanha, Asarabacca leaves were often administered in doses of half a drachm, and the root in doses of ten grains, to excite vomiting; but as their operation was sometimes violent, they are fallen into disrepute. Its chief use in the present practice is as an errhine, where we wish to increase the secretion of mucus by the nostrils, or to influence the state of the brain. About three grains is the quantity to be used, which produces a copious flow of mucus from the nostrils, whereby painful affections of the head, eyes, and teeth, will be often benefited. The discharge is frequently going on for several days; but if the dose be too strong, hæmorrhage from the nostrils is sometimes produced. Exposure to cold, during its use, must be sedulously guarded against. Errhines (says a popular writer) were remedies formerly in much repute, but they require, more than others, great caution in their use. If we consider the minute circulation of the brain, the thinness of the vascular coats, and the great quantity of blood accumulated in the head, every stimulant remedy specially acting on this part, must be attended with great danger of producing rupture in some part of the minute ramification of vessels, and thus occasioning effusion on the brain. In all full and plethoric habits, therefore, such applications cannot be too much condemned. Their action is to excite convulsions, or strong efforts of sneezing, which may, by irritation of the nostrils, elicit a discharge from the whole surface of this organ, and by sympathy communicate also its influence to the higher parts beyond the reach of the application. It is only then in cases of temporary obstruction that such remedies can be of use, and their operation can be no more than producing an artificial evacuation for the time. Hence, where a peculiar dryness of this part takes place, and where the state of the constitution does not forbid the application of moderate stimulants, they may be applied at times with considerable benefit. In obstinate opthalmia,

connected with laxity of the organ, the irritation of the nostrils by errhines has sometimes effected a cure. The best preparation for this purpose is the *pulvis asari* compositus of the Edinburgh Pharmacopœia, which consists of the dried leaves of asarabacca three parts, the leaves of marjoram and flowers of lavender, of each one part, reduced to powder. A few grains of this, which was long known under the name of *pulvis cephalicus*, snuffed up the nose, procures a considerable evacuation for a long time, without causing much sneezing or inconvenience to the patient, The nostrum called Collins's *Cephalic Snuff*, seems nothing more than the foreign snuff mixed with the British, and a certain quantity of some aromatic.

Off. Prep.—Pulvis Asari Compositus. *E. D.*

Canella alba.

W. Clark. del.

London. Published by John Churchill, Leicester Square, May. 1828.

LXVI

CANELLA ALBA.

White, or Laurel-leaved Canella.

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

Nat. Ord. OLERACEÆ, *Lin.* MELIACEÆ, *Juss.*

GEN. CHAR. *Calyx* 3-lobed. *Petals* five. *Anthers* 21, adhering to a pitcher-shaped nectary. *Berry* 1-celled, with two or four-seeds.

Syn.—Canella peruana, and C. tubis minoribus alba, *Bauh. Pin. p.* 409; *Park.* 1581.
Canella cubane, *Johns. Dendr.* 165.
Canella cinamomea, *Pluk. Phyt.* 160. *f.* 7.
Canella Winterana, *Gœrt. Fruct. v.* 1. *t.* 77. *f.* 2.
Canella alba, *Sp. Pl. Willd. v.* 2. 851; *Swartz, Trans. Lin. Soc. v.* 1. 96. *t.* 8; *Woodv.* 2. 318. *t.* 117; *Stokes v.* 3. *p.* 12.

FOREIGN.—*Canelle blanche*, Fr.; *Canella bianca*, It.; *Weisser Zimmet*, Ger.

THIS tree is pretty common in most of the West India islands, growing in the inland woods, where it attains a considerable size.

The stem rises from ten to fifty feet in height, very straight and upright, and branched only at the top. The branches are erect, and not spreading; furnished with petiolated leaves, irregularly alternate, oblong, pointed, entire, without any distinct nerves or veins, of a dark green colour, thick like those of the laurel, and shining. The bark is whitish, by which it is commonly known at first sight in the woods. The flowers, which grow at the extremities of the branches in clusters, upon divided foot-stalks, are small, of a violet colour, and seldom open. The calyx is 1-leaved, persistent, and deeply divided into three lobes; the lobes are roundish, concave, incumbent, smooth, and mem-

branous. The petals are five times as long as the calyx, oblong, sessile, concave, erect, two a little narrower than the others; the nectary is pitcher-shaped, the length of the petals, bearing the anthers, and deciduous. There are no filaments; but the anthers, which are twenty-one in number, linear, parallel, adhere longitudinally to the outside of the nectary, and discharge a yellow pollen. The germen is superior, within the nectary, ovate, 3-celled; style cylindrical, with two rough, convex, blunt stigmas. The fruit is an oblong, fleshy, 1-celled, smooth, black berry. The annexed plate represents a branch of the tree in flower, and the berries of their natural size.—Fig. (*a*) a flower, with its petals forcibly expanded; (*b*) the fruit; (*c*) the pistil standing on the 3-lobed calyx magnified, with the two stigmas; (*d*) a transverse section of the berry of its natural size, with one seed remaining fixed to the side; (*e*) a seed of the natural size.

About the year 1579, as Captain Winter, who commanded the Elizabeth, which formed part of the squadron under the command of Sir Francis Drake, was sailing through the streights of Magellan, he discovered the Wintera *aromatica*, which yields a bark, first mentioned, described, and named by Clusius, as *Cortex Winteranus*, in compliment to the discoverer.* About the beginning of the seventeenth century, Clusius was the first, also, to record the introduction of Canella *alba;* which Parkinson† says, was in his time often mistaken for Winter's bark: it was John Bauhin,‡ however, who first confounded the names, by styling Cortex Winteranus, Canella alba; and although Sir Hans Sloane gave separate descriptions of each in the Transactions of the Royal Society, the botanical distinctions were paid so little attention to by Lemery,§ Pomet, and other writers on the materia medica, that Linneus‖ himself was led into error, and combined two different genera under the name of Laurus *Winterana*. He afterwards separated the Canella *alba* from *Laurus*, and established it as a distinct genus, by the name

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* *Exot.* lib. 4. ch. 4. † *Theatr.* p. 1581. ‡ *Hist.* t. i. l. 4. p. 460.
§ *Dict. des Drogues.* p. 170. ‖ *Sp. Plant.* ed. i. p. 371. n. 11.

Winterania; under which title it has been universally, but very improperly known; for while the tree we have figured comes, as we have already stated, from the West Indies, the Wintera *aromatica,* whose existence remained in oblivion nearly a century, during which time the bark of the former was substituted for it, is found in the neighbourhood of the Antarctic regions, and belongs to a different class. An excellent plate of it is given in Vol. V. of Medical Observations and Inquiries, and to that work we are indebted for the subjoined botanical account by Dr. Solander; which it will be well to compare with the one already given of Canella *alba.*

"*The Winter's Bark-tree, Winterana Aromatica,* is one of the largest forest trees upon Terra del Fuego; it often rises to the height of fifty feet. Its outward bark is, on the trunk, grey, and very little wrinkled, on the branches quite smooth and green.

"The *branches* do not spread horizontally, but bend upwards, and form an elegant head of an oval shape.

"The leaves come out, without order, of an oval elliptic shape, quite entire, obtuse, flat, smooth, shining, of a thick, leathery substance, evergreen, on the upper side of a lively deep green colour, and of a pale bluish colour underneath, without any nerves, and their veins scarcely visible; they are somewhat narrower near the footstalks, and there their margins are bent downwards.

"In general, the leaves are from three to four inches long, and between one and two broad; they have very short *footstalks,* seldom half an inch long, which are smooth, concave on the upper side, and convex underneath. From the scars of the old footstalks the branches are often tuberculated.

"The peduncles, or footstalks for the flowers, come out of the *axillæ foliorum,* near the extremity of the branches; they are flat, of a pale colour, twice or three times shorter than the leaves; now and then they support only one flower, but are oftener near the top divided into three short branches, each with one flower.

"The *bracteæ* are oblong, pointed, concave, entire, thick, whitish, and situated one at the basis of each peduncle.

"*Calyx*, or *flower-cup*, it has none; but in its place the flower is surrounded with a *spathaceous* gem, of a thick, leathery substance, green, but reddish on the side which has faced the sun: before this gem bursts, it is of a round form, and its size is that of a small pea. It bursts commonly so that one side is higher than the other, and the segments are pointed.

"The *corolla* consists always of seven petals, which are oval, obtuse, concave, erect, white, have small veins, and are of an unequal size, the largest scarcely four lines long; they very soon fade, and drop off almost as soon as the gem bursts.

"The filaments are from fifteen to thirty, and are placed on the flattened side of the receptacle; they are much shorter than the petals, and gradually decrease in length towards the sides.

"The *antheræ* are large, oval, longitudinally divided into two, or as if each were made up of two oblong *antheras*.

"The *germina* are from three to six, placed above the receptacle, turbinated, or of the shape of an inverted fig, flat on the inside, and somewhat higher than the stamina; they have no styles, but terminate in a stigma, which is divided into two or three small lobes.

"The fruit I have never seen in its perfect ripe state, but can conclude from the unripe ones, which I saw in abundance, that each germen becomes a separate seed-vessel, of a thick, fleshy substance, and unilocular: in each I could plainly discern the rudiments of three, four, or five seeds."

"The bark," (says Dr. Fothergill) "of the Winterania, or Winter's cinnamon, brought over by the Dolphin, in respect to figure, exactly resembles that which was delineated by Clusius. The pieces are about three or four inches square, of different degrees of thickness, from a quarter to three-quarters of an inch. It is of a dark brown cinnamon colour, an aromatic smell if rubbed, and of a pungent, hot, spicy taste, which is lasting on the palate, though imparted slowly. It has the name of Winter's cinnamon, from a faint resemblance in colour and flavour to that grateful aromatic, though differing from it greatly in every other respect. This bark is only brought to us from the Streights of Magellan, and is the produce of the tree above de-

scribed. Much celebrated as an antiscorbutic by the first discoverers, but unknown in the practice of physic, no quantity, except as a curiosity, having been brought to Europe till the return of the ships sent out on the expeditions to the South Seas."

In the last edition of Dr. Hooper's Dictionary, we find that the glaring errors, which we have exposed, are still propagated.

Qualities and Chemical Properties.—Every part of the tree exhales a powerful aromatic odour, and when in blossom, perfumes the whole neighbourhood. The flowers dried, and softened again in warm water, are said to diffuse an odour nearly approaching to that of musk. The leaves have a strong smell of laurel. The berries, after having been some time green, turn blue, and become at last of a glossy black colour, and have a faint aromatic taste and smell. They are, when ripe, as well as the fruits of several kinds of laurel, very agreeable to the white-bellied and bald-pate pigeons, (*Columba jamaicensis* and *leucocephala*,) which feeding upon them, acquire that peculiar flavour, so much admired in the places where they are found.

Canella alba is brought to England in casks, and cases: the principal part is in quills, which are of a whitish yellow; while the flat pieces, which are somewhat thicker, are rather of a darker colour. The odour is strongly aromatic; the taste aromatic also, more like the clove than cinnamon, warm, pungent, and somewhat bitter. It gives out all its virtues to alcohol, but the infusion, although bitter, possesses little of its aromatic properties. "The infusion is not altered by infusion of galls; sulphate of iron, or zinc; muriate of mercury, or tartarized antimony; but nitrate of silver, and acetate of lead, render it milky, and throw down precipitates."* The essential oil is often scented with the oil of cloves, and sold for it.

Medical Properties and Uses.—On account of its aromatic flavour, Canella alba is employed to cover the taste of several articles of the materia medica. Combined with aloes, it forms a popular remedy, well known by the name of *hiera*

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* Thomson's Dispensatory.

picra, and added to the tincture and infusion of senna, it covers its nauseous taste, renders it much more grateful to the palate, prevents it from griping, and might be advantageously substituted for the cardamom seeds, which enter into the composition of the former. It appears to be more useful as a condiment than as a medicine, for "the bark, together with the fruit of the capsicum, were formerly common ingredients in the food and drink of the Caraibs, the ancient natives of the Antilles; and even at present it makes a necessary addition to the meagre pot of the negroes."†

DOSE.—From ten grains to thirty, or more.

OFF. PREP.—Tintura Gentianæ composita. *E.*
Vinum Aloes. *L. E.*
Pulvis Aloes cum canella. *D.*

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† Trans. Linnean Society, vol. i. p. 99.

Pl. 146.

Lythrum Salicaria.

G. Reid del.

Wedde

London, Published for the Authors, Jan 1830.

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.*

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

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-

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Holcus mollis.
Glyceria aquatica.
——— fluitans.
Poa trivialis.
—— pratensis.
—— annua.
Briza media.
Dactylus glomerata.
Cynosurus cristatus.
Festeuca loliacea.
——— pratensis.
——— elatior.
Bromus secalinus.
——— mollis.
——— racemosus.
——— sterilis.
Arundo Phragmites.
Lolium perenne.
——— temulentum.
——— arvense.
Hordeum murinum.
——— pratense.
Triticum repens.
——— caninum.
Scabiosa arvensis.
Galium palustre.
——— verum.
——— aparine.
Plantago major.
——— lanceolata.
Parietaria officinalis.
Potamogeton crispum.
——— perfoliatum
Sagina procumbens.
Myosotis palustris.
Lithospermum arvense.
Symphytum officinale.
Hottonia palustris.
Lysimachia vulgaris.
Anagallis arvensis.
Convolvulus arvensis.
——— sepium.
Campanula rotundifolia.
Solanum Dulcamara.
——— nigrum.
Chenopodium Bonus Henricus.
——— urbicum.
——— rubrum.
——— hybridum.
——— album.
Ulmus campestris.
Torilis infesta.
Scandyx Pecten-Veneris.
——— anthriscus.

Chærophyllum sylvestre.
Bunium flexuosum.
Sium angustifolium.
—— nodiflorum.
—— repens.
—— latifolium.
Æthusa Cynapium.
Conium maculatum.
Coriandrum sativum.
Œnanthe fistulosa.
——— crocata.
Phellandrium aquaticum.
Ægopodium Podagraria.
Angelica sylvestris.
Heracleum Spondylium.
Sambucus nigra.
Juncus glomeratus.
——— effusus.
Luciola campestris.
Rumex crispus.
——— obtusifolius.
——— Acetosa.
——— Acetosella.
Triglochin palustre.
Alisma Plantago.
Epilobium hirsutum.
——— parviflorum.
——— tetragonum.
Polygonum Persicaria.
——— Hydropiper.
——— lapathifolium.
——— Bistorta.
——— aviculare.
——— Convolvulus.
Butomus umbellatus.
Saxifraga granulata.
——— tridactylites.
Silene inflata.
Stellaria media.
——— holostea.
Arenaria serpyllifolia.
——— rubra.
Sedum acre.
——— reflexum.
Agrostema Githago.
Lychnis Flos Cuculi.
——— dioica.
Cerastium vulgatum.
——— semidecandrum.
——— aquaticum.
Spergula arvensis.
——— nodosa.
Mespilus Oxyacantha.
Spiræa ulmaria.
Rosa canina.

Rubus fructicosus.
——— corylifolius.
Potentilla anserina.
——— reptans.
Geum urbanum.
Papaver hybridum.
——— Rhœas.
Thalictrum flavum.
Ranunculus ficaria.
——— sceleratus.
——— bulbosus.
——— repens.
——— acris.
——— aquatilis.
Caltha palustris.
Ajuga reptans.
Mentha hirsuta.
Glechoma hederacea.
Lamium album.
——— purpureum.
——— amplexicaule.
Galeopsis tetrahit.
Stachys sylvatica.
Ballota nigra.
Scutellaria galericulata.
Prunella vulgaris.
Rhinanthus Crista galli.
Pedicularis palustris.
Antirrhinum Cymbalaria.
——— Orontium.
Scrophularia aquatica.
Thlaspi Bursa pastoris.
Cochlearia Armoracia.
Senebiera Coronopus.
Cardamine pratensis.
Nasturtium officinale.
——— sylvestre.
——— terrestre.
——— Irio.
——— Sophia.
Barbarea vulgaris.
Erisymum Alliaria.
Brassica campestris.
Sinapis arvensis.
Raphanus Raphanistrum.
Erodium cicutarium.
Geranium pyrenaicum.
——— molle.
—— —— dissectum.
Malva sylvestris.
Fumaria officinalis.
Lathyrus pratensis.
——— repens.
——— arvense.
——— 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.

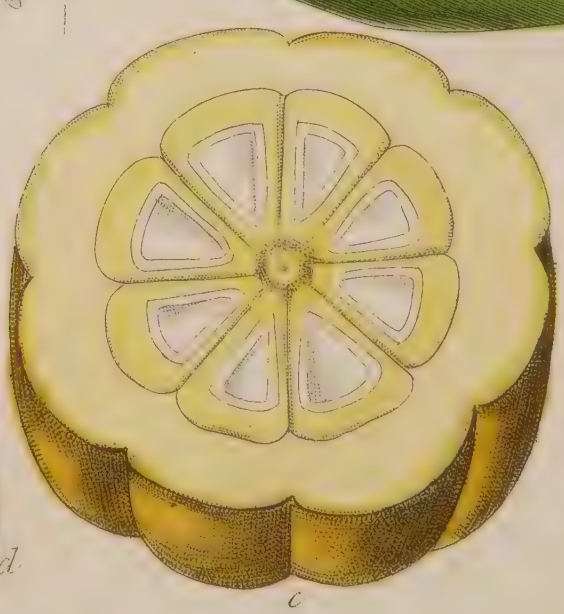
Lathyrus filiforme.
Medicago lupulina.
Picris echioides.
Sonchus arvensis.
——— oleraceus.
Leontodon Taraxacum.
Hieracium pilosella.
Lapsana communis.
Cichorium Intybus.
Arctium Lappa.
Cnicus lanceolatus.
Carduus acanthoides.
Bidens cernua.
——— tripartita.
Artemisia vulgaris.
——— Absinthium.
Tussilago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

a

b

d



c

Garcinia Cambogia.

G. Reid. del.

Wedgett 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, succullent, 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.

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.

Pl 143.

Euphorbia officinarum.

G.Reid. del.

Wed & Dell. Sc.

London. Published. for the Authors. Dec. 1829.

EUPHORBIA OFFICINARUM.

Officinal Spurge.

Class XI. Dodecandria.—*Order* III. Trigynia.

Nat. Ord. Tricoccæ, *Lin.* Euphorbiæ, *Juss.*

Gen. Char. *Corolla* four or five-petalled, fixed to the calyx. *Calyx* 1-leafed, ventricose. *Capsule* tricoccous.

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 ευφορβιον 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, turbinated, 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.

(Braconnot *Ann. Chim.* lxviii.)	44	(Pelletier, *Bull. Pharm.* 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 alkalies, 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, cholic, 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.

Pl 95

Eugenia caryophyllata

Caryophyllus Aromaticus

EUGENIA CARYOPHYLLATA.

The Clove Spice-tree.

Class XII. Icosandria.—*Order* I. Monogynia.

Nat. Ord. Hesperidiæ, *Lin.* Myrtaceæ, *Juss.*

Gen. Char. *Calyx* 4-parted, superior, persistent. *Petals* 4. *Germen* oblong, cylindrical, 2-celled, with many ovules in each cell. *Style* awl-shaped, in the centre of a quadrangular elevation. *Berry* oval-oblong, 1-seeded.

Spec. Char. *Leaves* lanceolate, acuminate, entire. *Panicles* axillary and terminal, trichotomous.

Syn.—Caryophylli veri. Clusii, *Ger. Em.* 1533.

Caryophyllum *Rumph. Herb. Amb.* ii. 3. *t.* 1. 2. 3.

Myrtus Caryophyllus, *Spreng. Syst. Veget. v.* 2. *p.* 485.

Le Gerofle, Sonnerat *Voy. á la Nouv. Guin. p.* 196. *t.* 119.

Caryophyllus aromaticus, *Lin. Sp. Pl.* 735; *Gærtn. de Fruct. v.* 1. *p.* 167. *t.* 33; *Lamar. Illustr. t.* 417, *Dict. v.* 2. *p.* 718; *Bot. Mag. n. s. v.* 1. *t.* 2749; *Woodv. t.* 135; *Trans. Soc. of Arts, v.* 20. *p.* 371. *Stokes, v.* 3. *p.* 73.

Eugenia caryophyllata, *Sp. Pl. Willd. v.* 2. *p.* 965; *Ait. Kew. ed.* 2. *v.* 3. *p.* 188; *Thunb. Diss. de Caryoph. aromat. p.* 1. *Jour. de Physiq. tom.* xiv. 47. *t.* 1.

Foreign.—*Le Giroflier*, Fr.; *Il garfano aromatico*, It.; *Il clavo aromatico*, Sp,; *Gewürznäglein*, Ger.; *Givosditschka*, Rus.; *Laong*, Hind.; *Thenghio*, Chin.

The Clove-tree is originally a native of the Moluccas; and the well-known spice was for a long period the staple commodity of Amboyna, one of the principal of these islands. The lucrative trade arising from this valuable article of commerce, or of

luxury, is entirely in the hands of the Dutch, who guard their monopoly with the most illiberal jealousy. Cloves are only produced in Amboyna, and the neighbouring islands; but to prevent smuggling, and to make their command of the market more secure, they have been at the utmost pains to extirpate the clove-trees from all the other islands, and to confine the culture of them to Amboyna alone. Notwithstanding, however, the vigilance of the Dutch to secure to themselves a monopoly in this valuable spice, the French obtained some plants, which they carried to the Isle of Bourbon, about the year 1770, and thence to Cayenne, from whence its cultivation has extended to the West Indies. The clove was introduced into the Royal Gardens at Kew, in 1797, by the Right Hon. Sir Joseph Banks.

The clove-spice is produced on a very handsome tree, somewhat resembling a large pear-tree. The trunk is from fifteen to thirty feet high, a foot thick, divided into branches, four or five feet from the ground, which are slender, opposite, usually horizontal, and form a dense, pyramidal head. The leaves are opposite, persistent, somewhat coriaceous, about four inches long, with a strong midrib, and parallel lateral nerves; ovate-lanceolate, quite entire, smooth on both sides, reddish and rather shining above, paler underneath, and sprinked with minute resinous dots, and tapering at the base into a slender foot-stalk, nearly two inches long, which according to Sonnerat is the most aromatic part of the plant. The flowers are odorous, from nine to fifteen or more on a branch, in short terminal pannicles, trichotomously divided, and jointed at every division. The calyx, which is superior, consists of four ovate, concave, spreading segments, at first green, but afterwards becoming red. The petals are four, ovate, concave, yellowish-red, larger than the calyx and caducous. In the centre of the calyx, and occupying the top of the germen, is a quadrangular elevated line, into which the stamens are inserted, surrounding the base of the shortish obtusely subulate style. The filaments are numerous, much longer than the petals, bearing small yellow ovate-cordate anthers. The germen is inferior, oblong, 2-celled, with many ovules in each cell; all of which,

as stated by Professor Hooker, become abortive, or *one* proves fertile, and by its great enlargement destroys the appearance of the rest of the ovules, and of the two cells; so that the fruit, which forms a rather large elliptical purple berry, is only 1-seeded.—Fig. (*a*) represents the petals ready to fall off; (*b*) the petals as they fall off, adhering in a calyptra; (*c*) a detached petal; (*d*) the petals cohering, the stamens gradually raising them; (*e*) the rudiment of the fruit in a longitudinal section, to show the insertion of the stamens; (*f*) the fruit nearly ripe; (*g*) longitudinal section of the fruit; (*h*) front view of, and *i* back view of a stamen; (*j*) vertical section of a berry; (*k*) vertical section of a flower.

The Clove-tree, as we have before observed, is a native of the Molucca Islands; and a short time before the Portuguese took possession of Amboyna, the Cerammers of Cambello secretly carried some seeds in hollow bamboos from Machian, and thus propagated this valuable tree all over Amboyna, Ceram, and the neighbouring islands; and in the space of from fifty, to sixty years, the whole of Hoewamoehil was covered with them. This was made known to the Dutch when they first went to Cambello; and some of the first-planted trees were shown to them behind the hill *Massili:* the memory of it is likewise preserved in the traditionary songs of the Amboynese. The brave and enterprising inhabitants of Cambello were rewarded for their candour, by the destruction of all their clove-trees; whereby they were deprived of the fruits of their industrious exertions. The implacable enmity which they in consequence entertained for the Dutch, and their repeated attacks upon their forts, established by the latter, have been stigmatized by Dutch writers as a base and wicked spirit of disobedience; so that Valentyn says, "It would have been better, if, instead of extirpating their trees alone, we had at the same time, exterminated this revengeful and sanguinary nation."

The islands Honimoa, Oma, and Noussa-lant, commonly called the *Uliassers;* together with Amboyna, were the only spots in which the Dutch East India Company allowed the tree to be cultivated, and they constantly caused it to be destroyed in every

other place within their reach, especially on little *Ceram*, or *Hoewamoehil*, (exclusive of the extirpation which took place from time to time in the Spice-Islands themselves,) that the great abundance of this article, with which the ware-houses, both at Batavia and in Holland, abounded, might be moderated.

Thus the Company ordered, in December 1769, that the number of clove-trees should not be allowed to exceed 500,000, and it was further ordered in 1773, that 50,000 more should be destroyed; so that in 1775, after three extirpations, the number of trees as nearly as could be ascertained, was 513,268. Besides this number, there were 22,310 *tatanamangs*, which are trees planted by the Amboynese at the birth of each child, whereby a rough calculation is made of their respective ages. Although the natives do not oppose the extirpation of the trees in the plantations, when some of their *tatanamangs* were cut down, an insurrection took place, which it was very difficult to overcome.

It is not easy, as Dr. Hooker justly observes, to determine when the Clove was first known to Europeans. J. Bauhin asserts, that the inhabitants of the Moluccas, were scarcely acquainted with the value of the Clove, till some Chinese vessels visited the country, and transported many plants into China, after which they were distributed into other districts of India; into Persia and Arabia. Sir James Smith says, that it does not appear to have been known by the ancient Greeks, and Romans; the first distinct mention of it being by Paulus Ægineta, a Greek physician of the seventh century, as a food and medicine. Sir J. Smith also supposes it to be the *Carunfel* of Serapion, and the *Carunfel bellum* of Avicenna; both of whom were Arabian physicians.

The Clove is now cultivated wherever human industry has carried it to a suitable soil and climate; and numerous other countries possess this precious vegetable. The French introduced it into the Islands of Mauritius and Bourbon, in 1769; and it has succeeded so well, that in 1802, when M. Bory de St. Vincent was in the Mauritius, he visited the first tree that had been planted by M. Poivre; saw it loaded with Cloves; and ascertained that it had, in some years, produced the extraordinary quantity of

125lbs of this spice; whereas, the average produce in Amboyna is 2 or 2½lbs. per annum. It requires five thousand cloves to weigh a pound; consequently, there were 625,000 flowers upon this single tree, independently of others which were left for seed; "a fact," says M. St. Vincent, "which would appear incredible, were we not to mention, that this beautiful tree is at least forty feet high, throwing out innumerable branches, some of which, falling down on all sides, form a pyramid of verdure." In 1791, Mr. Hubert, the proprietor of the original spice-estate, gave a fête champêtre in honour of the extended cultivation of the spice-trees; whilst the festivals, annually held by the Dutch in Amboyna, were instituted in commemoration of their destruction in the surrounding islands.

Another French gentleman, M. Céré, sent plants from the Mauritius, to Cayenne, about the year 1779; and in 1792 the plantations contained 2500 trees, which bore cloves equal to those of the East Indies, and which fetched a higher price in France than those from the Moluccas, Others were sent to Martinique, and the French West India Islands; so that the former furnished the London market in 1797, with 350lbs; and the following year with 200lbs.; at which time St. Kitt's sent 2981lbs.

From Martinique, the Clove-tree was introduced to the Island of St. Vincent,* and under the superintendence of Dr. Anderson, at the Botanic Garden, it is brought to great perfection. In Trinidad too, the Clove is extensively cultivated, and there can be but little doubt, but that it will there become a profitable article of commerce.

The Rev. Lansdown Guilding, who wrote an account of the Botanic Garden in the Island of St. Vincent, says, "that the tree is covered with its lovely blossoms, the greater part of which prove abortive, and falling to the ground, are collected and dried for sale. The berries which remain on the tree, gradually enlarge their calyx and develop the seed, and are gathered under the trees about July, having turned to a blackish purple, and

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*The gold medal of the Society for the Encouragement of Arts, Manufactures, and Commerce, was voted in 1802 to Dr. Anderson, for a communication on Cloves and Cinnamon produced in that island.

lost all their value as a spice. The seeds require to be set out immediately and planted near the surface, as they vegetate rapidly. The young plants are tender, and should be placed, if possible, where it is intended they should remain. The Clove was once cultivated to a great extent in Dominique; in our own island, the trees, which are little valued, produce annually upwards of a million of seeds, besides the abortive fruit, which is dried as spice. The colonists supposing from our overgrown trade with India, that it can never become an article of commerce, neglect even to plant the Clove in their hedges, although it, as well as cinnamon, and many other plants, which any overwhelming change in our Eastern possessions might render invaluable, would grow without any expence."

The clove of merchandize is the unexpanded flower; the corolla forming a ball or sphere on the top, between the teeth of the calyx; thus, with the narrow base or germen tapering downwards, giving the appearance of a *nail;* hence Sir James Smith informs us, the Dutch call it *Naghel;* the Spaniards *Clavo;* the Italians *Chiodo;* and the French *Clou,* from which the English *Clove* is evidently derived.

Cloves are gathered by the hand, or beaten with reeds, so as to fall upon cloths placed under the tree; and dried by fire, or what is better, in the sun. The fully-formed berries are preserved in sugar, and eaten after dinner to promote digestion.

Qualities.—The bark, fruit, roots and leaves of the clove spice-tree are all more or less aromatic. The cloves of commerce have a strong aromatic odour, and a warm pungent taste. Infused in water, they give out to it more of their smell than to spirit, but not so much of their flavour. Alcohol takes up all the virtue of cloves. By distillation with water, they yield a fragrant essential oil, which is not very pungent; but which is said to be generally rendered acrid, by a portion of the resinous extract obtained by the action of alcohol on cloves being dissolved in it.

Cloves should be chosen large sized, perfect in all parts, heavy, of a fine fragrant smell, and hot aromatic taste, so as almost to inflame the throat; the colour should be dark-

brown, almost approaching to black, and when handled should leave an oily moisture on the fingers. When *fresh gathered*, cloves will yield, on simple pressure, a fragrant, thick, reddish oil. Sometimes they have a considerable portion of their essential oil drawn from them, and are then mixed with those that retain it. By this mixture the purchaser may be deceived; but on examination, those Cloves which have lost their virtue, always continue weaker then the rest, and of a paler colour; and whenever they look shrivelled, having lost the knob at the top, and are light or broken, with but little smell or taste, they should be rejected. As Cloves readily absorb moisture, it is not uncommon when a quantity is ordered, to keep them near a vessel of water, by which means a considerable addition to weight is made. The ton is 12 cwt. for freight.

When new, *oil of cloves* is of a pale reddish brown colour, (which becomes darker by age) extremely hot and fiery, and sinks in water. The kind generally exported from India, contains nearly half its weight of an insipid expressed oil, which is discovered by dropping a little into alcohol; when, on shaking it, the genuine oil mixes with the spirit, and the adulteration seperates. It is sometimes adulterated with a cheaper essential oil: to discover this, dip a rag into it and hold it before the fire; the flavour of the genuine oil will fly off, leaving that of the added behind.

Medical Properties and Uses.—Cloves are generally conceded to be the most stimulating of aromatics, and are chiefly employed to impart a pleasant flavour, or to correct the irritative properties of drastic medicines. The essential oil is sometimes added to extracts for the same purposes, and is a popular remedy for tooth-ache. The infusion of Cloves is a warm and grateful stomachic, and is advantageously employed to "relieve the sense of coldness in the stomach, which attends some forms of dyspepsia," especially when arising from the abuse of ardent spirits, from chronic gout, or flatulent colic. The Dutch join it with cinchona and supertartrate of potass, in obstinate agues. Twenty cloves are added in powder to half an ounce of each of the other ingredients, and half a drachm is given

every third or fourth hour. In dyspepsia, and as a vehicle for other medicines, ʒij of cloves are infused in half a pint of boiling water, and administered in the dose of ounce and a half, or two ounces. The essential oil is made into an agreeable draught by diffusing it in water, with mucilage; and a syrup, is sometimes made from the aromatic clove, coloured with cochineal. Cloves are used in their native climate, and in almost every part of the civilized world, as an article of luxury, communicating a pleasant flavour to preserved fruits, sauces, ragouts, and liqueurs. They are likewise used by the perfumer.

Dose. In substance, from gr. v. to gr. x.

Off. Prep.—Infusum Caryophyllorum, L. D.

Pl 124

Myrtus Pimenta.

for the Authors July 1. 1820.

MYRTUS PIMENTA.

Pimento, All-Spice, or Jamaica Pepper.

Class XII. Icosandria.—*Order* I. Monogynia.

Nat. Ord. Hesperideæ, *Lin.* Myrti, *Juss.*

Gen. Char. *Calyx* 5-cleft, superior. *Petals* five. *Berry* two or three-celled, many-seeded.

Spec. Char. *Leaves* oblong-lanceolate. *Flowers* in three-forked panicles.

Syn.—Amomum quorundam odore Caryophylli, *Clus. Exot. lib.* 1. *c.* 17; *Bauh. Hist.* 2. *p.* 194.
Myrtus arborea aromatica, foliis laurinis, *Sloanes Jam. v.* 2. 76. *t.* 191. *f.*
Caryophyllus aromaticus Americanus, *Pluk. Alin.* 88. *t.* 155. *f.* 4.
Piper Jamaicense, *Black. t.* 355.
Bay-berry-tree, *Hughes Barbad. p.* 145. *t.* 10.
Myrtus Pimenta, *Lin. Sp. Pl.* 676; *Willd.* 2. 967; *Woodv. t.* 26; *Sims in Bot. Mag. t.* 1236.

Foreign.—*Poivre de la Jamaique; Pimente; Toute-épice,* Fr.; *Gewürzmyrte; Jamaika Sfeffer,* Ger.; *Skryddpéppar,* Swed.

The Pimento or All-spice tree is a native of South America and of the West Indies. It succeeds well in our stoves, if allowed a strong heat, flowering copiously in May and June. It grows abundantly on the hilly parts of the north side of Jamaica, flowering in July, and soon afterwards ripening its fruit. It was cultivated by Philip Miller in 1732, but the date of its introduction is uncertain.

In its native soil this handsome evergreen tree usually rises with a straight or upright trunk to the height of thirty feet, branched towards the top, and covered with a smooth grey bark.

The leaves are opposite, on short footstalks, often two or three together, and vary in size and shape, but are commonly about four inches long, oblong-lanceolate, smooth, shining, pointed, and of a deep green colour. In their recent state, they have an agreeable aromatic taste, and abound in an essential oil, which appears in minute pellucid dots. The flowers are very numerous but small, and are produced in bunches or trichotomous panicles at the extremity of the branches. The calyx is divided into four roundish segments. The petals are four, reflected, and of a greenish-white colour. The filaments are numerous, longer than the corolla, spreading, of the same colour as the petals, supporting roundish white anthers. The style is simple, erect, with an obtuse stigma. The fruit is a smooth, shining, succulent berry, crowned with the persistent calyx, of a black or dark purple colour when ripe, and containing two kidney-shaped, flattish seeds.—Fig. (*a*) represents the fruit.

The pimento tree begins to fructify in three years after it is planted, and arrives at maturity at seven, when it abundantly repays the patience of the planter. It is particularly fond of a white marly or chalky soil, having a shallow surface of mould, and therefore grows well on those rocky lands which are fit for little else. The berries are picked from the branches in their green state, and are then laid on cloths spread on terraced floors. During the first and second days they are often turned, to be fully exposed to the sun. When they begin to dry they are frequently winnowed, and laid in cloths to preserve them from rain and dews, still being exposed to the sun every day, and removed under cover every evening, till sufficiently dry; which usually happens in twelve days, and is known by the darkness of their complexion and the rattling of the seeds. At this time they appear wrinkled, and are of a very dark brown colour, in which state they are stowed in bags or casks for market. Some planters kiln-dry them, and it seems the most eligible method, when, from abundance of the crop, dispatch and security against rain are so very essential.

The more odoriferous and smaller the berries are, the better

are they reckoned. The leaves and bark of the tree are full of aromatic inflammable particles, on account of which the growers are extremely cautious not to suffer any fire to be made near the walks, for if it once catch the trees, they consume with great rapidity. Nothing, it is said, can be more delicious than the odour of the walks in which the trees are planted, particularly when they are in blossom. The friction of the leaves and smaller branches, even in a gentle breeze, diffuse a most fragrant scent through the air, which is thought to render it very salubrious.

Qualities and Chemical Properties.—The berries of the pimento have a resemblance in smell and taste to cloves, juniper-berries, cinnamon, and pepper, or rather a peculiar mixture, somewhat akin to them all; hence their name of *All-spice*. The aromatic odour and warm pungent taste reside chiefly in the capsule, or cortical part of the berry. Its virtues are extracted by water, alcohol, and ether. The watery infusion is of a brown colour, and reddens infusion of litmus. With sulphate of iron it strikes a black colour, and lets fall a precipitate. Nitrate of mercury precipitates it of a yellowish brown; superacetate of lead, of a dirty green; and nitrate of silver, of a deep reddish brown colour. It forms a precipitate with the infusion of yellow bark. The sulphuric and muriatic acids redden it, and throw down a rose-coloured precipitate. The nitric acid forms no precipitate, but gives a yellow hue. The alcoholic tincture is rendered milky, and after a time precipitates by water; the ethereal, when evaporated in water, deposits drops of a greenish-yellow volatile oil, a pellicle of pungent nauseous-tasted resin, and some extractive. Hence pimento appears to contain a volatile oil, resin, extractive, tannin, and gallic acid. The essential oil is very grateful, and so ponderous as to sink in water.

Medical Properties and Uses.—As a condiment pimento is very generally employed; and in medicine is much used as an adjunct to bitters in dyspepsia when attended with much flatulence; also in athritic and hysterical affections. The watery infusion, sweetened with sugar and added to a little milk, is readily taken by children, and is an excellent cordial in malignant

measles, scarlatina, small-pox, and other fevers of a typhoid description. But it is principally employed to cover the taste of other medicines, and to impart warmth.

Off. Prep.—Aqua pimenta. L. E. D.
Oleum pimentæ. L. E. D.
Pilulæ opiatæ. E.
Spiritus pimentæ. L. E. D.
Syrupus rhamni. L.

Punica Granatum.

PUNICA GRANATUM.

Common Pomegranate Tree.

Class XII. ICOSANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. POMACEÆ, *Lin.* MYRTI, *Juss.*

GEN. CHAR. *Calyx* 5-cleft, superior. *Petals* 5. *Pome* many-celled, many-seeded.

SPEC. CHAR. *Leaves* lanceolate. *Stem* arboreus.

Syn.—Malus Granata sive Punica, *Ger. Em.* 1450.
Malus Punica sylvestris et sativa, *Bauh. Pin.* 438; *Raii. Hist.* 1462.
Malus Punica, *Camer. Epit.* 130. 131.
Malus Punica sylvestris, sive Balaustium, *Park. Theatr.* 1511.
Punica spinosa, *n.* 1098. *Hall. Hist; Du Hamel Traite des Arbres, t.* 2. 193.
Punica Granatum, *Sp. Pl. Willd.* 2. 981; *Lamarck Illustr.* 415; *Sm. Fl. Græc. Sibth. v.* 1. 476; *Woodv.* t. 58; *Stokes,* 3. 84.
FOREIGN.—*Le Grenadier,* Fr.; *Pomo Granato,* It.; *Granado,* Sp.; *Roma,* Port; *Granatass felschale,* Ger.; *Granatnik,* Russ.; *Rana,* Arab.; *Anár.* Hind.

THE Punica *Granatum* is a native of the southern parts of Europe, of Arabia, Japan, Persia, and Barbary, and is much cultivated in India and Ceylon. Mr. Crawford says, that in the Indian Archipelago it is found only in a cultivated state, and that the finest fruit is brought into Upper India, from Eastern Persia; while Olivier, in his travels in the Ottoman Empire, informs us that those of Ghemlek are the finest in Turkey. It is also introduced into the West Indies from Europe, and bears fruit of a very superior description. It blossoms luxuriantly in our own country, but as the flowers are generally monsters, fruit is seldom met with, and never of a proper flavour. By the Romans it was called the Punic Apple. The

tree was well known to the ancients, and Venus is fabled to have planted the first in Cyprus. It is said by Theophrastus to inhabit the same spots that the myrtle does, but although it is still found in Macedonia, the latter plant is not to be seen with it. According to Dierbach* it is the ποα ειδη of Hippocrates, and Pliny refers to it in the following terms: "Interior Africa ad Garamantas usque, et deserta palmarum magnitudine, et suauitate constat, nobilibus maxime circa delubrum Hammonis. Sed circa Carthaginem Punicum malum cognomine sibi vindicat."—lib. xiii. ch. 19, p. 197.

This tree rises to the height of eighteen or twenty feet; it is covered with a brownish bark, and is divided into many slender branches, which are armed with spines. The leaves are opposite, or ternate, about three inches long, sessile, wavy, entire, oblong or lance-shaped, pointed at both ends, and of a bright green colour. The flowers are large, of a rich scarlet colour, solitary, or two or three together; and are produced at the extremities of the young branches, from June to September. The calyx is bell-shaped, thick, fleshy, of a fine red colour, and divided into five acute segments. The corolla is composed of five large roundish wrinkled petals, rather spreading, and of a scarlet colour. The filaments are numerous, capillary, furnished with oblong yellow anthers, and inserted into the tube of the calyx. The germen is inferior, roundish, with a simple style, the length of the stamens, and capitate stigma. The fruit is as big as an orange, globular, and somewhat compressed; containing numerous angular, seeds, each enveloped in a distinct very juicy rose-coloured pulp, and is crowned with the calyx, and covered with a thick tawny coriaceous rind. Fig. (*a*) represents a section of the flower; (*b*) a single stamen, with its anther.

Qualities and Chemical Properties.—The flowers (*Balaustra* of the ancients†) are of a beautiful red colour,

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* Materia Medica of Hippocrates.

† Flos balaustrum vocatum, et medicinis idoneus, et tingendis vestibus, quarum color inde nomen accepit.—*Pliny, l. c.*

nearly inodorous, but somewhat of a styptic flavour. The juice, which is contained in the membranous cells, exhales a vinous odour, when fresh; it is of an agreeable subacid taste, is refreshing, and contains a great deal of mucilage united to a little tannin. The bark of the fruit has been used in the art of tanning, and, besides mucilage, contains a volatile oil, and tannin.

Medical Properties and Uses.—The pulp of the fruit may be eaten by patients who are suffering from the thirst of ardent fever; and combined with sugar, or honey, is very refreshing. By some it is said to be diuretic. "The Hindoo doctors prescribe it, combined with saffron, when the habit is preternaturally heated." The bark of the fruit is a powerful astringent, and as it readily gives out its properties to water, it has been strongly recommended by Dr. Cullen as a medicine of which we may frequently make use for relaxation of the gums and throat, for chronic diarrhœa, blenorrhagia, prolapsus of the rectum or uterus, &c. It is also prescribed with considerable success in those profuse perspirations, and in the colliquative diarrhœa which accompany the last stages of phthisis pulmonalis. The flowers possess the same virtues, but in a milder degree.

The Mahometan physicians consider the bark of the root to be a specific in cases of tape-worm;* and it is probable that they borrowed their knowledge from Avicenna, who is said to be their favourite author.† They boil two ounces of the fresh bark, in a pint and a half of water, till half only of that quantity remains; of this, when cold, a wine glassful is drunk every half hour, till the whole is taken. It occasionally produces a little nausea, says Dr. Ainslie, but seldom fails to destroy the worm, which is soon passed. Celsus also refers to the same practice in the following words, "Vel etiam pridie, cum mul-

* Vide Ainslie's Materia Indica, vol. i. p. 323.

† Acetosum est plurimu prouocans vrinam, quàm dulce; et ambo sunt prouocatina, et grana granati cum melle conferunt viceribus ani, et quod acétosum est, nocet (stomacho) et intestinis, et eius succus confert solutioni cholericæ, et confortat stomachu, et cortex radicis granati cum vino extrahit vermes, et ascarides, et assumitur cum sua dispositione, aut sumitur eius decocto. *Avicenna, Tractatus Secundus. Fol.* 329.

tum allium ederit vomat: posteroque die mali Punici tenues radiculas colligat, quantum manu comprehendet; eas contusas in aquæ tribus sextariis decoquat, donec tertia pars supersit; huc adjiciat nitri paulum, et jejunus bibat. Interpositis deinde tribus horis, duas potiones sumat, aut aquæ, vel muriæ duræ sit adjecta: tum desidat, subjecta calida aqua in pelve."* And we should suppose that M. Gomes, a Portuguese physician, who has written a treatise on the subject, is indebted to one of these sources for the suggestion. This gentleman has detailed sixteen cases of its successful employment, and since M. Merat has translated his work, and published it in the sixteenth volume of the *Journal Complémentine,* its efficacy has been confirmed by numerous experiments. Amongst others, M. Bourgeoise, has published many interesting facts upon the subject, in the Bibliotheque Medicale, (Dec. 1824,) and calculates that he has relieved thirty-four cases.

" Vegetable broth and spare diet are prescribed until the decoction be given. The evening before the medicine be taken, it is usual for the patient to take an *ounce* and a half, or two *ounces* of castor oil, with an equal quantity of syrup of lemons.

Decoction of the Bark of Pomegranate Root.

Take of fresh, but dry bark of the root of the pomegranate (bruised) . .	2 ounces.
Common Water . . .	2 pints.

" Macerate without heat twenty-four hours, then boil gently until it be reduced to one pint, and strain.

" This quantity of decoction is to be taken in three doses, one every half-hour, or every three-quarters of an hour.

" Usually in an hour, seldom so long as two hours after the third dose, the tenia is brought away entire, wound up into a ball, and strongly knotted in many places.

" Sometimes the first and the second doses are rejected from the stomach; notwithstanding which the third dose must be taken. It has been stated that the medicine given in the manner described may produce serious consequences.

" M. Bourgeoise, who gave it always in this manner, has never observed any thing which has induced him to give a less quantity: he has even used it in a stronger dose. If the tenia should not come away in an entire state, the vermifuge decoction should be repeated the following day." (*Majendie's Formulary.*)

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* A. Corn. Celsi de Med. l. iv. c. 17.

Amygdalus communis.

London, Published by John Churchill, Leicester Square, Nov.r 18.

AMYGDALUS COMMUNIS.

The Common Almond-tree.

Class XII. Icosandria.—*Ord.* I. Monogynia.

Nat. Ord. Pomaceæ, *Lin.* Rosaceæ, *Juss.*

Gen. Char. *Calyx* 5-cleft. *Petals* 5. *Drupe* with a nut perforated.

Spec. Char. The lower serratures of the leaves glandular; the flowers sessile, and in pairs.

Syn.—Amygdalus *Park. Theatr.* 1515; *Ger. Em.* 1445.
Amygdalus amara et dulcis, *Bauh. Hist.* 1. 174.
Amygdalus foliis glabris, *Hall. Stirp. Helv. n.* 1080.
Prunus Amygdalus, *Stokes, Bot. Mat. Med.* 3. 101.
Amygdalus communis, *Lin. Sp. Pl.* 677; *Willd.* 2. 982; *Woodv.* 2. 230. *t.* 83.
Foreign.—*Amandes douces et amares,* Fr.; *Mandorli dolce et amore,* Ital.; *Almendra,* Span.; *Bittere ünd Susse Mandeln,* Ger.; *Ba-da-mie Farsie,* Hind.

The Almond-tree is a native of Syria, but is now completely naturalized in the south of Europe, and will even perfect its fruit in the most favourable parts of our island. In this country, however, it is raised chiefly on account of its being highly ornamental in shrubberies, plantations, and other descriptions of pleasure-grounds, from its coming into bloom early in the spring, before the leaves are expanded.

This tree rises to the height of about twenty feet, is much branched, and covered with a greyish bark. The leaves, which considerably resemble those of the peach, are three or four inches long, elliptical, petioled, narrow, pointed at each end, serrated,

with small glands at the base, and of a bright green colour. The flowers are in numerous pairs, sessile or on very short foot-stalks, varying in colour from rose-red to snow-white, and appear in March and April. The calyx is tubular, reddish externally, and divided at the margin into five blunt segments: the corolla consists of five ovate, concave petals, irregularly notched and waved at the edges, and inserted by narrow claws into the calyx; the filaments about thirty, cylindrical, unequal, shorter than the corolla, inserted into the calyx, and furnished with roundish orange-coloured anthers; the germen is downy at the base, with a short, simple style, supporting a round stigma. The fruit, as well as the leaves, resemble those of the peach-tree, a species of the same genus; but is more flat, and instead of possessing the rich pulp of the latter, has a tough coriacious covering, which opens spontaneously at the longitudinal furrow, when ripe. The kernel, which is the Almond of the shops, is inclosed in an oblong, flattish, brittle, spongy shell, of a brown colour, pointed at one end, and composed of two cotyledons enveloped with a thin brown skin. Fig. (*a.*) represents the pistil; *(b)* a portion of the calyx, shewing the insertion of the stamens; *(c)* the front view of an anther magnified, *(d)* the back of an anther; *(e)* the shell, *(f)* the kernel, or almond.

The Almond-tree is common in China, and most parts of Asia, as well as in Barbary, where it is a native. In the south of France it is much cultivated, especially in Provence and Dauphinè, for the sake of the fruit, which is rarely matured in England. Cato termed almonds *Nuces Græcæ,* or Greek nuts, from which it is inferred that the tree was not cultivated in Italy, in his time. It appears, however, to have been known at a very remote period, and is mentioned by Hippocrates, Theophrastus, and other ancient authors. It was cultivated in England by Lobel previously to the year 1750; and is a great favourite in the shrubbery, blossoming sometimes as early as February, and forming a most enchanting harbinger of spring.

Of the Almond we have two sorts, the sweet and bitter, which are the produce of mere varieties of the same species, although the fruits themselves differ so much in their sensible properties.

The kinds of Almond chiefly cultivated for their fruit are, the common sweet Almond; the tender shelled; hard shelled; sweet Jordan; and bitter Almond.

"Sweet Almonds are imported in mats, casks, and cases: the bitter, which come chiefly from Magadore, arrive in boxes. When the Almond is not well preserved, it is preyed on by an insect that eats out the internal part; or, if this does not happen, the oil it contains is apt to become rancid."

Qualities and Chemical Properties.—The kernel of the fruit of the Sweet Almond, is inodorous, and farinaceous, and contains a large proportion of oil, which is more pure, and less rancid, than olive oil.* M. Boullay's analysis is as follows:

Oil	54
Albumen	24
Sugar (fluid)	6
Fibre	4
Gum	3
Pellicles	5
Water	3 5
Acetic acid and loss .	5
	100

Previously to being used, Almonds are decorticated, or blanched, by putting them in boiling water.

"The *bitter almond*, is also inodorous when entire, but when triturated with water, has the odour of the fresh blossom; and the taste is the pleasant bitter of the peach kernel." The expressed oil of bitter almonds, does not differ from that afforded by the sweet; both sorts, are therefore used indiscriminately; but the remains of the former, after expression, retain all their peculiar virtues, and bitterness. M. Vogel, in his experiments

* It is on account of this property that the oil of almonds is much used in perfumery, and in the composition of nostrums for the hair: thus *Macassar oil* consists merely of oil of almonds coloured red with alkanet root, and flavoured with oil of cassia: *Russia oil* is oil of almonds rendered milky by the addition of a small portion of ammonia or potash, and scented, we believe, with oil of roses.

on, and analysis of the bitter Almonds, gives the following proportions of the substances in 100 parts.

Peelings	8 5
Fixed oil	28
Albumen	30
Sugar	6 5
Gum	3
Parenchyma vegetable .	5
Essential oil and prussic acid	

The *essential oil* is best obtained by distilling Almond-water with barytes, to separate the prussic acid. In close vessels it is very volatile; exposed to the air, it becomes solid, crystalline, inodorous, and of considerable fixity. The crystals are a compound of it with oxygen, for oxygen is absorbed during the fermentation, and if they are dissolved in hydro-sulphuret of ammonia, they are again decomposed, and the original odour, and oil are produced. M. Robiquet, led by his own particular views of aroma, which are fully detailed in Vol. X. p. 109, of the Journal of Science, attributes the loss of odour, to the loss of ammonia; and its restoration, to the ammonia, added in the hydro-sulphuret.

" With a view to illustrate the true cause of the phenomena, M. Robiquet lately experimented on this subject. He found, that instead of taking place in a few minutes, the crystallization sometimes required several days; and, in consequence, he was led to distil the oil, collecting the results in different portions. In this way he found, that the first portions underwent no change in contact with the air, but that the last portions crystallized immediately on exposure to it, or to oxygen, with absorption of the gas; whilst in nitrogen, hydrogen, carbonic acid, or in the torricellian vacuum, no change took place.

" By further examination, it was ascertained that the most volatile portion of the oil contained nitrogen, as an element; for when boiled with solution of potash, it gave prussiate of potash, and when heated with oxide of copper, nitrogen. The less volatile and crystallizable parts contained no nitrogen; and when pure and in crystals, it was found that the odour of bitter almonds was not given to them by hydro-sulphuret of ammonia. The crystalline matter appears to be an acid substance; it reddens litmus; it is soluble in boiling water, and crystallizes by cooling; it is fusible, and readily volatile; it unites to alkalies, and appears to have no analogy with the oil from which it is derived.

" These two parts of the oil of bitter almonds, when examined as

to their action on the animal economy, were found entirely different; the more volatile was excessively poisonous, but the crystallizable matter was quite inert. M. Robiquet, in considering the nature of the principle containing nitrogen, is inclined to consider it as different from prussic acid, though readily convertible into it. Fixed alkalies, for instance, exert no action on it when cold, though at high temperatures they readily form prussiates, and a crystalline substance very different from that already described. Another acid, and a resinous matter, is also found at the same time.

" M. Robiquet, in a note, considers the oil of the cherry laurel as identical with that of bitter almonds.—*Ann. de Chim.* xxi. 250."

Poisonous effects. It will be seen, from the following interesting details, that the bitter almond, given in substance, is exceedingly poisonous, and the distilled water causes an action resembling that of laurel water, producing vertigo, headache, dimness of sight, vomiting, and occasionally epilepsy.

" A cat, two months old, swallowed a drachm of bitter almonds pounded. In a short time after, it dragged along its hind legs, became paralytic, and experienced four attacks of epilepsy. In the evening, the respiration became panting, and it died. The stomach was red at its orifices, and contained mucus: the heart and auricles were filled with fluid blood; there was an effusion of blood throughout all the right side.—*Orfila.*

" Some pigeons were made to take somewhat less than a drachm of bitter almonds pounded; they walked about for a few minutes; but in a short time their crops and necks swelled out, their feathers became erect: at length they fell down as if epileptic; their heads were reflected upon the back; they remained motionless, and senseless, and soon expired. The œsophagus was found somewhat inflamed, very much dilated, and full of mucus; the duodenum contained chyle, viscid and yellow; the blood in the sub-axillary vessels was fluid, and of a vermillion colour; the cerebellum was distended with blood; the lungs appeared sound.—Wepfer, *De Cicuta aquatica,* pp. 239 and 241.

" Twenty bitter almonds, each of them cut into three pieces, were introduced at noon into the stomach of a small robust dog: the œsophagus was then tied. At the end of an hour and a half, the animal began to experience vertigoes, and weakness of the posterior extremities. He died at six in the evening. The *Dissection* took place an hour after. The animal was still warm; the heart no longer contracted, and contained a very small quantity of blood; the lungs were greyish, the stomach, which was sound, contained the fragments of the almonds, and exhaled a strong smell of Prussic Acid, whilst, before the ingestion, these seeds were devoid of smell; the duodenum was lined with a substance similar, for its texture and colour, to the yellow matter of the bile; no lesion was perceived in the digestive canal."—*Orfila.*

" One drop of the essential oil of bitter almonds (says Mr. Brodie) was applied to the tongue of a young cat. She was instantly seized with violent convulsions; then lay on the side motionless, insensible, breathing in a hurried manner; the respirations became laboured, took place at longer and longer intervals, and at the end of five minutes from the application of the poison had entirely ceased, and the animal was apparently dead; but on opening the thorax, the heart was found acting regularly eighty times in a minute, circulating dark-coloured blood, and it continued to act for six or seven minutes afterwards.

" I injected into the rectum of a cat, half an ounce of water with two drops of the essential oil. In two minutes afterwards he was affected with symptoms, similar to those which occurred in the last experiment; and, at the end of five minutes from the injection of the poison, he was apparently dead. Two minutes after apparent death the heart was found acting eighty times in a minute. On *dissection* no preternatural appearances were found either in the internal membrane of the rectum, or the brain. The symptoms produced by this poison, and the circumstance of the heart continuing to contract after apparent death, lead to the conclusion, that it occasions death by disturbing the functions of the brain.

" While engaged in these last experiments, I dipped the blunt end of a probe into the essential oil, and applied it to my tongue, meaning to taste it, and having no suspicion that so small a quantity could produce any of its specific effects on the nervous system; but scarcely had I applied it, when I experienced a very remarkable and unpleasant sensation, which I referred chiefly to the epigastric region, but the exact nature of which I cannot describe, because I know nothing precisely similar to it. At the same time there was a sense of weakness in my limbs, as if I had not the command of my muscles, and I thought that I was about to fall. However, these sensations were momentary, and I experienced no inconvenience whatever afterwards.

" From the instantaneousness with which these effects are produced; and from its acting more speedily when applied to the tongue, than when injected into the intestine, though the latter presents a better absorbing surface, we may conclude that this poison acts on the brain through the medium of the nerves, without being absorbed into the circulation."

From other experiments Mr. Brodie ascertained that the effects of the essential oil of almonds when applied to a wound, are not so instantaneous as when applied to the tongue; otherwise there is no difference in its effects, in whatever manner it is applied.

Dioscorides, Fœnisius, Matthiolus, Tabernæmontanus, Vicat, and others, narrate instances of foxes, squirrels, fowls, cranes, ducks, canary-birds, and weazles, being killed by bitter Almonds.

TREATMENT.—See TOBACCO, *art.* XXXVII.

Medical Properties and Uses.—Almonds are demulcent, and the expressed oil is sometimes converted into an emulsion, by triturating it with mucilage and sugar, and gradually adding distilled water; the diffusion is, however, not very perfect, but a combination more complete and permanent is effected, by adding a few drops either of liquor ammoniæ, of liquor potassæ, or a few grains of the subcarbonate of potass, to the oil, swimming on the water, and without the mucilage. A more elegant emulsion is produced by the confection of almonds, which forms a useful vehicle for tincture of squills or of opium; and is advantageously administered for tickling coughs, for irritation of the urinary organs, especially if produced by blisters, and likewise for common drink, where the mucous membrane of the stomach has been irritated by corrosive poisons. By triturating camphor and the resins with almonds, they are rendered miscible with water. Sweet almonds, when fresh and free from rancidity, are much used as an article of diet, and when taken in moderate quantities are sufficiently nutritive and wholesome. Yet too freely indulged in, they are of difficult solution and digestion, and are very apt to disagree. They occasionally bring on an attack of urticaria febrilis; indeed, so powerful is this effect on one of our pupils, that three or four produce that disease in a most marked and violent manner; his whole skin being covered with weals.

Bitter Almonds have been extolled by Bergius as a remedy for intermittent fever, when mixed with decoction of bark, and he says, "Sed vidi subinde febres protractas, multis recidivis molestas, et quæ chinchinam penitus eluserant, sola tandem emulsione amara curatas." Dr. Mylius of Russia, has successfully administered, for the same disease, from a drachm and a half, to two drachms, formed into an emulsion with three ounces of water. An emetic was first prescribed, and the dose given one hour before the accession of the fit. Out of twenty-seven subjects labouring under quotidian, and quartan fevers, two were cured after the second dose; four after the third; nine after the fourth; four after the fifth; four after the sixth; two after the seventh; one after the eleventh; and

one after the twelfth. They suffered neither relapse, nor consecutive disease; and the effects are attributed to the prussic acid they contain.* On account of the same property, pulmonary, and dyspeptic symptoms, have been benefited by them in our own practice; and obstinate chronic eruptive diseases sometimes yield to their external application in the form of emulsion, to which quacks frequently add the oxymuriate of mercury.† Like the Sweet Almond, they occasionally produce *urticaria*, if taken in the smallest quantity. Plutarch mentions a great drinker of wine, who by their use, escaped intoxication; the modern Italians sometimes eat them for the same purpose; and it is said that the Egyptians purify the muddy water of the Nile, by putting it into jars, rubbed inside with a paste composed of them. At the Cape of Good Hope, the wood of the Almond-tree is made into lasts and heels for shoes.

Off. Prep.—Oleum Amygdalæ. *L. E. D.*
Emulsio Amygdalæ Comp. *E. D*
Emulsio Acaciæ Arabicæ. *E. D.*
Emulsio Camphoræ. *E.*
Confectio Amygdalarum. *L.*

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* Russische Samnlung dur Naturweissen-schaft, &c.

† The nostrums for eruptions and cutaneous diseases, sold under the title of *Gowland's Lotion*, *Milk of Roses*, *Caledonian Cream*, *Kalydor*, &c. consist merely of a solution of the oxymuriate of mercury in almond emulsion, with a proportion of sugar of lead, or white oxyde of bismuth. They are thus possessed of certain stimulant and repellent properties, and though blunted in part by the medium in which they are involved, cannot fail to be highly active on the skin, and consequently injurious.

Prunus Lauro-cerasus.

CXVII

PRUNUS LAURO-CERASUS.

Common Cherry-Laurel.

Class XII. Icosandria.—*Order* I. Monogynia.

Nat. Ord. Pomaceæ, *Lin.* Rosaceæ, *Juss.*

Gen. Char. *Calyx* inferior, 5-cleft. *Petals* 5. *Nut* of the *drupe* with prominent sutures.

Spec. Char. *Flowers* in racemes. *Leaves* evergreen, bi-glandular at the base.

Syn.—Laurocerasus, *Ger. Em.* 1603; *Raii Hist.* 1549; *Camer. Hort. t.* 23; *Clus. Hist.* 1. 4; *Tourn. Inst.* 627; *Du Hamel Arbr.* 1. *t.* 133.
Cerasus trapezuntina, sive Laurocerasus, *Park. Theatr.* 1518. *f.* 2; *Parad.* 401. *t.* 399. *f.* 6.
Cerasus folio laurino, *Bauh. Pin.* 450.
Padus Laurocerasus, *Mill. Dict. n.* 4; *Lin. Hort. Cliff.* 185.
Prunus Lauro-cerasus, *Lin. Sp. Pl.* 678; *Willd.* ii. *p.* 988; *Hort. Kew.* ii. 164; *Bull. Fr.* 153; *Pallas Fl. Ros. v.* 1. *p.* 17; *Plenck. Icon.* 383; *Woodv. 2d ed.* 515. *t.* 185.

Foreign.—*Laurier-cerise,* Fr.; *Lauro regio; Lauro di Trabesonda,* It.; *Loirocerejo,* Port.; *Lorbeerkirsche; Kirschlorbere,* Ger.

The common laurel is a native of the Levant, and was cultivated in Britain as early as 1629; but the precise period of its introduction is uncertain. It is a hardy evergreen shrub, or small tree, and is planted near houses, and in shrubberies, as an ornamental plant, producing its elegant spikes of odorous white blossoms early in May. We may remark, that it is frequently mistaken for the bay, and is regarded as the plant which furnished crowns for the Roman heroes. There is no doubt, however, that it was the sweet-bay (Laurus *nobilis*) which furnished the wreath worn on the brow of the victor, and of the priestess of Delphi. The mistake is supposed to have arisen

from the bay having formerly been called laurel, and the fruit of it only named *bayes*.

The common laurel attains the ordinary stature of a plum or cherry-tree, sending off long spreading branches, covered with a smooth brown bark. The leaves are alternate, and stand upon short foot-stalks; they are elliptical or obovate, tapering towards the base, pointed and curved at the apex, minutely toothed, smooth, and polished with a prominent midrib, and of a deep green colour. At their base underneath are two small yellow glands. The flowers are in spikes, on short, simple, axillary peduncles. The calyx is inferior, bell-shaped, and divided at the brim into five obtuse segments. The corolla consists of five small white concave, roundish, spreading segments. The filaments, which are alternately long and short, are about eighteen, awl-shaped, inserted into the calyx, and furnished with roundish yellow anthers. Before the petals unfold, the stamens are inflexed, and the anthers disposed in a circular form within the rim of the calyx, as is well represented on the plate (fig. *a*). The germen is roundish, supporting a columnar style, and terminated by an orbicular stigma. The fruit, or drupe is globular, of a shining black colour, and resembling a small cherry, both in its external appearance and internal structure. Fig. (*a*) represents a section of a flower, showing the position of the stamens; (*b*) the germen and style, (*c*) the fruit; (*d*) a drupe cut across, to show the nut or stone.

Poisonous Effects.—The distilled water of this plant, the virtues of which depend on the prussic acid that it contains, is a deadly poison. When applied to wounds in animals it induces vomiting, convulsions, great prostration of strength, diminished sensibility, and death. Injected into the stomach and rectum, it excites a similar train of symptoms, excepting that, in the latter, the convulsions are more violent, and tetanus of the extremities is produced. Its action has been found most rapid and intense when injected into the jugular vein.

Many cases are on record of its effects on man, and the earliest with which we are acquainted, are contained in the 37th vol. of the Phil. Trans. by Dr. Madden of Dublin, part of whose communication we give. "A very extraordinary accident that fell out here some months ago, has discovered to us a most dangerous poison, which was never before known to be so, though it has been in frequent use among us. The thing I mean is a simple water, distilled from the leaves of the *Lauro-cerasus*. The water is, at first, of a milky colour, but the oil which

comes over the helm with it, being in a good measure separated from the phelgm; by passing it through a flannel-bag, it becomes as clear as common water. It has the smell of the bitter almond, or peach-kernel, and has been for many years in frequent use among our housewives and cooks, to give that agreeable flavour to their creams and puddings. It has also been much in use among our drinkers of drams; and the proportion they generally use it in, has been one part of laurel-water, to four of brandy. Nor has the practice, (however frequent,) ever been attended with any apparent ill-consequences, till some time in the month of September, 1728, when it happened that one Martha Boyse, a servant, who lived with a person that sold great quantities of this water, got a bottle of it from her mistress, and gave it to her mother, Anne Boyse, as a very rich cordial.

"Anne Boyse made a present of it to Frances Eaton, her sister, who was a shopkeeper in the town, and who she thought might oblige her customers with it. Accordingly, in a few days, she gave about two ounces of the water to a woman called Mary Whaley, who had bought some goods of her. Mary Whaley drank about two-thirds of what was filled out, and went away. Frances Eaton drank the rest. Mary Whaley went to another shop, and in about a quarter of an hour after she had drank the water, she complained of a violent disorder in her stomach. She was carried home, and from that time she lost her spirit, and died in about an hour, without vomiting, or purging, or any convulsion.

"The shopkeeper, Frances Eaton, sent word to her sister, Anne Boyse, of what had happened, who came to her and affirmed that it was not possible that the cordial, as she called it, could have occasioned the death of the woman; and to convince her of it, she filled out about three spoonsful, and drank it. She continued talking with Frances Eaton about two minutes longer, and was so earnest to persuade her of the liquor being inoffensive, that she poured out two spoonsful more, and drank it off likewise. She was hardly well seated in her chair, when she died, without the least groan or convulsion. Frances Eaton, who had drank somewhat above a spoonful, found no disorder in her stomach or elsewhere; but to prevent any ill consequences, she took a vomit, and has been well ever since.

"Mary Whaley was buried without being examined by any one that I can find, except the coroner. I went to see Anne Boyse about twenty-four hours after her death, but could not prevail to have her opened. She was about sixty years old; her countenance and skin appeared well coloured, and her features were hardly altered, so that she looked as one asleep. Her belly was not swelled, nor had she any other external mark of poison.

"This accident brought into discourse another of the like nature, which happened about four years since in the town of Kilkenny. A young gentleman, son to Alderman Evans, mistook a bottle of *laurel-water* for one of *ptisan*. What quantity he drank is uncertain, but he died in a few minutes, complaining of a violent disorder in his stomach. This affair was not much regarded at that time, because he laboured under a distemper, to which, or to an improper use of remedies, his death was attributed by those about him."

Then follow Dr. Madden's experiments on animals; and the same volume contains also a narration of Dr. Mortimer's.

Foderè states, that when "he was attending his studies at Turin, in 1784, the chamber-maid and man-servant of a noble family of that town, stole, for the purpose of regaling themselves, a bottle of distilled laurel-water, which they took for an excellent cordial. Fearful of being surprised, they hastily swallowed, one after the other, several mouthfuls of it: but they soon paid the price of their dishonesty, for they expired almost instantly in convulsions. The dead bodies were carried to the university for examination. The stomach was found highly inflamed, but the rest of the organs were in a sound state."*

A very interesting trial took place during the last century, from a supposition (well grounded we conceive) that the distilled laurel-water had been administered. As it is often referred to by medico-legal writers, we think it right to give the account, which, with some remarks of Professor Beck, are quoted from his invaluable work on Medical Jurisprudence; the pamphlet, containing an account of the trial, taken in short-hand by Mr. Gurney, being so scarce that we are unable to obtain it.

"Sir Theodosius Broughton was a young gentleman of fortune in the county of Warwick, and nearly arrived at the age of twenty-one. His mother and his brother-in-law, Captain Donellan, and his sister, (Mrs. Donellan,) resided with him. In the event of his dying before the period of his majority, the greatest part of his fortune descended to his sister, and Captain Donellan would thus become entitled to a life-estate in it. Sir Theodosius was labouring under a slight syphilitic affection, for which he was attended by Mr. Powell of Rugby. His general health is, however, stated to have been good. On the 29th of August, 1780, Mr. Powell sent him a draught to be taken on the next morning, consisting of rhubarb and jalap, each fifteen grains; spirits of lavender, twenty drops; nutmeg-water, two drachms; simple syrup, two drachms; and an ounce and a half of simple water. The bottle containing this draught was placed on a shelf in his bed-room. He returned in the afternoon of this day from fishing, in good health and spirits. In the morning, a servant awoke him at an early hour, for the purpose of obtaining some straps for a net. He arose, and went into the next room for them. Even now he appeared in perfect health. About seven a.m. Lady Broughton got up and went into his room, as he had before desired her, to give him the medicine. She enquired whether he had taken it, or whether he chose that she should give it to him. He desired her to reach down the draught which was labelled "Purging Draught for Sir T. B.," and she poured it into a cup, for the purpose of his taking it. He had not, however, swallowed more than half of it, when he complained that it was so nauseous to the taste, and disagreeable to the smell, that he did not apprehend he should be able to keep it on his stomach. This remark induced Lady Broughton to smell the draught. She found it very peculiar in this respect, and observed to him that it smelt very strongly of bitter-almonds. He ate some cheese in order to take the taste out of his

* Foderè, vol. iv. p. 27.

mouth, and afterwards washed his mouth with some water. In about two minutes after swallowing the draught, he appeared to struggle very much, as if to keep it down, and had a rattling and guggling in his stomach. These symptoms continued about ten minutes, when he seemed to Lady Broughton to be inclined to go to sleep, and she left the room. She returned again in about five minutes, and was surprised to find him with his eyes fixed upwards, his teeth clenched, and froth running out of his mouth. He died in about half an hour afterwards, never having spoken since he took the draught.

" Captain Donellan came into the room when Sir Theodosius was dying, and inquired of Lady Broughton where the physic-bottle was. She showed it to him. He immediately took and poured water into it, shook it, and then emptied its contents into the wash-hand basin. And he persisted in doing this with another bottle, although Lady Broughton remonstrated, and objected to his conduct. Mr. Powell was sent for, but arrived after the death of Sir Theodosius. It appeared also in evidence, that Capt Donellan had a still in his own room, and that he had used it for distilling roses.

" Some days after the death of Sir T., he brought this still to one of the servants to be cleaned. It was full of lime, and the lime was wet. On the other hand, it appeared on the cross-examination of Lady Broughton, that Sir T., a short time before his death, had bought arsenic to poison fish, and some of this was afterwards found locked up in his closet. Suspicions soon began to be excited as to the cause of this sudden decease, and when these reached the ears of Sir W. Wheeler, the guardian of the young baronet, he wrote to Capt. Donellan, informing him of the rumours that were abroad, and requesting him to have the body opened, to satisfy the family and the public. Donellan immediately assented to this, and sent for some medical gentlemen. He, however, did not explain to them the cause of his request; and as they were thus led to suppose it merely an ordinary case, they declined the performance, on account of the putrefaction of the body. It is not necessary, nor indeed does it belong to this statement, to enumerate the various devices by which Donellan evidently attempted to elude the wishes of Sir W. Wheeler respecting a dissection. On the eighth day after death the body was buried; but it was taken up immediately after by the coroner and opened. It was found swollen and distended, the face was black, the lips swollen and retracted, and showing the gums, the teeth black, the tongue protruding, and the skin spotted in various parts of the body. ' The orifices and small arch of the stomach, and the intestines, bore the appearance of inflammation; the heart was natural, the lungs were suffused with blood, looking red, and spotted in many places with black specks; and on the back part, the blood had settled in a deep-red colour, almost approaching to purple; the diaphragm was in the same state, and in general upon the depending surfaces of the body, the blood was settled in the like manner: the kidnies appeared black as tinder, and the liver was much in the same state.' There was also some extravasated blood in the thorax.

" Several physicians and surgeons deposed, that they performed experiments on animals with laurel water, and found the effects very

similar to the symptoms produced in Sir T. Broughton's case. Death succeeded in a few minutes, after having been preceded by convulsions. The appearances on dissection also agreed.

"It may be mentioned in this place, that Mr. Powell prepared a draught precisely alike to that which he had sent to the Baronet, with the addition of some laurel-water; and Lady Broughton on being requested to smell it, stated that it resembled the one she had given to her son.

"The counsel for the prisoner, in their cross-examination, inquired of the medical witnesses, whether the presence of epilepsy or apoplexy would not account for the symptoms observed? To this a negative answer was given. Dr. Parsons thought they resembled the latter most, but he was decided in attributing them to the effects of the medicine. Sir Theodosius was young, of a spare habit, and it was, therefore, very improbable that apoplexy should have caused his death. They also inquired, whether the appearances observed on dissection might not be the effects of putrefaction. It was allowed that the external might; but not the internal.

"On the part of the prisoner, the celebrated JOHN HUNTER was summoned as a witness: and the judge (the Hon. F. Buller) in summing up the evidence, after stating that four medical witnesses were decided in attributing death to the effects of the laurel water, made the following comments on his testimony:—'For the prisoner, you have had one gentleman called, who is likewise one of the faculty, and a very able man. I can hardly say what his opinion is, for he does not seem to have formed any opinion at all of the matter. He, at first, said he could not form an opinion whether the death was or was not occasioned by the poison, because he could conceive that it might be ascribed to other causes. I wished very much to have got a direct answer from Mr. Hunter, if I could, what, upon the whole, was the result of his attention and application to the subject, and what was his present opinion, but he says he can say nothing decisive. So that upon this point, if you are to determine upon the evidence of the gentlemen who are skilled in the faculty only, you have the very *positive opinion* of four or five gentlemen of the faculty that the deceased died of poison. On the other side, you have what I really cannot myself call more than the *doubt* of another: for it is agreed by Mr. Hunter, that the laurel-water would produce the symptoms which are described. He says an epilepsy or apoplexy would produce the same symptoms; but as to an apoplexy, it is not likely to attack so young and so thin a man as Sir Theodosius was; and as to epilepsy, the other witnesses tell you they don't think the symptoms which have been spoken of, do show that Sir Theodosius had epilepsy at the time.'"

The jury retired for about an hour, and then brought in a verdict of guilty, and Capt. Donellan was executed.

It was and still is (says Professor Beck) a prevailing opinion with many, that Sir T. Broughton was not poisoned, and that the captain was innocent. Dr. Male notices this case as "a melancholy and striking instance of the unhappy effects of popular prejudice, and the fatal consequences of medical ignorance." Mr. Phillips, in his

"Theory of Presumptive Proofs," adduces it as an instance where a man was unwarrantably condemned on circumstantial evidence.*

As a medical man, it might be enquired of Dr. Male, whether the symptoms preceding this death have not been most strikingly and astonishingly verified, as probably originating from laurel-water, by the subsequent investigations of chemists and physicians. Mr. Hunter says, in his testimony, that he had never known laurel-water to act so rapidly as the other medical witnesses described. He had injected it into the veins and into the stomach of animals, *but it never produced so quick an effect.* Who, have subsequent trials proved to be correct on this point—Mr. Hunter, or the other witnesses?

The fact of Capt. Donellan's having a still is cautiously omitted in Mr. Phillips' statement of the case, and it is evident from his comments, that they are founded on imperfect information concerning the subject in dispute.

The *oil of laurel* also acts as a virulent poison, and in a similar manner to the *distilled water.* The *watery extract*, however, according to Orfila, is very feeble, and comparatively innoxious in its operation. For the effects of bitter almonds, and of their essential oil, we refer our readers to Art. XLIII. Vol. I. of this work.

The kernels of the peach are very often distilled for the purpose of impregnating *eau de noyau*, and if too strongly impregnated with the oil, it must prove noxious. The late Duke Charles of Lorrain nearly lost his life by swallowing a small quantity of this liquor, and although we are unable to furnish our readers with the particulars, several fatal cases have occurred in England.

Qualities and Chemical Properties.—The leaves and bark of this tree are of a bitter, somewhat acrid taste, and have a smell characteristic of the volatile oil which they contain. This oil is most abundant in the leaves when gathered in the autumn. It is formed of two parts; one crystallizable, the other uncrystallizable and very poisonous. A particular vegetable principle which has been long known, but has till lately been confounded with gum, exudes nearly in a pure state from this and some other trees. To it, Dr. John gave the name of *cerasin*. *Cerasin* is a solid substance possessing the appearance of gum, and is distinguished by a similar taste. It is usually harder than gum, and not so easily reduced to powder; when put into water, it imbibes that liquid, swells up considerably, and becomes semi-transparent, and gelatinous, but is not in the least soluble. It dissolves in boiling water, but again precipitates when the liquid cools, and remains in the state of a jelly. Cerasin is insoluble in alcohol and ether. *Gum Tragacanth* may

* Appendix to his Law of Evidence, p. 30.

be considered as pure *cerasin.* But the most important product of the Prunus *lauro-cerasus* is the volatile oil (*prussic* or *hydrocyanic acid*) which it yields on distillation, and the poisonous effects of which are particularly adverted to when speaking of distilled laurel-water.

Prussic acid, when obtained for medicinal purposes, is however procured in a different manner; and as it is all-important that it be of uniform power, we give Vauquelin's method, which is principally recommended by British practitioners, and resorted to by our best chemists. M. Vauquelin obtains it by decomposing the cyanuret of mercury by sulphuretted hydrogen. To a retort he adapts a globe, containing a mixture of sulphuret of iron and diluted sulphuric acid. The cyanuret of mercury is placed in a horizontal tube, bent to a right angle, at the extremity of which, enters the globe. The cyanuret of mercury is placed in the horizontal part of the tube, near the extremity attached to the globe. Beyond the deuto-cyanuret, fragments of carbonate of lead and of chloruret of calcium are placed, the former to absorb the small quantity of sulphuretted hydrogen which might remain undecomposed by the cyanuret of mercury, the latter to take up the water which the hydrocyanic acid might otherwise carry along with it.

Scheeles' method furnishes an impure product, and when the new Pharmacopœia appears, we hope to find a standard rule for procuring so powerful a medicine.

Prussic acid, at the ordinary temperature, is liquid, transparent, and colourless; its taste, at first of an agreeable freshness, soon becomes acrid and irritating; it slightly reddens the tincture of turnsol. Its odour is powerful and noxious; being insupportable when not mixed with a large proportion of air—it then resembles the smell of bitter almonds. Prussic acid is extremely volatile; in fact, it boils at 26°.5, under a pressure of 0°.76; and at 10° sustains a column of mercury at 0°.38. Its congelation is however easily effected, and takes place at 15° of Farh.: so that when a few drops of this acid are poured upon paper, the portion which evaporates, instantly produces a degree of cold sufficient to crystallize the other: it is the only liquid

which possesses this property. It is but slightly soluble in water, on which account, when agitated with ten or twelve times its bulk of this fluid, it collects on the surface in the manner of oil or ether. It is readily soluble in alcohol. Left to itself in well-stopped vessels, it sometimes decomposes in less than an hour; according to M. Majendie, it can rarely be preserved longer than a fortnight. Messrs. Waugh, in Regent Street, are said, however, to prepare it after the formula of Dr. Nimmo, and warrant it to keep, without deterioration, for six months.

Prussic acid exerts the same deadly powers that the distilled laurel-water does, but in a more eminent degree. One drop, in a pure state, introduced to the tongue of a dog or cat, induces a few hurried inspirations, and death immediately ensues. Dropped into the eye, it produces effects equally sudden. One drop diluted with several drops of alcohol, injected into the jugular vein, will kill the animal as suddenly as if it were struck with lightening; and in animals poisoned in this manner, scarcely any traces of muscular irritability can be detected a few moments after death.

Cases are continually occurring in this country, in which prussic acid has been taken with the express intention of producing death: and in the *Annales de Chimie* for 1814, the following one is recorded. A professor of chemistry left a flask containing alcohol saturated with prussic acid; the servant-maid, seduced by the agreeable smell of the liquor, swallowed a glass of it. At the expiration of two minutes she fell dead, as if she had been struck with apoplexy. The body was not opened.

Orfila also mentions that Professor Scharinger of Vienna, prepared some pure and concentrated prussic acid, a certain quantity of which he diffused on his naked arm, and died a short time after.

Hufeland relates the following case. " D. L., a robust and healthy man, ætat. 36, on being siezed as a thief by the police, snatched a small sealed phial from his pocket, broke off the neck, and swallowed the greater part of its contents. A strong smell of bitter-almonds soon spread around, which almost stupified all

present. The culprit staggered a few minutes, then, without a groan, fell on his knees, and sunk lifeless on the ground. Medical assistance being called in, not the slightest trace of pulse or breathing could be found. A few minutes afterwards, a single and violent aspiration occurred, which was again repeated in about two minutes. The extremities were perfectly cold, the breast and abdomen still warm, the eyes half open and shining, clear, lively, full, almost projecting, and as brilliant as those of the most ardent youth under violent emotion. The face was neither distorted nor convulsed, but bore the image of quiet sleep. The corpse exhaled a strong odour of bitter-almonds. And the remaining liquid in the phial being analysed, was found to be a concentrated solution of prussic acid in alcohol.

Even its vapour should be carefully avoided; for if respired, it causes considerable pain in the chest, and a feeling of oppression which does not go off for several hours. It also has a very deleterious effect on germination, exerting an influence on living vegetables, almost as powerful as on animals, speedily destroying their vitality.

Tests.—It having been denied that the presence of the vegetable poisons could be detected, the attention of chemists has been excited to this point; and in the *Archives Generales* for August 1824, M. Lossaigne has made known the proper method of detecting hydrocyanic acid in the human body. Before devoting himself to the research on this substance in the stomach of animals, he considered it proper to study the actions of the re-agents on this acid. He is satisfied that, by saturating an aqueous solution of hydrocyanic acid, with a small quantity of *potass*, and then touching it with a little *sulphate of iron*, he could detect the $\frac{1}{10000}$ part of the weight of water. If, instead of the sulphate of iron, he employed *sulphate of copper*, and then added a sufficient quantity of muriatic acid to dissolve the excess of oxyde of copper which had been precipitated by the alkali; the solution assumed a milky appearance, at the time when it only contains $\frac{1}{20000}$ part of its weight of acid. If we dilute this solution in a large quantity of water, the precipitation disappears in a few

hours, and the fluid becomes clear, especially if the liquid in which the precipitation first took place has the muriatic acid a little in excess.

A fact well worthy of remark is, that in making the two-fold experiment by these tests, that made by the sulphate of copper will have its effect disappear, and the fluid will become clear frequently before that which has been treated by the sulphate of iron has acquired the blue colour proper to it. It sometimes happens, that this colour does not show itself for twelve, and sometimes for eighteen hours afterwards.

It is by the help of these tests that M. Lossaigne has discovered, *forty-eight hours after the death of a cat*, the hydrocyanic acid in the intestinal tube. The method of procedure is to distil in a tubulated retort, the fluid that has been obtained from the intestines by cutting them into small pieces. As the hydrocyanic acid is very volatile, it passes over in distillation. When you have obtained about $\frac{1}{3}$ of the fluid, you need not carry the operation further, but saturate the product by potash, and examine it by the two modes before described. The following observation has been deduced from the experiments of this chemist:—

1. That by these two tests he could detect, in a distilled fluid, hydrocyanic acid in the proportion of $\frac{1}{10000}$ to $\frac{1}{20000}$ of the weight of water.

2. That it is possible to detect it, in poisoned animals, more than forty-eight hours after death.

3. That it is always in the viscera, that its vestiges can be discovered.

4. That not the least portion can be detected in the brain, spinal marrow, or heart. Although they give out an odour which causes its existence to be suspected.

From a paper read, however, before the Royal Academy of Medicine at Paris, by M. Itard, it appears that a spontaneous development of prussic acid is occasionally met with in the alvine evacuations. He quoted two cases of the kind. The first subject had inflammation of the intestines; the other symptoms of inflammation of the liver. In both individuals, the

stools smelt strongly of bitter almonds. These facts are certainly highly important in a medico-legal point of view; as the existence merely of the odour of prussic acid in the fæces cannot, under such circumstances, be received as evidence that the person had been poisoned with this medicine. M. Delens related, on the same occasion, several facts, which showed that prussic acid had been found in the perspiration, urine, and expectoration, accounting for the blue colour of those liquids. M. Dupay observed, that cows fed in certain pastures gave blue milk. M. Virey quoted a case where cows fed with the PRUNUS *padus*, exhaled a very strong smell of bitter almonds.

The existence of prussic acid in the excrements of these animals was ascertained by the sulphate of iron. M. Marc related that in Germany some persons had been poisoned by eating sausages, in all of whom a great quantity of prussic acid was spontaneously developed.

TREATMENT.—The effects of this poison are so instantaneous, that when taken with a view to suicide, the fatal purpose is generally at once accomplished. Occasionally, however, serious effects are produced by overdoses in medicine; and under such circumstances, in addition to the means recommended in ART. XXXVII. under the head of NICOTIANA TABACUM, we should recommend cold affusion to the head, and repeated doses of ammonia, warm brandy and water, or the spirits of turpentine.

MEDICAL PROPERTIES AND USES.—Dr. Elliotson justly observes in his valuable work,* the hydrocyanic acid can scarcely be called a new medicine, as the leaves of the lauro-cerasus, bitter almonds, and other substances containing it, and from which they derive their virtues, were long ago employed as remedies. Dr. Brown Langrish† tells us that the powder of the dry leaves of the lauro-cerasus was frequently employed in his neighbourhood as a certain cure for ague, "by giving as much as will lie on a shilling, in a glass of white wine, two hours before the fit, and repeating it three times. It is held in great

* Numerous Cases illustrative of the Efficacy of the Hydrocyanic or Prussic Acid in Affections of the Stomach, &c. By John Elliotson, M.D.

† Physical Experiments upon Brutes, p. 122. 1746.

esteem among the poorer sort of people, and is said to have good success." By referring also to the account of Amygdalus *communis*, in our work, it will be seen that Bergius successfully treated it with bitter almonds. Nurses occasionally put a leaf of the lauro-cerasus in pap, to relieve flatulence; while Linneus says, "Lauro-cerasi per Belgium usitatissima pro infuso in morbis depascentibus."* Baylies boasts of its virtues in hectic, and speaks of it as efficacious in attenuating the blood: that it was given during the last century as a remedy for consumption, is evident from a reference to it by Cullen, who says, "that it has been of no use in cases of *phthisis pulmonalis*, or in resolving obstructions of the liver, seems to be concluded upon too few experiments."

Not only every class of agents produces peculiar effects upon the living body, but every individual, besides the general properties of its class, is characterized by peculiar effects. The hydrocyanic acid is a narcotic, but it has not the property of lessening pain in general, nor of procuring sleep in a direct manner like opium; neither has it the power of controlling the pulse like Digitalis. In a large dose, short of fatal effects, it, as we have already hinted, occasions insensibility and extreme feebleness of the heart's action: in a smaller, vertigo, faintness, and perhaps rapidity of pulse, sickness, and a sense of constriction at the præcordia: in a still smaller, nausea only, with perhaps momentary vertigo, and even pain of the stomach. Although, in too large a dose it irritates the stomach, it has a remarkable power when properly exhibited of soothing this organ when in a state of morbid irritability. In Dr. Elliotson's extensive practice at St. Thomas's hospital, it has been satisfactorily proved, we understand, to be the best remedy in gastrodynia and in pyrosis; but its powers are most conspicuous in vomiting unconnected with inflammation of this organ. Frequently, as in pregnant women, it is observed to arrest, at the first few doses, perhaps at the very first, vomiting which had existed for several weeks, merely from morbid irritability; and hiccough also has frequently yielded to it. Yet, what is sin-

* Amœnitates Academicæ, vol. iv. p. 40.

gular, it will not mitigate pain in the intestines, or entendynia. It cannot therefore be expected to relieve, nor does it even lessen pain generally, in other parts; and as a consequence, cannot be employed as a general anodyne.

The attacks of pain which occur in angina pectoris, and so closely resemble gastrodynia in situation and course, as probably to be mistaken, are said to be more relieved by it than by any other means.

It is also employed with advantage in the hooping, and what is called spasmodic cough; i. e. when there is no inflammation or organic disease; or where these exist, the cough is disproportionally violent. After proper antiphlogistic measures in inflammations of the chest, it has been useful; and occasionally in consumption, in palliating symptoms; but as it possesses no power over organic disease, it is not a cure for consumption as some have too fondly wished; and a physician asserting in the nineteenth century, what time has proved to be incorrect, that it has cured several hundred cases, either proves a disregard of truth, or an ignorance of the symptoms and pathology of this fatal disease—for which he is alike culpable.

Nervous patients it sometimes soothes considerably. But, excepting in affections of the stomach, we may doubt whether it possesses any advantages over opium, properly administered; and in procuring sleep, relieving pain in general, or as remedy for diabetes, it will be found a poor substitute.

When palpitation depends upon dyspepsia, it, in common with other symptoms, is greatly mitigated by this acid.

The external application of the prussic acid, greatly diluted, has been recommended to sooth irritation of the skin. But it more frequently causes smarting sensations, and a degree of dryness, even when extremely diluted, that renders it worse than useless. Externally, though occasionally beneficial, it is infinitely inferior in its effects to the chloruret of soda, which as a disinfecting agent, and as a cleanser of sloughing ulcers, we particularly recommend.*

Dose.—The largest dose of the acid generally borne, prepared

* See Scott's *Translation of Labbaraque*, on this subject.

by Vauquelin's method, varies from one to five drops. We should begin with one drop, and increase the dose one drop daily, or every other day, till the symptoms yield, or signs of its disagreeing appear, such as severe vomiting, vertigo, or a sense of debility. The dose should be then reduced to what is borne with comfort. It may be continued any length of time without fear of accumulation of effect, or constitutional operation. It should not be given on an empty stomach; and when several doses are combined, the mixture should be well shaken previously to its administration.

PRUNUS DOMESTICA.—*Common Plum-tree.*

SPEC. CHAR. *Flower-stalks* solitary or in pairs. *Leaves* lanceolate-ovate, convolute while young. *Branches* without thorns.

Syn.—Prunus, n. 1079. *Hall. Hist. v.* 2. 27.
Prunus sativa, *Fuchs. Hist.* 403. *f.*
Prunus domestica, *Lin. Sp. Pl.* 680; *Willd. v.* 2. 995; *Fl. Brit.* 527; *Eng. Bot. v.* 25. *t.* 1783; *Hook. Scot.* 150; *Ger. Em.* 1497. *f.*; *Woodv. t.* 85.

FOREIGN.—*Prunier, Prune,* Fr.; *Prugno; Susino,* It.; *Ciruelo,* Sp.; *Ameriera,* Port.; *Ppflaumen,* Ger., *Plommon,* Swed.; *Sliwnik,* Russ.

THE plum-tree is frequently found growing wild in our woods and hedges, bearing flowers in April and May; but the country from whence it originally came has not been ascertained. "Whether," says Sir J. E. Smith, "all our cultivated plums may formerly have originated from the Prunus *insitia,* (Wild Bullace-tree,) its thorns having disappeared by culture, like those of the pear-tree, is a question which perhaps no botanist can ever solve." With respect to the varieties, Parkinson, in 1629, enumerates no fewer than sixty, "all of which," he says, "are to be had of my very good friend Master John Tradescant, who hath wonderfully laboured to obtain all the rarest fruits he can hear of in any place in Christendome, Turkey, yea, or the whole world." Professor Martyn, in his edition of Miller's Gardener's Dictionary, also enumerates sixty varieties of the plum.

The plum-tree rises about fifteen feet in height, and is destitute of spines. The leaves are pale green, oval, serrated, on short footstalks, and when young, convoluted and pubescent underneath: the stipulas are pointed, and placed in pairs at the base of the footstalks. The flowers are large, on short peduncles, with a bell-shaped, deciduous calyx, and five, obovate, white petals. The filaments are numerous and inserted into the calyx: the germen is round and supports a simple style. The fruit is an oblong drupe, internally consisting of a sweet fleshy pulp, and inclosing a smooth almond-shaped nut or stone.

Qualities.—Three sorts of this fruit are ranked among the articles of the materia medica; they are all met with in our gardens, but the shops are supplied with them moderately dried from abroad. These are the Brignole plum, or Prunelle, brought from Brignole in Provence, of a reddish yellow colour, and a very grateful sweet, subacid taste; the common or French prunes, called by our gardeners the little black damask plum, and damsons, the larger damask violet plum of Tours, which is seldom kept in the shops, but has generally been supplied by the common prunes. All these fruits possess the same general qualities with the other summer fruits. When perfectly ripe, they are pleasant to the palate, and moderately nutritive; but when eaten too freely they are apt to occasion flatulence, griping, and diarrhœa. They are nearly inodorous, and contain chiefly mucus, saccharine matter, and malic acid.

Medical Properties and Uses.—The dried fruit, or prunes, are gently laxative, and enter as an ingredient into the *Confectio sennæ* of our pharmacopœias. They are advantageously employed as an article of diet, in costive habits, and in febrile and other diseases.

The fruit of the sloe, (Prunus *spinosa*,) is a powerful astringent; and the inspissated juice is a substitute for the Indian catechu. This juice is also largely used in factitious or adulterated port-wine, and the leaves are reckoned among the adulterations of tea in England.

Pyrus Cydonia.

G.Reid del.

London Pub. by J. Churchill, Leicester Square, May 1829.

CXV

PYRUS CYDONIA.

Common Quince-tree.

Class XII. Icosandria.—*Order* IV. Pentagynia.

Nat. Ord. Pomaceæ, *Lin.* Rosaceæ, *Juss.*

Gen. Char. *Calyx* superior, 5-cleft. *Petals* 5. *Apple* inferior, with from 2 to 5 cells, many-seeded.

Spec. Char. *Leaves* roundish elliptical, entire; downy beneath. *Flowers* solitary, stalked. *Calyx* serrated, reflexed.

Syn.—Malus cotonea, *Ger. Em.* 1452; *Raü Hist. p.* 1452; *Bauh. Hist. v.* 1. *p.* 35; *Matth. Valgr. v.* 1. 217.
Cotonia et Cidonia mala, *Lob. Ic. v.* 2. *p.* 152.
Pyrus Cydonia, *Lin. Sp. Pl.* 687. *Willd.* 2. *n.* 17. *Jacq. Austr. t.* 342; *Woodv. v.* 2. *t.* 79.

Foreign.—*Coignassier*, Fr.; *Melacotogna*, It.; *Quittenkorner*, Ger.; *Abee*, Hind.

The Quince-tree is a native of the rocky banks of the Danube, and is naturalized in the hedges of Germany. Dr. Sibthorp found it wild in the northern parts of Greece, in which country it still retains the ancient name κοδωνιὰ, so called from Cydon a town in Crete where it grew. Thunberg found it growing in Japan, where it is called *umbats*. It was among the first exotic fruits cultivated in England, where it blossoms in May or June, and ripens its fruit in November.

The tree is of low growth, much branched, and generally distorted. The leaves are roundish or ovate, entire, varying in size, smooth, and of a dusky green colour above, paler and downy beneath, and stand upon short foot-stalks. The flowers are large, solitary, and of a pale rose-colour, or white; the calyx is superior, villous, persistent, and divided into five spreading segments: the corolla is composed of five petals; these are concave, roundish, and inserted into the calyx: the filaments are about twenty, awl-shaped, shorter than the corolla, and support yellow anthers:

the germen is orbicular, with five slender styles, and simple stigmas. The fruit is large, varying in shape, yellow, downy, umbilicated, and when ripe has a peculiar fragrant odour, and a very austere acidulous taste; each of its cells contains two or three ovate, angular, reddish brown, cartilaginous seeds, ranged horizontally.—Fig. (*a*) section of the fruit; (*b*) a seed.

There are different varieties of the fruit; as the globular, or apple-quince; oblong, or Portugal quince; and the pear-shaped, or pear-quince. The Portugal quince is the best, but the fruit is produced sparingly. The quince tree is propagated by layers, by suckers, or by cuttings. It thrives best in a moist soil, but the fruit is superior in a dry one. The quince is supposed to be the golden apple of the Hesperides, so famous in ancient fable.

Qualities and uses.—The seeds are inodorous, nearly insipid, and abound with an impure mucilage, which they yield to boiling water. One drachm makes six ounces of a nearly colourless transparent mucilage, resembling in consistency the white of egg; which is occasionally prescribed as a demulcent in gonorrhœa, tenesmus, dysentry, and in apthous affections and excoriations of the mouth and fauces; in the latter case it is generally combined with borax and honey. A diluted solution of it injected beneath the eye-lids is recommended by Dr. Thompson, for obtunding the acrimony of the discharge in violent inflammations of the eye. It is the most agreeable of all the mucilages; but is apt to spoil and become mouldy in a short time.

In its raw state the fruit is not eatable; but when pepared it becomes mild, and to many persons highly grateful. A small portion of it added to stewed or baked apples is useful for giving pungency and flavour. The expressed juice taken in small quantities is cooling, antiseptic, and astringent, useful in nausea, vomiting, as well as some kinds of diarrhœa; by boiling it loses its astringency. Formerly this was directed in the London Pharmacopœia to be made into a syrup; but the only preparation of the quince, which it now directs, is the decoction of the seeds. An elegant sweetmeat, or marmalade (*Miva cydoniorum*,) is prepared by boiling the pulp over a gentle fire, with an equal weight of sugar.

Off. Prep.—Decoctum Cydoniæ, L.

Rosa gallica.

Weddell del.

Pub by J. Churchill, Leicester Square, Dec.r 1828.

XCIX.

ROSA GALLICA; *a*, subvar. *Cuprea.*

Red Officinal Rose; a, subvar. "*Tuscany Rose.*"

Class XII. ICOSANDRIA.—*Order* V. POLOGYNIA.

Nat. Ord. SENTICOSÆ, *Lin.* ROSACEÆ, *Juss.*

GEN. CHAR. *Calyx* pitcher-shaped, 5-cleft, finally pulpy, contracted at the neck. *Seeds* numerous, hispid, affixed to the inner side of the tube of the calyx.

SPEC. CHAR. *Leaflets* rigid, elliptical, smooth. *Prickles* of the stem uniform, slender; *flower-stalks* stiff, erect. *Calyx* ovate. *Fruit* subglobose.

Syn.—Rosa rubra, &c. *Bauh. Hist.* 2. 34.
R. centifolia, *Mill. Dict. n.* 14; *Willd. Sp. Pl.* 2. 1171; *Pers. Syn.* 2. 48.
R. sylvatica, *Gater. Montaub.* 94.
R. rubra, *Lamarck Fl. Fr.* 3. 130.
R. holosericea, *Röss Ros. t.* 16.—Damascena rubro purpurea, *ibid. t.* 18.
R. belgica, *Brot. Luist.* 1. 338.
R. cuprea, *Jacq. Fragm.* 31. *t.* 34. *f.* 4.
R. pumila, *Bauh. Hist.* 2. 35; *Willd. Sp.* 2. 1072.
R. austriaca, *Crantz Austr.* 86; *Poll. Palat.* 50.
Rosa, n. 1104. *Hall. Helv.*
R. gallica, *Lin.! Sp.* 704; *Willd. Sp.* 2. 1071; *Redouté les Roses, tom.* 1. 73. *t.* 25.—135. *t.* 52.—2. 17. *t.* 7.—19. *t.* 8. 10. *Bot. Reg. v.* 6. *t.* 448.

FOREIGN.—*Fleurs des Roses rouges*, Fr.; *Rosa domestica*, It.; *Essig-rosen*, Ger.

THIS species of Rose is a native of the south of Europe, common in our gardens, and flowering in June and July. In its cultivated state, it is scarcely three feet high, sending up, from its creeping roots, many stems, armed with fine, dispersed, short, straight prickles. The leaves consist of two or three pair of leaflets, with a terminal one attached on very shortpetioles to

a common footstalk; the leaflets are ovate, rigid, doubly serrated, smooth, of a fine rather shining green colour on the upper surface, pale, downy, or hairy underneath. The stipulas are linear-lanceolate, pointed, entire, downy and glandular. The flowers consist of a few large spreading petals, of a deep peculiar rich crimson colour; their base, like the stamens, of a fine gold colour, and stand on stiff, erect peduncles. The segments of the calyx are downy, sometimes fringed at the margin with a row of linear-lanceolate leaflets, as if pinnate: the stamens are numerous, bearing roundish yellow anthers; the germens are also numerous, with villose styles, united into a cylinder. The fruit is subglobose, and of a pale crimson colour.

In a work, professedly scientific, a long dissertation on this flower of Love and Poetry cannot reasonably be expected. We must not, however, pass over unnoticed some of the fables and allegories with which it is connected, lest some of the ladies who patronize our undertaking should consider us as devoid of proper taste.

The name Rosa is supposed to be derived from the Celtic, *rôs,* or *rhos;* from whence proceeds its Greek synonym, *ῥοδον.* De Theis considers that the Celtic *rhodd,* or *rhudd,* red, is the primary root of these words, the rose colour being almost synonymous with redness. Hence also came *rhus, rubia, rubus,* and the Greek name of the *pomegranate, ῥοα,* or *ῥοδια,* still in use. From the beauty of the genus, the rose is dedicated to Venus, the goddess of love and beauty. Thus Berkely, in his Utopia, describes lovers as declaring their passion by prescribing to the fair beloved a rose-bud, just beginning to open; if the lady accepted and wore the bud, she was supposed to favour his pretensions. As time increased the lady's affection, he followed up the first present by that of a half-blown rose, which was again succeeded by one full-blown; and if the lady wore this last, she was considered as engaged for life. In some parts of Sussex, it is customary for the domestics to welcome a bride, by strewing the path with roses, on her first appearance; and in Surrey, in the time of Evelyn, it was the custom to plant roses round the graves of lovers. The Greeks and Romans observed this practice

so religiously, that it is often found annexed as a codicil to their wills, as appears by an old inscription at Ravenna, and another at Milan, by which roses are ordered to be yearly strewed, and planted upon graves. In South Wales it is also the universal practice to strew roses and other flowers over the graves of departed friends. As an emblem of youth, the rose was dedicated to Aurora, and as an emblem of fugacity, to Cupid; no doubt from its short-lived beauty, which has been a fruitful theme for poets, as in Crashaw's lines on the death of Mr. Herrys: an instance also occurs in Mr. Bowring's translation from the Russian of Kostrov; and in Canto 16, of Tasso's *Gerusalemma Liberata.*

The rose was given by Cupid, as a bribe to Harpocrates, the god of Silence; from whence, we should suppose, originated the custom, which, according to Rosenbergius, prevailed among the northern nations of Europe, of suspending a rose from the ceiling over the upper end of their tables, when it was intended that the conversation which took place should be sacred to secresy: and it is this custom that undoubtedly gave rise to the common expression, "Under the Rose."

The ancients tell us, that roses were originally white; but were changed to red by the blood of Venus, when her feetwere lacerated by their prickles in her attempt to protect Adonis from the rage of Mars. Theocritus and Bion, however, are of opinion that it was the blood of Adonis himself that changed their colour. Another fable relates, that Cupid, leading a dance in Heaven, stumbled and overset a bowl of nectar, which falling upon the earth, stained the rose; while Ausonius has caused the rose to blush, from the blood of Cupid. Busbequius informs us that the Turks superstitiously believe that roses originate from the sweat of their prophet Mahomet. Monkish writers also have enlisted roses into the service of their theology. Marubus tells a story of a virgin named Dorothea, who suffered martyrdom in Cæsarea under the government of Fabricius; and who converted a scribe named Theophilus to Christianity, by sending him some roses in the winter-time out of Paradise.

A golden rose was considered so honourable a present, that

none but crowned heads were thought worthy either to give, or to receive it. Roses of this kind were sometimes consecrated by the Popes upon Good Friday, and given to such potentates as it was their particular interest to propitiate. The flower itself they considered an emblem of the mortality of the body, and the metal of which it was composed, of the immortality of the soul. Boëthius says, that William, King of Scotland, received a present of this sort from Pope Alexander the Third; and Henry the Eighth is recorded to have had a similar gift from Alexander the Sixth. The seal of Luther, which is a rose, is supposed to be symbolical of the same things, as those golden presents were. Roses were also employed by the Roman emperors as a means of conferring honours upon their most famous generals, whom they allowed to add a rose to the ornaments of their shields; a custom which continued long after the Roman empire had ceased to exist, and the vestiges of which may yet be traced in the armorial bearings of many of the ancient noble families of Europe.

We have already hinted, that owing to the great variety of roses, it has become a task of almost insurmountable difficulty to determine which is a species, or which a variety; and although Mr. Lindley, Professor of Botany at the London University, has written a Monograph on the Genus, to which we are much indebted for information now communicated, much remains to be accomplished to satisfy the mind of the scientific botanist, and to reconcile the differences existing in his and Sir J. Smith's opinions. We do not consider ourselves competent to the task; but to prove the truth of our remarks, we need only state that the R. *Gallica* is considered to be a variety of the R. *pumila* of Jacquin; that the R. *centifolia* and R. *provincialis* are identical; while Sir J. Smith ranks the *hundred-leaved* rose a variety of R. *Gallica*. Miller also differs, "and concluded that the Dutch hundred-leaved roses were intended. But as there wereevidently no varieties of the Provins rose, he proposed the latter as a new species, and without further examination, he has been followed by subsequent writers in this country." The hundred-leaved rose has been very generally confounded with a distinct species, the R. *Damascena*, and unless the mistake be corrected in the last

edition of the Dublin Pharmacopæia, of which we cannot obtain a sight, it will be seen that the error is still propagated by a very learned body.

As objects of cultivation, roses have always been eagerly sought after, and for the purpose of increasing their beauty, every means have been adopted, that are likely to render them double. Hence we account for the multitude of individuals, with which every garden abounds; whose beauty is only equalled by the extreme difficulty of tracing them to their original stock. And we may go back to the times of Herodotus, Athenæus, and Theophrastus, each of whom advert particularly to double roses; while Pliny enumerates several sorts, amongst which is the R. *centifolia*.

"The species are all included between the 70th and 20th degrees of northern latitude; except the R. *Montezuma* of Mexico, found in 19° N., at an elevation of more than 9300 feet above the level of the sea. But Baron Humboldt has calculated that in tropical countries the decrement of caloric is one degree over 9° toises of vertical elevation; therefore the heat at this height would be nearly the same as that of countries 29° further from the equator; so that its situation is essentially the same as that of the European parallel, to the species of which it is more readily related than to those of its own continent. In Asia half the species have been found. Of the thirty-nine it produces, eighteen are natives of the Russian dominions and the countries adjacent. Most of them are similar to the European portion of the genus, and five are common to Europe and Asia. Of the remainder, one, which is perhaps a distinct genus, has been discovered in Persia, fifteen in China, and two of the latter, with four others in the north of India; one of which has considerable affinity to the R. *moschata* of Northern Africa. The Chinese and Indian species have a habit entirely different from the rest. It is from Asia, which may indeed be called the "land of the rose," that the greatest number of novelties are to be expected. With the roses of the Crimea we are entirely unacquainted; and yet they are said to grow there in the most astonishing profusion. Europe has twenty-five species; of which 5-sixths exist between 40° and 50°. Britain, according to

Smith, has twenty-two species: Denmark has seven; Holland, thirteen; whilst in Spain, Portugal, and the Levant, only four species have been observed. In the north of Africa are two species peculiar to that country, and two others common to it, and Europe. Fourteen species have been found in North America, only two of which, R. *Montezuma* and *stricta* bear much general resemblance to European roses. The R. *lævigata* of the woods of Georgia is so similar to the R. *sinica* of China, as not to be immediately distinguished from it; and the latter is even sold in some of the London nurseries under the name of R. *Cherokeensis*.

Qualities.—The petals of the unblown buds are the parts medicinally used. They give out their virtues both to water and rectified spirit, and tinge the former of a fine red colour, but the latter of a very pale one. The extract obtained by inspissating the watery infusion, is moderately austere, bitterish, and subsaline. The spirituous extract is considerably stronger both in astringency and bitterness. Water at 212° extracts both its odour and taste; and the infusion strikes a black with sulphate of iron, and also forms a precipitate of a dark colour, with sulphate of zinc.

Medical Properties.—It is generally believed that the petals of this rose are astringent; but Poterius, as cited by Lewis, states that he found a drachm of powdered red roses occasion three or four alvine evacuations, and this not in a few, but several instances. Ainslie also says, "the powder of the red rose petals, in doses of one drachm, is purgative." Whether, however, they are purgative, or not, is of very little importance, since they are principally used as an elegant colouring matter in the infusion, which owing to the addition of sulphuric acid, is certainly astringent. This infusion forms an elegant and useful vehicle for neutral salts in hœmorrhages, and other diseases.

Off. Prep.—Confectio Rosæ. *L. E. D.*
Infusum Rosæ. *L. E. D.*
Mel Rosæ. *L. D.*
Syrupus Rosæ. *E.*

ROSA CENTIFOLIA.—*Hundred-leaved Rose.*

SPEC. CHAR. *Prickles* unequal, large, falcated. *Leaflets* edged with minute glands. *Flowers* drooping. *Calyx* viscid. *Fruit* oblong.

Syn.—Rosa hollandica, sive batava, *Ger. Em.* 1262
Rosa provincialis *Mill. Dict. n.* 18; *Willd. Sp.* 2. 1070.
Rosa centifolia, *Lin. Sp. Pl.* 704; *Redouté Ros.* 1. 25. *t.* 1—37. *t.* 7—77. *t.* 26—79. *t.* 27—111. *t,* 40.

FOREIGN.—*Rose a cent feuilles,* Fr.; *Die Centrifolienrose,* Ger.; *Hoa houng tau,* Cochinch.

THIS, like the Rosa *gallica,* is generally regarded as a native of the south of Europe; but Mr. Lindley is disposed to place its native country in Asia, because it has been found wild by Bieberstein, with double flowers, on the eastern side of Mount Caucasus, whither it is not likely to have escaped from a garden. It is a much taller plant than the Rosa *gallica,* rising to the height of five or six feet, and beset with large, unequal, hooked prickles. The leaves resemble those of *gallica,* but are larger, and furnished on the margin with minute glands. From *gallica* it differs also by its flowers being cernuous, by the larger size of its prickles, and by its oblong or rounded, but never elongated fruit.

QUALITIES.—Many varieties of this species of rose are indiscriminately used for medicinal purposes. The petals are of a pale red colour, and of a very fragrant odour; and although this fragrance is very pleasant to most persons, several instances are on record, where it was highly injurious. Both Echius and Schwenckius narrate cases of inflammation of the eyes, faintings, hysterical affections, abortion, &c. being produced; and Murray states, that persons confined in a close room, with a large quantity of roses, have been in danger of immediate extinction of life. From the experiments of Priestly and Ingenhousz, their effects are attributed to the mephitic air, (carbonic acid gas,) which these, in common with many other flowers, exhale. The petals impart their odour to watery liquids, both by infusion and dis-

tillation. Six pounds of fresh roots impregnate, by distillation, a gallon or more of water strongly with their flavour. On distilling large quantities of roses, a fragrant, butyraceous oil is obtained, which liquifies by heat, and appears yellow; but concretes in the cold into a white mass. The smell of this exactly resembles that of roses, and is well known as a perfume under the name of *Attar*, or *Uttir*.

This valuable perfume is prepared in India, Persia, and Turkey, and is frequently adulterated with the oil of the sandal wood; the imposition, however, cannot be concealed, since the essential oil of sandal will not congeal in common cold; and its smell cannot be concealed, but will predominate in spite of every art. In Cashmere they seldom use sandal to adulterate the attar; but Col. Polier states, that in order to increase the quantity, they are said to distil with the roses a sweet-scented grass, which does not communicate any unpleasant scent, and gives the attar a deep clear colour. This essence also does not congeal in a slight cold. The attar, or essential oil of roses, is also frequently adulterated with spermaceti, more particularly that imported from Turkey. The best mode of discovering this fraud, according to Mr. Milburn, is by the addition of a small portion of alcohol to the suspected oil; this will dissolve the genuine oil, and leave the spermaceti in lumps, which if heated will form one solid white mass. In the genuine oil, when congealed, the chrystals will be short and uniform, not more numerous in one part than in another; for if they are of different lengths, the oil may be considered as adulterated. It is said that the colour of the attar is no criterion of its goodness, it being sometimes of a fine emerald green, of a bright yellow, and of a reddish hue, from the same country, and from the same process, only from roses obtained on different days. The real oil or attar concretes with a slight cold; it floats on cold water, and dissolves slowly in highly rectified spirits of wine. It is seldom imported from India for sale; but considerable quantities are brought from Turkey. In speaking of the rose, Dr. Ainslie, in his valuable "Materia Indica," informs us that the attar of the Levant and Tunis is obtained from the Rosa *sempervirens*.

With the greatest caution, and all the auxiliary aid of science, very little *attar* can be obtained from English roses; and even in Italy they yield a very minute portion. Kempfer, in his *Amœnitates Exoticæ*, p. 374, speaks highly of the roses of Shiraz, where it would appear that a large quantity of this essential oil is prepared; nor are the roses and *attar* of Cashmere held in less estimation in the East. The roses of Barbary and Syria are inferior in quality to the Persian; and at Bassora, in the latter country, whole fields are cultivated for the purpose of making rose water. In the Asiatic Researches, Colonel Polier gives the following process for making *attar*, or essential oil of Roses;—"Forty pounds of roses, with their calyces, are put into a still with 60 lbs. of water. The mass being well mixed, a gentle fire is put under the still; and when the fumes begin to rise, the cap and pipe are properly fixed and luted. When the impregnated water begins to come over, the fire is lessened by gentle degrees, and the distillation continued until thirty pounds of water are come over, which is generally done in about four or five hours. The water is to be poured upon 40lb. of fresh roses, and thence are to be drawn from 15 to 20lb. of distilled water, by the same process as before. It is then poured into pans of earthenware, or of tinned metal, and left exposed to the fresh air for the night. The attar, or essence, will be found in the morning congealed and swimming on the top of the water. This is to be carefully separated and collected, either with a thin shell or a skimmer, and poured into a phial. When a certain quantity has been obtained, the water and feces must be separated from the clear essence, which, with respect to the first, will not be difficult to do, as the essence congeals with a slight cold, and the water may then be made to run off. If, after that, the essence is kept fluid by heat, the feces will subside, and may be separated; but if the operation has been neatly performed, these will be little or none. The feces are as highly perfumed as the essence, and must be kept after as much of the essence has been skimmed from the rose-water as could be. The remaining water should be used for fresh distillations, instead of common water, at least as far as it will go."

The quantity of essential oil to be obtained from the roses is very variable, as it depends not only on the skill of the distiller, but also on the quality of the flowers and the favourableness of the season. In order to obtain four *mashas* (about 1½ drachm) from 80 pounds, which, deducting the calyces, amounts to something less than 3 drachms *per* 100 pounds of rose leaves, the season must be very favourable, and the operation carefully performed.

Rose Water (*Aqua Rosæ* Ph. Lond.) is prepared by taking *eight* pounds of the petals of Rosa *centifolia*, and pouring over them as much water as will prevent empyreuma during the distillation, and then distilling a gallon. This water has the agreeable odour of the rose in great perfection when properly prepared; but is very apt to spoil, unless it be rectified by a second distillation.

Medical Properties.—The petals of the hundred-leaved rose are considered to be slightly laxative; and the syrup is often mixed with a little almond oil, and given to children as a domestic medicine. Rose water is an elegant medium for preparations of lead and zinc, of which collyria are generally composed.

Off. Prep.—Aqua Rosæ. *L. E. D.*

Syrupus Rosæ. *L. E.*

Pl 100.

'Rosa canina.'

Published by J. Churchill Leicester Square Jan.y 1.1832.

ROSA CANINA.

Common Dog Rose.

SPEC. CHAR. *Fruit* ovate, smooth or somewhat bristly. *Calyx* pinnate, deciduous. *Prickles* strongly hooked. *Styles* distinct. *Leaflets* rigid, ovate, pointed, quite smooth.

Syn.—Rosa sylvestris inodora, seu canina, *Raii Syn.* 474; *Park.* 1017.
R. canina inodora, *Ger. Em.* 1270. *f.*
R. sylvestris vulgaris, flore odorato incarnato, *Bauh. Pin.* 483.
R. sylvestris alba cum rubore, folio glabro, *Bauh. Hist. v.* 2. 43. *f.*
R. n. 1101, *Hall. Hist. v.* 2. 38.
R. canina, *Lin. Sp. Pl.* 704; *Willd. v.* 2. 1077; *Fl. Brit.* 540; *Engl. Bot. v.* 14. *t.* 992; *Lind. Ros. p.* 98; *Hook. Scot.* 157; *Woods Trans. of Lin. Soc. v.* 12. 223. *Woodv. v.* 3. *t.* 139.

PROVINCIALLY.—*Wild Briar. Dog Rose. Hep-tree.*

FOREIGN.—*Le Rosier sauvage; Rose de Chien,* Fr.; *Rosa salvatica,* It.; *Rosa silvestre; R. peruna,* Sp.; *Rosa brava,* Port.; *Hundrose,* Ger.; *Niupon,* Swed; *Schiopwnik,* Rus.

THE Dog Rose, the most common ornament of our hedge-rows, and universally admired for the beauty of its foliage, its large, handsome, fragrant flowers, and its rich coral fruit, is sufficiently familiar to every one. It is not, however, generally known that this species is very apt to be confounded with some others, equally common, which it nearly resembles; we shall therefore make no apology for quoting Mr. Lindley's description:—"A straggling briar six or seven feet high. The branches light green, reddish-brown on the sunny side; armed with strong, scattered, hooked, nearly equal prickles (rarely straight, and then much closer together.) Leaves distant, pale or dark green, frequently tinged with red, in exposed situations usually much blistered by the sun, quite free from pubescence; stipulas rather dilated, a little reflexed, acute-pointed; petiole armed with a few little, hooked prickles; leaflets 5—7, ovate or oblong, acute or rounded, sessile or subsessile, flat or concave, even or rugose, coarsely or

finely, simply or doubly serrated; the serratures always acute, without glands and converging. Cymes one or many-flowered; bracteæ ovate-lanceolate, appressed, acute, concave or flattish, finely toothed and glandular at the edge; peduncles and calyx smooth; tube ovate; sepales spreading, sharp-pointed, deciduous, somewhat divided; petals obcordate, concave; disk very thick, elevated; ovaries 20—30; styles nearly smooth, distinct, included or a little exserted. Fruit ovate or oblong, scarlet, shining, without any bloom; pericarps large, uneven." It flowers in June and July, ripening its fruit late in autumn. Fig. (*a*) represents the fruit cut open to show the seeds; (*b*) a seed.

The foregoing description, says Mr. Lindley, applies strictly to R. *canina*. "When this is weak, and grows in woods or shady places among grass, it has straight prickles, and becomes R. *nuda* of Woods: with very distinct aculei, it is R. *andegavensis* of Bastard; with very dense ones it is R. *canina* of Rau."

Qualities.—The fruit has no odour, but a pleasant, sweet, acidulous taste, which is said to depend on uncombined citric acid and sugar.

Medical Properties and Uses.—The pulpy part of the heps of the dog-rose possesses no medical properties; but, beat up with sugar, forms a confection, which sometimes enters into the composition of demulcent electuaries. It is also employed to form calomel, antimony, &c. into pills; and is sometimes served up at table as a desert. The root has been recommended in hydrophobia. The Tartars boil the twigs and leaves in the place of tea, and the Siberians praise them for their reviving, stomachic qualities. The inhabitants of the Volga prepare a spirit from the flowers, by fermentation; and in the Ukraine they are made into a preserve with honey and sugar.

A reddish moss-like, prickly excrescence, erroneously called *Bedeguar, Rose sponge,* and by the French *Galle chevelüe,* is frequently found upon the branches of the Rosa *canina,* and other roses. This excrescence is the habitation of the larva of a small hymenopterous insect, Cynips *Rosæ,* and was formerly celebrated for its supposed astringent power.

Off. Prep.—Confectio Rosæ caninæ, L. *olim.* Conserva Cynosbati.

Tormentilla erecta.

XXVI

TORMENTILLA ERECTA.

Common Tormentil, or Septfoil.

Class XII. ICOSANDRIA.—*Order* V. POLYGYNIA.

Nat. Ord. SENTICOSÆ, *Lin.* ROSACEÆ, *Juss.*

GEN. CHAR. *Calyx* 8-cleft. *Petals* 4. *Seeds* roundish, naked, affixed to a small juiceless receptacle.

SPEC. CHAR. *Stem* ascending, branched. *Leaves* ternate, sessile. *Stipulas* lanceolate, serrate.

Syn.—Tormentilla, *Raii. Syn.* 257.; *Ger. Em.* 992. *f. Camer. Epit.* 685. *f.*
Fragraria *n.* 1117. *Hall. Hist. v.* 2. 47.
Tormentilla erecta, *Lin. Sp. Pl.* 716; *Willd. v.* 2. 1112
Tormentilla officinalis, *Fl. Brit.* 552.; *With.* 476.; *Hook. Fl. Scot.* 164.
Potentilla Tormentilla, *Sibth.* 162.; *Grev. Fl. Scot. p.* 116.
FOREIGN. — *Tormentil,* Fr.; *Tormentilla,* Ital. Span. Port.; *Tormentilwurzel,* Ger.; *Sabiasnoi koren,* Russ.

OF this genus there are two British species, Tormentilla *erecta,* and T. *reptans.* The former, which is the subject of the present article, is distinguished by its smaller flowers, its sessile leaves, and its more or less erect stem. They are both very common plants, particularly the present species, growing on dry heathy pastures, by road-sides, throughout Europe; and flowering in June and July.

Common Tormentil has a large perennial, woody, irregular, knotty, and generally crooked root, dark-brown externally and reddish within. It sends forth several stems, which as the trivial name imports, are erect, sometimes procumbent, or spreading, and seldom exceed a foot in length; they are round, slender, wiry, and branched towards the top. The leaves are mostly sessile, and composed of three oblong, acute, deeply serrated leaflets, slightly hairy and paler underneath, but dark-green above, and accompanied by small, deeply-cut stipules. The flowers are small, solitary, of a golden-yellow colour, and stand upon long slender axillary, or terminal stalks; each flower consisting of four obcordate petals, attached by short claws to the rim of the calyx. The calyx is hairy, and cut into eight or ten ovate, unequal segments. The filaments are about sixteen, awl-shaped, shorter than the corolla, having roundish erect anthers.

The germens are very small, usually eight, each supporting a single short thread-shaped style, with obtuse stigmas. The seeds are ovate, naked, obscurely wrinkled, and smooth.---Fig. *(a)* represents the calyx; *(b)* the stamens; *(c)* the pistils.

The generic name *Tormentilla*, a diminutive of *tormentura*, a pain or griping, is supposed to be expressive of its use in alleviating pains in the teeth, or of the bowels, *tormina*.

Qualities and Chemical Properties.---The root of tormentil possesses a slightly aromatic odour, and a strong astringent taste. "To boiling water it yields its active matter, which appears to be tannin, as the infusion is copiously precipitated by solution of isinglass. Excepting galls and catechu, it contains more tannin than any other vegetable."

Medical Properties and Uses.—Tormentil root was formerly used in the plague and other malignant diseases, and was recommended by Vesalius as no less effectual than guaiacum for syphilis. It is now merely used as an astringent; but because it is indigenous, and to be found on almost every heath, it is seldom prescribed. We believe it, however, to be one of the best medicines of its class; and, as it produces its astringent effects without increasing excitement, Dr. T. Thompson recommends it to be given in those diarrhœas which attend pulmonary consumption. It forms an excellent application in the form of gargle, for spongy gums and ulcerations of the mouth or tongue, and has been recommended as an external application to ill-conditioned sores. In the Orkneys the roots are used in the tanning of leather; and, in the islands of Tiree and Coll, a decoction of them in milk, is employed by the inhabitants, as a domestic remedy, in diarrhœa, and dysentery.

Tormentil root may be given either in the form of decoction, or of powder; but as it enters into the composition of the *pulvis cretæ compositus* (L), that preparation is generally prescribed by those who are conversant with its virtues. Those persons are very few, we are ashamed to acknowledge; for, trying the experiment, we ascertained, that nine medical men out of twelve were ignorant of the composition into which it enters.

Dose.—In substance, from half a drachm, to one drachm.

Geum urbanum.

W. Clark. del. et sculp.

London. Published by John Churchill. Leicester Square, Sept.r 1827.

GEUM URBANUM.

Common Avens, or Herb Bennet.

Class XII. Icosandria.—*Order* VIII. Polygynia.

Nat. Ord. Senticosæ, *Lin.* Rosaceæ, *Juss.*

Gen. Char. *Calyx* 10-cleft, inferior. *Corolla* 5-petalled. *Seeds* with a bent awn. *Receptacle* cylindrical.

Spec. Char. *Flowers* nearly erect; awns naked. *Leaves* ternate; radical ones lyrato-pinnate.

Syn.—Caryophyllata, *Raii. Syn.* 253, 1; *Ger. Em.* 994. *f.*; *Matth. Valgr. v.* 2. 333. *f.*
Caryophyllata vulgaris majore flore, *Park.* 136; *Bauh. Pin.* 321.
Geum, *n.* 1130, *Hall. Hist. v.* 2. 52.
Geum urbanum, *Lin. Sp. Pl.* 716; *Willd. v.* 2. 1113; *Fl. Brit.* 554; *Curt. Lond. fasc.* 2. *t.* 36. *Stokes, v.* 3. 156. *Woodv. Sup.* 259.
Foreign.—*Bonoite officinale,* Fr.; *Cariofilata,* Ital.; *Nelkenwurzel,* Ger.

This is a common perennial plant, growing wild in woods, and shady places, in many parts of Great Britain; and it occurs also in similar situations throughout Europe, as far north as Sweden. It is found in flower the greatest part of the summer; and is figured in "English Botany," *v.* 20. *t.* 1400.

The root is woody, and fibrous. The stem is erect, two feet round, branched towards the top, rough, and covered with minute hairs. The lower leaves are on long channelled foot-stalks, interruptedly pinnate and lyrate, with the terminal leaflet very large, rounded, and often three-lobed; the upper or cauline ones are sessile, simple, wedge-shaped and trifid; the whole irregularly notched, serrated, hairy, and of a deep

green colour. The flowers are terminal, solitary, erect or somewhat drooping, and stand on long foot-stalks. The calyx is inferior, of one leaf, permanent, and divided into ten acute segments, five alternate ones of which are smaller. The petals are bright yellow, roundish, and attached by their claws to the rim of the calyx; the filaments are awl-shaped, shorter than the corolla, and supporting yellow anthers; the germens are ovate, compressed, and collected into a round head; the styles jointed above the middle, with simple stigmas. The seeds form a round orbicular head; they are numerous, ovate, downy, and each tipped with a long rigid purple awn, terminating in a small sharp hook.—Fig. *(a)* represents the pistils; *(b)* a portion of the calyx showing the situation of the filaments and anthers; *(b)* a section showing the receptacle, and seeds with their hooked awns.

Qualities.—The root of Avens has a gently austere taste, and a fragrant odour. On distillation with water it yields a small portion of an agreeable volatile oil. The infusion strikes a deep black colour with the salts of iron, and gives a copious precipitate with gelatin.

Medical Properties and Uses.—The effects of Geum urbanum, are those of a moderate astringent, antiseptic, and tonic. The root may be given with safety in all cases where we wish to restrain immoderate discharges, especially those from the bowels, when not attended with inflamatory action. It was formerly in much repute in diarrhæa and dysentery, and has of late years been strongly recommended by the continental physicians, especially in Germany, as a substitute for Peruvian bark in the cure of intermittent fevers. Although Avens has been seldom employed in practice in this country, it would seem to be possessed of very valuable properties, and being an indigenous vegetable, we can confidently recommend it to the attention of the profession for further, and more extensive trials. The decoction, made by boiling one ounce of the roots in a pint of water, for ten minutes, is the usual mode of exhibiting it. Of this one or two ounces may be given every hour. The dose in substance is from half a drachm to a drachm.

Papaver Rhœas.

W. Clark del. et sculp.

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PAPAVER RHŒAS.

Red Poppy.

Class XIII. POLYANDRIA.—*Order* I. MONOGYNIA.
Nat. Ord. RHŒADEÆ, *Lin.* PAPAVERACEÆ, *Juss.*

GEN. CHAR. *Calyx* 2-leaved. *Petals* 4. *Capsule* superior, 1-celled, opening by pores under the persistent stigma.

** *Capsules smooth.*

SPEC. CHAR. *Capsules* smooth, nearly globular. *Stem* many-flowered, bristly; bristles all spreading. *Leaves* pinnatifid.

Syn.—Papaver laciniato folio, capitulo hispido longiore, *Raii Syn.* 308.
Papaver erraticum, *Camer. Epit.* 371, 1; *Matth. Valgr. v.* 2. 404. *f.*
Papaver, n. 1064. *Hall. Nomencl.* 95. *Hist. v.* 2. 16.
Papaver Rhœas, *Lin. Sp. Pl.* 726. *Willd. v.* 2. 1146. *Fl. Brit.* 567; *Eng. Bot. v.* 9. *t.* 645; *Curt. Lond. fasc.* 3. *t.* 32; Stokes *Bot. Mat. Med. v.* 3. 192; *Hook. Scot.* 168.
PROVINCIALLY.—*Corn Poppy; Corn Rose; Cop Rose.*
FOREIGN.—*Coquelicot*, Fr.; *Papavero salvatico*, Ital.; *Adormidera sylvestre, Amapola*, Span.; *Die blumen der klapprose*, Ger.

THE Red Poppy is an indigenous annual, growing plentifully in corn-fields, where it frequently proves a very troublesome weed; flowering in June and July. Its geographical distribution is extensive; but it is said not to occur in America.

The stem is herbaceous, upright, branched at top, a foot or more in height, and clothed, as well as the flower-stalks, with strong hairs which spread horizontally. The leaves are sessile, pinnate, or bi-pinnatifid, serrated, and covered with short hairs The flowers are large, solitary, and stand upon long hairy foot-stalks; the calyx consists of two ovate, hairy, concave leaves, which fall before the flowers expand; the petals are four, large, roundish, undulated, of a deep rich scarlet colour, and generally

marked with a black spot at the base. The germen, which becomes a smooth, urn-shaped capsule, is ovate and large, without any style; the stigma is shield-shaped, sessile, scolloped on the edges, and having ten or twelve rays. The fruit is a capsule, crowned with the stigma, divided into many cells, and containing numerous kidney-shaped seeds. Fig. *(a)* represents a single stamen; *(b)* the capsule.

This species of Papaver is readily distinguished from the *Papaver dubium,* which it closely resembles, by the hairs spreading horizontally on the flower-stalks as well as on the stem, and by the short roundish capsule.

Like most other pretty flowers, the Red Poppy has been celebrated by poets in different ways; thus, from their flowering amongst the corn, they have been supposed, by one, to be upon the look out for Ceres:

> "And the poppies red,
> On their wistful bed,
> Turn up their dark blue eyes for thee."

In a Latin poem, by Mr. Landor, Ceres is supposed to have created the Poppy to assuage her anguish during the search for her daughter; and the statues of the goddess are generally adorned with Red Poppies, from their being companions of wheat: but

> —— Poppies nodding, mock the hope of toil.
> *Crabbe's Village.*

Qualities and Uses.—The petals of the Red Poppy should be gathered just as they begin to blow. They possess a faint narcotic odour, and are generally thought to have a slightly sedative effect. They yield their virtues to boiling water, but are merely used for their fine colouring matter. A syrup of them is directed in the Pharmacopœias, which was formerly prescribed in coughs and catarrhal complaints; but no faith whatever is now placed in its medicinal powers. Opium has been obtained from the capsules, but in so small a quantity, as to render it an object unworthy of the trouble.

Off. Prep.—Syrupus Rhœados. L. D.

Papaver somniferum.

W. Clarke del.

London, Published for the Authors. April 1830.

CLIX

PAPAVER SOMNIFERUM.

White Poppy.

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 ἥμερος. *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.

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, kindey-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 occular witness, and Mr. Davis,† whose accounts agree with that given by Kœmpfer,‡

* *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 provice 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 pro-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

* 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 seperates 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 alkalies, 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 ὀπος, juice; adding sometimes μεκωνος, the juice of the poppy, or more specifically ὀπος 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 alkalies; 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 medicale*, Barbier, vol. ii. p. 467; Report of M. Lodibert, *Bulletin de la Sociétié 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 obliviated. 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 Brownonian 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 Præl. 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, Gorterus, 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 Pharmacolicæ 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 exeretion 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.

℞. Ammoniæ subcarbonatis, ℈j.
Pulveris Ipecacuanhæ, ʒ ss.
Tincturæ Capsici, ʒij.
Aquæ communis, ℥ij. 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 ammoniæ, 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 delerium 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 cholic, 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 diarrhœa 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 antisyphilitic 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 gonorrhœa 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 idiosyncracy, 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.

Chelidonium majus.

CHELIDONIUM MAJUS.

Common Celandine.

Class XIII. POLYANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. RHŒADEÆ, *Lin.* PAPAVERACEÆ, *Juss.*

GEN. CHAR. *Calyx* of 2 leaves, caducous. *Petals* 4. *Pod* superior, 1-celled, of 2 valves. *Seeds* numerous, crested.

SPEC. CHAR. *Flowers* umbelled. *Leaves* pinnatifid, bluntly lobed and notched.

Syn.—Papaver corniculatum luteum, Chelidonia dictum, *Raii Syn.* 309. *β. Fl. Brit.* 563.

Chelidonium majus, folio magis dissecto, *Ger. Em.* 1069. *f.*

Chelidonium majus, foliis quernis, *Bauh. Pin.* 144; *Mill. Ic.* 61. *t.* 92. *f.* 2; *Fl. Dan. t.* 676.

Chelidonium, *n.* 1059. *Hall. Hist. v.* 2. 13.

Chelidonium umbelliferum, *Stokes Bot. Mat. Med. v.* 3. *p.* 180.

Chelidonium majus, *Lin. Sp. Pl.* 723; *Willd. v.* 2. 1141. *Fl. Br.* 563; *Eng. Bot. v.* 22. *t.* 1581; *Hook. Scot.* 167; *Woodv. Sup. t.* 263; *De Cand. Syst. v.* 2. 98; *Bull. Fr. t.* 61; *Fuchs. Hist.* 865. *f. Matth. Valgr. v.* 1. 576. *f.*; *Camer. Epit.* 402. *f.*

PROVINCIALLY.—*Greater Celandine; Swallow-wort; Tetter-wort.*

COMMON Celandine, or Greater Celandine, so named in contradistinction to Ranunculus *Ficaria*, Pilewort Crowfoot, which was called by the old botanists Lesser Celandine, is a perennial plant, growing wild in hedges and uncultivated grounds, especially on a chalky soil, in Britain and other parts of Europe. It

delights in moist, shady situations, growing principally among rubbish, in the neighbourhood of villages, and flowering in May and June. We perceived it in the garden hedge at the Spaniard, on Hampstead heath; and also by the road side near Richmond, in Surrey, plentifully. It is one of those plants which, on account of the very acrid, and poisonous qualities of its juice, we have allotted a place in the present volume.

This plant rises from a spindle-shaped root, with a round, leafy, somewhat hairy, branched stem, swelled at the joints, to the height of two feet. The radical leaves are numerous, smooth, very deeply pinnatifid, or divided to the rib into two or three roundish and indented lobes, of which those of the extremities are the largest, of a bright green colour on the upper side, and glaucous or bluish-green underneath. The leaves arising from the stalks are of the same form, but of a paler colour, and placed alternately. The flowers, which are of a golden-yellow colour, are borne in small umbels on long, generally hairy footstalks, arising from the axillæ of the leaves. The calyx is inferior, consisting of two roundish-ovate, concave, acute, deciduous leaves. There are four roundish, spreading petals; the filaments are numerous, usually about thirty, shorter than the corolla, having oblong, compressed, obtuse, erect, 2-lobed anthers. The germen is superior, cylindrical, the length of the stamens, terminated by a small obtuse, heart-shaped, or cloven stigma, without a style. The seeds are numerous, ovate, smooth, with a crest along the upper edge, and contained in a linear, somewhat cylindrical pod, of one cell and two deciduous valves. They are disposed in two rows, on short stalks along a marginal receptacle, between the edges of the valves. Fig. (*a*) represents a petal; (*b*) a stamen with its anther; (*c*) the stigma at two different periods of its growth; (*d*) the pod and seeds.

A variety with very hairy stalks, and laciniated petals has been supposed by M. De Candolle, and Lamarck to be a distinct species. It is mentioned by Clusius, Bauhine, and several other of the old botanists; was found plentifully in the former part of the last century, among the ruins of the Duke of Leeds' seat at

Wimbledon; and, according to Lamarck, was cultivated in the royal garden at Paris, a little before the French revolution.

The generic appellation Chelidonium, from κελιδὼν, a *swallow*, is said to be expressive of a popular tradition among the ancients, that swallows made use of its juice to restore the sight of their young if blinded. A more probable notion, however, is, that it derives its name from the circumstance of its flowering about the time when these birds make their first appearance in spring.

Qualities.—Both varieties of Celandine agree in their medical qualities. The whole plant is very brittle ,and exudes, when broken or wounded, an orange-coloured, fetid juice. Its taste is intensely bitter and acrid, occasioning a sense of burning in the mouth and fauces, similar to that produced by Cayenne pepper, which lasts for a considerable time. Both water, and rectified spirit, extract nearly the whole of the active matter, which is most powerful in the root. The juice of the leaves is yellow, and gives a green tincture to rectified spirit; that of the root is of a deep saffron colour, and tinges the same menstruum with a brownish yellow. The pungency they possess is not of a volatile kind, for hardly any of it rises in distillation; yet it is lessened by drying the plant, or by inspissating with a gentle heat the spirituous or watery infusions. The parts of the plant employed in medicine, are the root, and leaves, particularly the former.

Poisonous Effects.—The juice of this species is a violent acrid poison; producing inflammation in the textures to which it is applied. A writer on poisons, in the Edinburgh Encyclopedia, says he has seen speedy death produced by it; and from the following experiments made by M. Orfila on dogs, it would appear that it proves fatal when introduced into the stomach, and applied to wounds.

1st. Three drachms of the watery extract of Celandine, were introduced into the stomach of a small, feeble dog, and the œsophagus was tied. At the end of six minutes the animal made violent efforts to vomit; four hours after, he was lying on the side; he made deep inspirations; sensibility and mobility were diminished to such a degree, that the organs of hearing and vision were no longer capable of

receiving impressions; he was not able to stand, and died a very short time after. The stomach contained a small quantity of a fluid excessively viscid, and of a brownish colour; the mucous membrane was of a bright red throughout its whole extent, and of a blackish red in its folds; the intestinal canal was not altered; the lungs were of a reddish colour, crepitating, and appeared not to be affected.

2nd. At three o'clock, an incision was made in the inside of the thigh of a small dog, and a drachm and a half of the watery extract of Celandine dissolved in a small quantity of water, was applied to the wound. At five, the animal experienced nothing remarkable. The next day, at nine in the morning, he was found dead. The digestive canal exhibited no sensible lesion; the wound was inflamed, and the lungs somewhat livid.

3rd. Four ounces of the juice of Celandine obtained from the leaves, were introduced into the stomach of a dog of middle size; the œsophagus was tied. The animal made efforts to vomit, moaned, and became insensible. He died ten hours after. The mucous membrane of the stomach was inflamed, and the lungs presented, here and there, livid patches, somewhat distended with blood.

From the preceding facts it results: 1st. That Celandine and its extract, produce serious symptoms, followed by death; 2dly. That their deleterious effects seem to depend on the local irritation they excite, as much as on their absorption and action on the nervous system; 3rd. That it appears to act on the lungs.

No remedy in the nature of an antidote has been proposed for this poison, beyond evacuation, diluents, and the usual antiphlogistic treatment.

Medical Properties and Uses.—Notwithstanding the extravagant eulogiums that have been bestowed upon this acrimonious plant by some of the modern, as well as ancient physicians, it is rarely administered internally. The virtues attributed to it are those of a stimulating aperient, diuretic, and sudorific. It was formerly regarded as a powerful deobstruent, and supposed to be particularly efficacious in the removal of obstructions of the liver and other viscera, in promoting expectoration in dropsies, and in the cure of intermittents, in herpetic eruptions, and even pulmonary consumption. Tragus greatly extols its virtues in plague; boiled in vinegar, with the addition of *theriaca*, he affirms that it produced a profuse perspiration, and immediately removed the disease. It is said to have obtained a considerable reputation during the "sweating sickness" in this country, in which case it was accompanied with a specific. It must, however, be observed, that some writers have considered it a danger-

ous remedy internally, if too large a quantity be administered; it will consequently require great caution in the use, beginning with small doses, and increasing them gradually. Some authors recommend an infusion of it in wine, as the best preparation; which will take off a great deal of its acrimony. Geoffroy prescribes the following in cases of obstruction of the liver, and suppression of the menses. Take of leaves of Celandine, a handful, cream of tartar, a drachm. Macerate them in six ounces of whey; to the strained liquor add an ounce of syrup of succory, and make it into a draught to be taken on an empty stomach. For the above syrup may be substituted advantangeously that of orange-peel; but it is very evident, in our opinion, that the dose is much too powerful. Ettmuller particularly recommends the external application of the bruised plant for those œdematous swellings of the feet, which succeed to violent fevers and other severe diseases, especially long-continued tertian, or quartan agues. The use of the orange-coloured juice in the jaundice, was probably suggested by the absurd Rosicrucian doctrine of signatures.

Joseph Miller, in his "Botanicum Officinale, or Compendious Herbal," published in London, 1722, speaking of Celandine, says, "it is aperitive and cleansing, opening obstructions of the liver and spleen, and of great use in curing the jaundice and scurvy. Some reckon it cordial, and a good antidote against the plague. Some quantity of it is put into *aqua mirabilis*. Outwardly it is used for sore eyes, to dry up the rheum, and take away specks and films, as also against tetters and ring-worms, and scurfy breakings-out."

Externally, the juice has been long known as a popular remedy to destroy warts; and is said to be very efficacious in stimulating and healing old and indolent ulcers, speedily removing fungous flesh, and restoring a great degree of activity to the torpid and indolent granulations. For the removal of warts, the method of applying it is, simply to break any part of the stalk, and to touch the part affected with the yellow juice that exudes. Fabricius Hildanus employed this juice successfully in opacities of the cornea; while Ettmuller, Geoffroy, and all the writers of

that day, attest its efficacy when diluted with milk or some other bland fluid, in the removal of specks from that membrane. A cataplasm formed of the bruised leaves, and stalks, was formerly supposed to be an infallible remedy in herpes, and has been extolled for curing the itch.

Dose.—Of the dried root from ʒss to ʒj is a dose; of the fresh root infused in wine or in water the dose may be about ℥ss.

Dryobalanops camphora!

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 Asiat. Res. v.* xii. *p.* 539; *Malay Miscel.* 1. *p.* 5.
Carpura. Sans.; *Cáfúr,* 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 Tantong*.

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 champhor it is volatalized; when heated under pressute, 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 fulness of the pulse, and excites diaphoresis. In a large dose, it diminishes the force of the circulation, induces sleep, and sometimes produces delerium, 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.

Delphinium Staphisagria.

W. Clark. Sculp.

London. Published by John Churchill. Leicester Square, Feb.y 1828

DELPHINIUM STAPHISAGRIA.

Palmated Larkspur, or Stavesacre.

Class XIII. POLYANDRIA.—*Order* III. TRIGYNIA.

Nat. Ord. MULTISILIQUÆ, *Lin.* RANUNCULACEÆ, *Juss.*

GEN. CHAR. *Calyx* 0. *Petals* 5, the upper one spurred. *Nectary* bifid, horned behind.

* * *Three-capsuled.*

SPEC. CHAR. *Nectaries* 4-leaved, shorter than the petal. *Leaves* palmate, with the lobes obtuse.

Syn.—Staphisagria, *Raii Hist.* 705; *Park*, 223; *Ger. Em.* 495: *Bauh. Pin.* 324; *Dod. Pempt.* 336; *Fuchs.* 784.

Delphinium Platani folio, Staphisagria dictum, *Tourn. Inst.* 428; *Boerh.* 1.301.

Delphinium Staphisagria, *Lin. Sp. Pl. Willd.* 2.1226; *Scop. Carn.* 2. *n.* 652; *Woodv.* 417. *t.* 154. *Sm. Fl. Græc. Sibth.*; *Stokes*, 3. 215.

FOREIGN.—*Staphisagre*, Fr.; *Stafisagria*, It.; *Piogenta*, Sp.; *Stephanskraut laus korner*, Ger.

THIS handsome plant is a native of Provence, Languedoc, and many other parts of the south of Europe. It is a biennial, cultivated here by Gerarde in 1596, and flowering from April to August.

Stavesacre grows to the height of one or two feet; the stem is round, downy, erect, simple, and of a purplish hue. The lower leaves are nearly as large as those of the vine, palmated, and divided into seven lobes, which are oblong, ovate, veined, downy, sometimes acutely indented, and of a pale green colour; those on the upper part of the stem are gradually smaller, usually 5-lobed, and

supported on long downy footstalks of the colour of the stem. The flowers are bluish or purplish, supported on long footstalks, and form an elegant open spike at the extremity of the stem. There is no calyx. The corolla is composed of five petals, placed in a circle, the upper one extended behind into a long tubular spur; the nectary is usually divided into four leaves placed in front within the row of petals; the two superior are narrow, small, and at the base drawn out into spurs like that of the petal in which they are both inclosed; the outer two are roundish and plaited at the edges. The filaments are numerous, awl-shaped, and crowned with oblong yellow anthers; the germens are three, superior, close together, tapering, downy, and furnished with short filiform styles, terminated by simple stigmas. The three capsules are ovate-oblong, tapering, pointed, with one valve opening internally, and contain many rough, brown, triangular seeds. The beautiful figure which accompanies this description, we have taken the liberty to make from Sibthorp's celebrated "Flora Græca." Fig. (*a*) represents the nectary; (*b*) the stamens; (*c*) the capsules.

The Delphinum Staphisagria is supposed to be the σταφις αγρια of Dioscorides; and from the flower being something like a dolphin's head, the generic term is derived from δελφινος, a dolphin. Our climate is too cold for this plant in the open air.

Qualities and Chemical Properties.—The seeds of this species of Delphinium are rough and blackish without, and of a light yellowish colour within. Their odour is slightly fœtid; to the taste they are intensely bitter, acrid and nauseous, and when masticated powerfully excite the salivary secretion, and inflame the fauces. M. M. Lassaigne, and Feneulle, have discovered in the stavesacre a vegetable alkali which they named *delphine*, from a supposition that the acrid qualities of the whole family depended upon this principle: an opinion, however, which has not been confirmed by the analysis of other plants belonging to it.

It is thus obtained: The seeds, deprived of their husks and grounds, are to be boiled in a small quantity of distilled water, and then pressed in a cloth; the decoction is to be filtered, and boiled for a few minutes

with pure magnesia; it must then be re-filtered, and the residuum left on the filter; when well washed, it is to be boiled with highly rectified alcohol, which dissolves out the alkali, and, by evaporation, it is obtained as a white pulverulent substance, presenting a few crystalline points.

It may be obtained also by acting with dilute sulphuric acid on the seeds, unshelled but well bruised, the solution is to be precipitated by subcarbonate of potash, and the precipitate acted on by alcohol: but, obtained in this way, it is very impure.

Delphine, when pure, is crystalline whilst wet, but, on drying, rapidly becomes opaque by exposure to air. Its taste is bitter and acrid. When heated it melts; and, on cooling, becomes hard and brittle like resin. If heated more highly it blackens, and is decomposed. Water dissolves a very small portion of it. Alcohol and ether dissolve it very readily. The alcoholic solution renders syrup of violets green, and restores the blue tint of litmus, reddened by an acid. It forms neutral salts with the acids, which are very soluble; the alkalies precipitate the delphine in a white gelatinous state, like alumine.

Sulphate of Delphine evaporates in the air, does not crystallize, but becomes a transparent mass like gum. It dissolves in alcohol and water, and has a bitter acrid taste. In the voltaic current it is decomposed, giving up its alkali at the negative pole.

Nitrate of Delphine, when evaporated to dryness, is a yellow crystalline mass. If treated with excess of nitric acid, it becomes converted into a yellow matter, little soluble in water, but soluble in boiling alcohol. This solution is bitter, is not precipitated by potash, ammonia, or lime-water, and appears to contain no nitric acid, though itself is not alkaline. It is not destroyed by further quantities of acid, nor does it form oxalic acid. Strychnine and morphium take a red colour from nitric acid, but delphine never.

The *acetate of delphine* does not crystallize, but forms a transparent hard mass, bitter and acrid, and readily decomposed by cold sulphuric acid. The oxalate forms small white plates, resembling in taste the preceding salts.

Delphine calcined with oxide of copper gave no other gass than carbonic acid. It exists in the seeds of the stavesacre, in combination with malic acid, and in company with the following principles:—1. A brown bitter principle, precipitable by acetate of lead. 2. Volatile oil. 3. Fixed oil. 4. Albumen. 5. Animalized matter. 6. Mucus. 7. Saccharine mucus. 8. Yellow bitter principle, not precipitable by the acetate of lead. 9. Mineral salts.—*Annales de Chim.* xii. p. 358.

Poisonous Effects.—Hillefield, as recorded in Orfila, gave some infusion of stavesacre to dogs, and the animals died, after having had vomitings, involuntary dejections, general trembling, accompanied by great debility. Orfila also gave the powdered seeds to dogs, which are stated to have died from their effects; but it appears to us that the operation of tying the œsophagus, would,

of itself, be able to produce all the symptoms that were observed. From its effects when applied to wounds that were made in the thighs of dogs, Orfila infers that stavesacre is not absorbed, and that it produces local irritation, and sympathetic lesion of the nervous system.

Medical Properties, and Uses.—Stavesacre seeds produce vomiting, drastic purgation, and inflammation, and are never administered internally. Formerly* they were used as a masticatory for tooth-ach; but they are too acrid to be recommended even for this purpose. Externally applied they are said to be efficacious in scabies, and fungous ulcerations; but their chief, and most valuable virtue is that of destroying *pediculi* in the head, when mixed and used with hair-powder.

Delphine has not been employed as a medicine; nor are its effects on the animal economy known.

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* Eius grana quindecim si quis trita in aqua musla dederit, crassa per vomitu purgant. Sed qui biberint, ambulare debent. Quinetiam assiduè attendere, oportet, et aquam mulsam potue dare, quod strangulationis pericula inferant et fauces deurant. Trita eadem, et ex oleo inuncta, pediculationi, prurigini et scabei auxiliatur. Plurima cit pituita comanducata. Decocta in aceto, dentium in dolori, si ea colluantur, subuenit. Gingiuaru rheumatismum sistit. Ulcera oris, aphthas nominant cum melle sanat. Miscetur præterea urentibus malagmatis. *Diosc.*

Aconitum Napellus

XXVIII

ACONITUM NAPELLUS.

Common Monk's-hood, or Wolf's-bane.

Class XIII. POLYANDRIA.—*Order* III. TRIGYNIA.

Nat. Ord. MULTISILIQUÆ, *Lin.* RANUNCULACEÆ, *Juss.*

GEN. CHAR. *Calyx* 0. *Petals* 5, the highest arched. *Nectaries* 2, peduncled, recurved. *Pods*, 3 or 5.

SPEC. CHAR. Divisions of the leaves linear, broader above, and scored with a line.

Syn.—Aconitum cœruleum seu Napellus, *Bauh. Pin.*
Aconitum Napellus, *Lin. Sp. Pl.* 751; *Willd.* 183.
Aconitum caule simplici, *n.* 1197. *Hall Hist.* ii. 1235.
FOREIGN.—*Aconit, Chaperon et Moine*, Fr.; *Napello*, Ital.; *Aconito*, Span.; *Blauer-stramhut*, Ger.

This species of Aconite, (which has frequently been mistaken for the A. *neomontanum*, so strongly recommended by Baron Störck,) is one of our most active vegetable poisons, and is still retained in the London and Edinburgh Pharmacopœias. It is very generally cultivated in gardens as an ornamental plant; but grows spontaneously in the alpine forests of Sweden, France, Switzerland, Austria, Carniola, and other parts of Europe. It flowers in May and June.

The root is simple, or fusiform, and woody. The stem is erect, simple, clothed with leaves, rises to the height of two or three feet, and is terminated by an elegant cylindrical spike of flowers. The leaves are palmated and divided into five wedge-shaped segments; these are deeply cut and toothed, and stand alternately upon long-channelled footstalks, which become gradually

shorter as they approach the top of the stem, so that the upper leaves are nearly sessile; the whole are dark green above, paler underneath, smooth and shining. The flowers, which are of a deep violet colour, proceed alternately on the spikes, and are supported upon short axillary pedicels. There is no calyx; but two small stipulæ are placed on the flower-stalk, at a short distance from the flower. The petals are five; the uppermost helmet-shaped covering the nectaries; the lateral ones broad, roundish; the lower oblong, and bending downwards. The nectaries are two, concealed under the upper petals; each nectary is furnished with a hooked spur, with the lip lanceolate and bifid. The stamens are filiform, converging, purple at the upper part, and supporting whitish anthers. The germens are from three to five, with simple reflected stigmas. The capsules, which correspond in number with those of the germens, contain numerous angular-wrinkled seeds. Fig. *(a)* represents the stamens; *(b)* the pistil; *(c)* the two recurved nectaries.

There are two or three varieties with white, rose-coloured, and variegated corollas. Those with blue flowers are said to be the most powerful. The variety called *pyramidale* is most commonly cultivated in English gardens, on account of the appearance of its long spike of flowers, which are sometimes above two feet long. The Aconitum *Cammarum,* is sometimes confounded with the present species, but the flowers are of a paler blue, the helmet much longer, and the plant is much taller; frequently attaining the height of six feet.

The etymology of the generic name, *Aconitum,* is involved in considerable obscurity. Some have deduced it from Acone, a city of Bithnia, where it grew in great abundance; but the most probable derivation, according to Prof. Martyn, is from ακονιγος, *pulveris expers,* without dust; because the plant grows on rocks destitute of soil, agreeably to the description of Ovid:

> "Quæ quia nascuntur dura vivacia cautè,
> Agrestes *Aconita* vocant."

Pliny says: "Aconitum nascitur in nudis cautibus quas Aconas nominent; et ideo Aconitum aliqui dixêre, nullo juxta ne pulvere quidem nutriente. Hanc aliqui rationem nominis attulêre."

Its poisonous effects were well known to the ancients, who regarded it as the most violent of all poisons, and fabled it to be the invention of Hecate, who caused it to spring from the foam of Cerberus.

Qualities.—Although the root is the most powerful, every part of the plant is poisonous, for on chewing a small quantity of the leaves, a sensation of numbness will be felt in the lips and tongue, which continues for some hours. Should a larger quantity be used, a pungent heat in the palate and fauces will be felt, which will be succeeded by general tremors.

The taste is moderately bitter; the odour faint and narcotic. The active principle is an alkali, and discovered by Brandes, who has named it *aconita*. The deleterious and acrimonious qualities of the plant are nearly lost by drying; and alcohol and water extract its virtues very imperfectly.

Symptoms.—The aconite is one of that class of poisons which acts through the medium of the nervous system, and can produce death without being absorbed. When taken in an overdose the following symptoms quickly ensue: viz. intense heat, and numbness of the throat and mouth, violent nausea, giddiness, convulsions, violent purgings, mania, and cold sweats; which terminate in death.

It appears that M. Bichat was the first who ascertained, that "the brain is not directly necessary to the action of the heart, and that when the functions of the brain are destroyed, the heart continues to contract for some time afterwards, and then ceases, only, in consequence of the suspension of respiration, which is under the influence of the brain." To prove these assertions, Mr. Brodie, in the true spirit of philosophical research, instituted a series of experiments, with different vegetable poisons, amongst which is *aconite*, and has established the truth of these important views.

"An ounce of the juice of the leaves of Aconite was injected into the rectum of a cat. Three minutes afterwards he voided what appeared to be nearly the whole of the injection; he then stood for some minutes perfectly motionless, with his legs drawn together; at the end of nine minutes from the time of the injection, he retched and vomited; then attempted to walk, but faltered and fell at every step,

as if from giddiness. At the end of thirteen minutes he lay on his side insensible, motionless, except some slight convulsive motions of the limbs; the respiration became slow and laboured; and at forty-seven minutes from the time of the injection he was apparently dead. One minute and a half afterwards the heart was found contracting regularly, one hundred times a minute.

"It appears from this experiment, that the juice of Aconite, when injected into the intestines, occasions death by destroying the functions of the brain. From the analogy of other poisons it is rendered probable that it acts on the brain, through the medium of the nerves, without being absorbed into the circulation. This opinion is confirmed by the following circumstance: if a small quantity of the leaf of Aconite is chewed, it occasions a remarkable sense of numbness of the lips and gums, which does not subside for two or three hours.

"I made a wound in the side of a young rabbit, and introduced, between the skin and muscles, about twenty drops of the juice of Aconite. Twenty-three minutes afterwards he was affected with symptoms in all essential respects similar to those which occurred in the experiment already related, where the juice was injected into the rectum; and at the end of forty-seven minutes from the application of the poison he was apparently dead. Two minutes after apparent death, the heart was found contracting, but very feebly.*

It is asserted, that the effluvia arising from the herb in full flower, has so overpowered some persons as to produce loss of sight for a day or two; attended by faintings and other untoward symptoms: and the juice, according to Snodder,† applied to a wounded finger, affected the whole system; not only producing pains in the hand and arm, but cardialgia, great anxiety, sense of suffocation, syncope, &c. The wounded part sphacelated also, prior to suppuration taking place.

"The root was given by way of experiment to four criminals; two at Rome, in 1524; and two at Prague, 1561. Two out of the four soon perished, and the others recovered with great difficulty. Matthiolus states, that a criminal was put to death by a drachm of it: and Dodonæus narrates the cases of five persons, who ate some of it by mistake, at Antwerp, and all died. Dr. Turner also mentions, that several Frenchmen, at the same place, partook of the shoots of the plant, mistaking it for masterwort, and that all died in the course of two days, excepting two players, who quickly evacuated all they had taken, by vomiting.

A person having eaten some of the leaves of the A. *napellus*, became maniacal, and the surgeon who was called to his assistance declared, that the plant was not the cause of his disorder; and to

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* Phil. Trans. 1811, fol. 186 and 194.

† Vide Albert. Jurisp. Med. t. 6, p. 724.

convince the company that it was perfectly innocent, he eat freely of its leaves, and soon after died in great agony."—(Mordus in K. Vet. Acad. 1739, p. 41.)

"John Crumpler, at eight in the evening, ate some salad, in which had been put by mistake a certain quantity of A. *napellus*. He felt immediately a burning heat on the tongue and gums, and a great irritation in the cheeks. He thought that the blood no longer circulated in his limbs; he had however no inclination to vomit. Perceiving the symptoms to increase, he drank about a pint of oil, and a great quantity of tea, which produced vomiting. The symptoms far from disappearing were aggravated. At ten o'clock, Vincent Bacon, a surgeon, was called in, and found him in bed, with his eyes and teeth fixed, his hands and feet cold, the body, for the most part, covered with a cold perspiration, the pulse scarcely perceptible, and the breathing so short, that it could with difficulty be perceived. He made him swallow two spoonsful of spirit of hartshorn, which occasioned coughing and vomiting: he then administered an infusion of *Carduus Benedictus*, until several vomitings were procured. The patient shortly had a stool, and vomited afresh. The pulse became a little raised, but was intermitting, and extremely irregular. Some stimulating medicines were given; the next morning he was a great deal better, and the cure soon completed." *

Dissection throws no light on the effects of Aconite.

Besides the A. *napellus* and *neomontanum*, it appears from well-attested accounts that the A. *Cammarum* and A. *Anthora* are also poisonous, and according to Bauhine, even the A. *Lycoctonum*, has produced unpleasant symptoms.

Treatment.—The plan of treatment is the same as that recommended under the article "*Belladonna*." Bleeding has been advised, but it should never be resorted to, till the pulse becomes full, or apoplectic symptoms supervene.

Medical Properties and Uses.—It is to Baron Störck † that we are principally indebted for our knowledge of this powerful remedy; which, according to his account, is diuretic, as well as diaphoretic, and narcotic. He administered it for intermittent fevers, chronic rheumatism, gout, exostosis, paralysis and scirrhus, and narrates many well-marked cases of these diseases, in which it was eminently successful. He appears to

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* *Phil. Trans.* 1737, *p.* 287.

† See Störck's "*Libellus quo demonstratur Stramonium, Hyoscyamum, Aconitum, non solum tuto posse exhiberi usu interno hominibus, verum et ea esse remedia in multis morbis maxime salutifera.*" 1762.

have been well acquainted with the potency of the drug he was administering; and therefore recommended small doses to be given at first, which were very gradually increased.* His observations led to its employment in other diseases, and it has been found useful in amaurosis, scrofula, venereal nodes, &c.; but in consequence of its uncertain powers, alarming symptoms have been produced, which have caused it to fall into general neglect. Dr. Davy, however, in a letter to Dr. Paris, says: "In some cases of chronic rheumatism, and in some of intermittent fever, complicated with visceral disease, it (the extract) has had a beneficial effect not to be mistaken; the dose has been from one to two grains." Its diaphoretic effect he did not observe. We have had no experience of the internal administration of Aconite, but the extract applied as a plaster, in the same form as that we have already recommended for Belladonna, is a very useful application to rheumatic affections. It is usual to combine either the powder, or the extract, with some antimonial preparations, calomel, camphor, ipecacuanha, guaiacum, &c. The extract is most certain in its effects; and, as well as the powder, must be given in small doses at first.

Doses.—Of the extract, from half a grain to two.
Of the powder, from two to ten grains.

Off. prep.—Extractum Aconiti. *L. E.*

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* Si vero mali nihil superveniat, lenta et prudenti manu augenda est dosis, donec optatus observetur effectus; dein autem augere amplius dosim non est necesse, quamdiu idem effectus continuat.

Winteria aromatica.

G. Reid. del.

Wed. Dell. sc.

London. Published. for. the. Authors. Sept. 1830.

CLXXVIII

WINTERA AROMATICA.

Officinal Winter's Bark Tree.

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. Gœtt.* v. 9. 34. *t.* 7; *Soland. in Med. Obs. & Enq. v.* 5. 41. *t.* 1.

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 germens 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 germens; (*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.

R. acris

Ranunculus Flammula

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LXXXII

RANUNCULUS ACRIS.

Upright Meadow Crowfoot.

Class XIII. POLYANDRIA.—*Order* VII. POLYGYNIA.
Nat. Ord. MULTISILIQUÆ, *Lin.* RANUNCULACEÆ, *Juss.*

GEN. CHAR. *Calyx* 5-leaved. *Petals* 5 or more, with *nectaries* in their claws. *Seeds* numerous, naked.

SPEC. CHAR. *Calyx* spreading. *Flower-stalks* round. *Leaves* in three deep-lobed and cut segments; the upper ones linear and entire. *Stem* erect.

Syn.—Ranunculus pratensis erectus acris, *Bauh. Pin.* 178; *Raii Syn.* 248.
Ranunculus surrectis cauliculis, *Ger. Em.* 951.
Ranunculus pratensis, surrectis cauliculis, *Lob. Ic.* 665. *f.*
Ranunculus hortensis secunda, *Dod. Pempt.* 426. *f.*
Ranunculus, *n.* 1169. *Hall. Hist. v.* 2. 72.
Pes corvinus, *Brunf. Herb. v.* 1. 143. *t.* 38. *f.* 3.
Chrysanthemum, *Fuchs. Hist.* 879. *f.*
Ranunculus acris, *Lin. Sp. Pl.* 779; *Willd. v.* 2. 1326; *Fl. Brit.* 593; *Eng. Bot. v.* 10. *t.* 652; *Curt. Lond. fasc.* 1. *t.* 39; *Mart. Rust. t.* 30; *Hook. Scot.* 174; *Stokes, Bot. Mat. Med. v.* 3. 266; *Bull. Fr. t.* 109.

AMONG the numerous species of vegetables, natives of Britain, few are more familiarly known than those of the Renunculi. They are herbaceous plants, all, or at least most of them possessing acrid qualities, and generally affecting cold or temperate climates. Sixty-one species are enumerated by Willdenow in the 14th edition of Systema Vegetabilium, but the number has of late been considerably augmented. Fifteen are natives of our island; and of these the two species figured, and the *bulbosus* are the commonest, occupying a considerable space in rich pastures, and propagating themselves with great facility. Early in the spring, and during the greatest part of the summer the flowers occur everywhere; hence the farmer and the horticulturist are continually employed in their destruction, for they contribute little or nothing to the support of man and the larger quadrupeds.

The root of the Ranunculus *acris*, is perennial and somewhat bulbous, with several long simple fibres. The stem is two feet high, erect, round, hollow, leafy, beset with minute hairs, branched towards the top, and many-flowered. The radical leaves are oblong, upright, hairy, footstalks, in three or five deep lobes, which are variously subdivided and toothed. The leaves on the stem are of the same structure; divided into fewer and narrower segments; the uppermost are much smaller, and cut into three linear entire lobes, or sometimes entirely simple and linear. The stalk and branches are terminated by bright yellow flowers, one or two together, on round even stalks, covered with close hairs, and *not* furrowed. The calyx is pale greenish—yellow, or coloured like the corolla, and formed of five ovate, concave, spreading deciduous leaves, which are clothed with a downy pubescence and tipped at the apex with a dark brown spot. Within the calyx are five obtuse petals, polished on their inner surface, and furnished at the base with the nectary, which is a small pore, covered by a scale. The filaments are numerous, (from forty-eight to ninety-three,) not half the length of the petals, with oblong heart-shaped stigmas. In the centre of the corolla are many germens, collected into a head, and each furnished with a small reflected stigma, without any style. The seeds are lenticular, smooth, with a small, slightly-curved point.—Fig. (*a*) represents a single petal detached to show the nectary; (*b*) a stamen with its anther.

Linneus gave this species the name of Acris, on account of its being supposed to be acrid and poisonous in an eminent degree. Mr. Curtis says, " that even pulling up the plant, and carrying it some little distance, has produced a considerable inflammation in the palm of the hand; that cattle in general will not eat it, but that sometimes, when they are turned in a hungry state into a new field of grass, or have but a small spot to range in, they will feed on it, whereby their mouths become sore and blistered. According to Linneus sheep and goats eat it; but kine, horses, and swine refuse it. When made into hay it loses its acrid quality; but then it seems to be too stalky and hard to afford much nourishment; if it be of use, it must be to correct, by its warmth, the insipidity of the grasses."

RANUNCULUS FLAMMULA.

Lesser Spear-wort Crowfoot.

(*Pl.* LXXXII.)

Spec. Char. *Leaves* ovate-lanceolate, bluntish, stalked. *Stem* reclining. *Root* fibrous. *Seeds* smooth.

Syn.—Ranunculus flammeus minor, *Raii Syn.* 250; *Ger. Em.* 961. *f.*
Ranunculus longifolius, aliis Flammula, *Bauh. Hist. v.* 3. 848. *f.*
Ranunculus, n. 1182. *Hall. Hist. v.* 2. 78.
Ranunculus Flammula, *Lin. Sp. Pl.* 772; *Willd. v.* 2. 1307; *Fl. Brit.* 587; *Eng. Bot. v.* 6. *t.* 387; *Curt. Lond. fasc.* 6. *t.* 37; *Hook. Scot.* 174; *Stokes, Bot. Mat. Med. v.* 3. 258; *Bull. Fr. t.* 15.

This species of Ranunculus, which is commonly called in English the small or lesser Spear-wort, grows plentifully throughout Europe, in marshy places, and especially in the wet and more boggy parts of heaths and commons, where it flowers most part of the summer.

The root is perennial, consisting of several long simple fibres, issuing part from the lower joints of the stem. The stem is a foot high or more, reclining, partly or entirely decumbent at the base, branched, leafy, round, hollow, smooth, and frequently tinged with purple. The whole plant is generally smooth, except a variety whose leaves are said to be hairy at the edges, and the upper part of the stem is sometimes a little downy. The radical leaves are ovate-lanceolate, pointed at each end, standing on long foot-stalks, which are hollow on one side and flattened; those on the stalk lanceolate, alternate, standing on shorter foot-stalks, which are dilated and sheathing at the base; the uppermost, and those next the flowers, linear; all of them smooth, sometimes perfectly entire, or more or less toothed. The flowers are terminal as well as opposite to the leaves, and stand on round erect stalks, without bracteas. The corolla is of a bright yellow colour, composed of five roundish, somewhat concave, heart-shaped petals, with short claws and a very minute

nectary. The calyx consists of five ovate, obtuse, slightly villous, concave, yellowish, deciduous leaves. The stamens are numerous, and the other parts of the flower resemble those of the preceding species. Mr. Lightfoot remarks that the plant, in some states, differs very little from great Spear-wort Crowfoot, Ranunculus *Lingua;* that it varies greatly in magnitude, and in gravelly soils degenerates to a trailing dwarfish size, with small linear leaves.

GENERAL QUALITIES OF THE RANUNCULI.

The roots of the R. *bulbosus* appear to consist of albumen, mixed with ligneous fibres. If the root be macerated in cold water, it gives a solution of this substance, which coagulates in flocks on the application of heat; and undergoes the same process slowly on the admixture of alcohol. The juice of some, yield nitric acid; but the most interesting constituent in most of the species of ranunculus is the acrid principle, which pervades every part of the plant in its green state. Like the acrimony of the arum, it is volatile, and disappears in drying, or upon the application of heat. It differs, however, in not being destroyed by a moderate heat, and in being fully preserved by distillation. Professor Bigelow subjected various species of this family to this experiment, and always found the distilled water to possess a strong acrimony; while the decoction, and portions of the plant remaining in the retort, were wholly destitute of this property. This distilled water, when first taken into the mouth, excited no particular effect; but after a few seconds, a sharp, stinging sensation was produced. When swallowed, a great sense of heat took place in the stomach. Some distilled water of the *R. repens,* was kept in a close stopped phial for several months, and retained its acrimony undiminished. In winter time it froze, and on thawing lost this property. According to the experiments of Tilebein,* the water of *R. sceleratus,* is acrimonious in an intense degree; and when cold, deposits crystals, which are scarcely soluble in any menstruum, and are of an inflammable nature. Precipitates are pro-

* Chemical Annals, vol. ii. p. 313.

duced in this water by muriate of tin, and acetate of lead. The strength of the distilled water is impaired by continuing the operation too long. The acrimony of the plants is also expended in a very short time at the boiling heat, and a further continuance of the distillation brings over only water.

Properties, and Medical Uses, &c.—Both ancient and modern writers on botany, and materia medica agree, in attributing to many species of the genus *Ranunculus* a corrosive, and poisonous quality. In several, it abounds in such a degree as, when applied externally, in a recent state, to excite vesications, and ulceration of the parts, which often assume a malignant or gangrenous disposition: and taken internally they prove poisonous, by inducing vomiting, inflammation of the stomach, and the usual consequences of acrid poisons. These qualities, according to Dr. Pulteney,* are particularly manifest in the recent plant, while in its highest vigour before flowering; and more intensely in the germen of the flower itself, and in the petals of some.

The poisonous species that are indigenous and common in England, are the R. *Flammula;* R. *bulbosus;* R. *acris;* R. *sceleratus;* and the R. *arvensis.* Of these the *Flammula, bulbosus* and *sceleratus,* are judged to be the most acrimonious.

Before the introduction of *Cantharides,* the acrid Ranunculi were all, in their turn, used as vesicatories, and Haller† tells us, that the *R. flammula* is still in use as such in some parts of France: and as the two species we have figured have obtained places in the materia medica of the Dublin college, we suppose that they are intended to be employed for this purpose amongst the paupers of Ireland. Gilibert‡ assures us, that the *R. bulbosus* vesicates with less pain than the *flies,* and has this advantage, that it does not affect the urinary passages. He therefore gives it a decided preference as an epispastic. Other authors allow these properties in the Ranunculi; and state that they exert their effects sooner than the Cantharides; but as their action is uncertain,

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* Trans. of Lin. Soc. vol. v. p. 14.
† See his Enumeratio Stirpium, and Hist. Stirp. Helvetiæ.
‡ Plantæ rariores Lithuaniæ. No. 331.

and as many instances are recorded by Murray* and others, of their producing ill-conditioned ulcers, they are not employed in this country. The latter author states, that a slice of the fresh root of *R. bulbosus* placed in contact with the inside of the finger, brought on a sense of pain in two minutes. When taken off, the skin was found without redness, and the sense of heat and itching ceased. In two hours, however, it returned again, and in ten hours a full serous blister was raised. This was followed by an ulcer of bad character, and difficult to heal. He remarks, that if the application is continued after the first itching, the pain, and subsequent erosion are, much greater. And it is a well-known fact, that soldiers, and mendicants, often resort to these plants to produce ulcers on their legs; the former to procure their discharge, and the latter to excite commisseration.

With a view to their external stimulus they have been used advantageously in rheumatism, the hip disease, hemicrania, and fixed pains of various descriptions. Amongst the old practitioners who have recorded instances of their effects, are Baglivi, Störck, and Sennertius. A curious practice formerly prevailed in several countries of Europe, of applying the ranunculus to the wrists, or fingers, for the cure of intermittent fevers. This is mentioned by Van Swieten, Tissot, and some others. In *hemicrania* it was applied to the head, and in this case did not produce a discharge, nor break the skin; but occasioned tumefaction of the hairy scalp. Chesnau, quoted by Murray, advises that the ranunculus be applied to a small surface only, and through a perforation of adhesive plaster, to keep it from spreading. From want of this caution, he had known extensive inflammation to arise, and spread over a great part of the face, neck, and breast.

The burning sensation which the Ranunculi excite in the mouth when chewed, extends, as we have already observed to the stomach, if they be swallowed. Krapf† states that a small portion of a leaf, or flower of R. *sceleratus*, or two drops of the juice, excited acute pain in the stomach, and a sense of inflammation in the throat. He gave a quantity of the juice

* Appar. Med. iii. 87.

† Experimenta de nonullorum Ranunculorum, &c. p. 107.

to a dog, which produced vomiting and great distress: and the animal being killed, was found to have the stomach inflamed, and contracted, and the pylorus hardly pervious. The same author informs us, that dilution greatly diminishes the power of this fluid, so that half a drachm of the juice, in six ounces of water, may be taken with entire safety. Grazing cattle generally avoid the plants of this genus, as far as it is possible for them to do so. Accordingly we observe the flowers of ranunculi left untouched, while the grass is closely cropped around them. It is nevertheless unavoidable, that portions of them should often be eaten by these animals; and although their mouths and nostrils are frequently excoriated, it is probable that small quantities of the less acrid sorts do them little injury. In the *Pan Suecus*, some experiments upon these plants, on domestic animals are detailed; in which it is stated, that horned cattle eat all the species when offered to them, excepting R. *auricomus*. This species was rejected by horses, while they would eat R. *Flammula*. Sheep, and goats eat the R. *acris*, one of the most pungent of the species. Dr. Pulteney states it as a well-known fact, that hogs devour the root of R. *bulbosus*. How it is that these animals resist the deleterious effects of such virulent plants it is not easy to say. It is not however a more remarkable fact, than that which is mentioned by Professor Pallas, that the hedgehog can devour cantharides by hundreds without inconvenience, whereas one of these insects might cause very serious symptoms to man. In their dry state, various species of ranunculi must necessarily enter very largely into the composition of hay; but having lost their acrimony by drying, they become harmless, and probably nutritive. Dr. Pulteney, in his paper already cited, states that "in the neighbourhood of Ringwood, on the borders of the Avon, which affords the *Ranunculus aquatilis fluvialis* in great abundance all the year, some of the cottagers sustain their cows, and even horses, almost wholly by it. It is usual to employ a man to collect a quantity for the day every morning, and bring it in a boat to the edge of the water, from which the cows eat it with great avidity. I was indeed informed they relish it so highly, that it is unsafe to allow them more than a certain quantity, I think between twenty-five and thirty pounds each

daily; but with variation according to circumstances. The cows I saw were apparently not in a mean condition, and gave a sufficient quantity of good milk. I was told by the person, whose cattle were feeding on it, that he kept five cows and one horse so entirely by this plant, and what the heath afforded, that they had not consumed more than half a ton of hay throughout the whole year. I examined the whole parcel, on which four cows were feeding in the beginning of March; and found the whole consisted, exclusively of the *Ranunculus fluvialis*, without any mixture of other aquatic plants. In summer, however, it can scarcely be avoided, but that there must be a mixture of some of these; but other plants are not chosen. Hogs also thrive so well on this plant, that they are not allowed any other food, till it is proper to fatten them."

The Ranunculus *Flammula* is very acrid. Applied externally it inflames and blisters the skin. Its acrimony rises in distillation. Some years ago a man travelled in several parts of England administering vomits, which operated the instant they were swallowed. The distilled water of this plant was his medicine; "and from the experience I have had of it," says Dr. Withering, "I feel myself authorized to assert, that in the case of poison being swallowed, or other circumstances occurring, in which it is desirable to make the patient vomit instantaneously, it is preferable to any other medicine yet known, and does not excite those painful contractions of the upper part of the stomach, which the white vitriol sometimes does, thereby defeating the intention for which it was given." The Highlanders raise blisters with it; for this purpose, the leaves are well bruised in a mortar, and applied in one or more limpet shells to the part where the blisters are to be raised.

Treatment.—The Ranunculi are too acrid to render it probable that they should ever be taken accidentally in sufficient quantity to produce deleterious effects; while, on the other hand, boiling them, if used by mistake for pot-herbs, dissipates their injurious properties. If, however, any accident should ever arise from them, we refer to Arum *maculatum*, Art. 22, for an account of the treatment which ought to be adopted.

Helleborus niger.

Published by John Churchill, New Square, March 18[illegible]

HELLEBORUS NIGER.

Black Hellebore.

Class XIII. POLYANDRIA.—*Order* VI. POLYGYNIA.

Nat. Ord. MULTISILIQUÆ, *Lin.* RANUNCULACEÆ, *Juss.*

GEN. CHAR. *Calyx* o. *Petals* five or more. *Nectaries* bilabiate, tubular. *Capsules* many-seeded, nearly erect.

SPEC. CHAR. *Leaves* pedate. *Flower stalks* radical, one or two flowered. *Bracteas* ovate.

Syn.—Helleborus niger, flore roseo. *Bauh. Pin.* 186.
Helleborus niger verus. *Ger. Em.* 976. *Park. Theatr.* 212. *Raii. Hist.* 697.
Elleborus niger legitimus. *Clus. Hist.* i. 274.
Helleborus niger. *Lin. Sp. Pl.* 783; *Willd. v.* 2. 1335.
FOREIGN.—*L'Hellebore a fleurs roses*, Fr.; *Elleboro negro*, Ital.; *Helleboro negro*, Sp.; *Schwarze Nieswurz*, Ger.; *Khurbuc usivud*, Arab.

BLACK HELLEBORE, so called from the dark colour of the root, is a perennial plant, growing spontaneously on the rocky mountains of Austria, Carniolia, Italy, and Greece, and cultivated in our gardens as an ornamental plant, flowering, in mild seasons, from December till March, whence it has obtained the name of Christmas rose. The date of its introduction is unknown; but it appears to have been cultivated in Britain by Gerarde as early as 1596. In the older editions of our Dispensatories, it is termed "Melampodium,"* and was formerly

* Melampodium appellatur, quoniam caprarum pastor, Melampus nomine, furentes Præti filias eo primus purgasse, et sanasse creditur. Folia ei viridia Platani

supposed to be the true ἑλλεβορος μελας of Dioscorides, till it was discovered to be a distinct species by Tournefort, growing plentifully on Mount Athos, Delphi, and the Bythnian Olympus, as well as on the hills near Thessalonia: and by Dr. Sibthorp, in the neighbourhood of Constantinople. Anticyra, now Asprospizzia, a city in Phocis, situated near Mount Oeta, was famous among the ancients for the Hellebore which it produced; it was of the best quality, and reckoned a specific for many diseases, particularly for insanity; hence arose the proverb, "Naviget Anticyram," send the madman a voyage to Anticyra. Thus the Roman poet:—

> Danda est ellebori multo pars maxima avaris:
> Nescio an Antycyram ratio illis destinet omnem.
> Hor. Sat. iii. lib. ii.

"By far the largest portion of Hellebore is to be administered to the covetous: I know not whether reason does not consign all Anticyra for their use."

The root, which is the part used in medicine, consists of numerous depending fibres, issuing from a rough transverse knotty head, externally of a blackish colour, internally white. The leaves are large, composed of five, six, or more leaflets of a deep green colour, and spring directly from the root on long cylindrical petioles, smooth, and dotted with red; the leaflets are ovate-lanceolate, smooth, shining, and coriaceous, with the distal, half of each slightly serrated. The flower-stalk is a scape, six or eight inches long, erect, round, variegated with red, and supporting one or two flowers. The bracteas, or floral leaves, are ovate, and indented at the edges. The corolla consists of five large, roundish, concave petals, at first white, or of a pale rose colour, deepening by age, and finally becoming green, after the impregnation of the seed. The nectaries are tubular, two lipped. The filaments are numerous, capillary,

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similia, sed minora, foliis sphondelii proxima, pluribus divisuris scissa, nigriora, et subaspera; caulis brevis; flores candidi purpurascentes, figura racemosi; semen intus Cnici. . . . Radices subsunt tenues, nigræ, velut e capitulo quodam cepæ simili dependentes, quarum usus est etiam. In asperis, editioribus, sitientibusque locis enascitur. . . . Eligi debet carnosum, plenum cui tenuis medulla sit, acre denique gustu, fervens que.—*Dioscorid.* l. 4. c. 151. p. 297.

supporting yellow anthers. The germens, about six or eight in number, become pods, containing many black, shining seeds.

Adulterations.—It appears that the merchants of Frankfort and of Hamburgh, frequently substitute the roots of the Aconitum *neomontanum*, Adonis *vernalis*, Helleborus *viridis*, Trollius *europæus*, Actæa *spicata*, and some other plants, for those of Helleborus *niger;* but these may in general be distinguished by their paler colour.

Qualities and Chemical Properties.—The fibres of the roots, which are the parts employed, are of the size of a small quill; corrugated; of a colour approaching to black on the outside; and of a yellowish white within. Their odour is disagreeable. Both the virtues and properties of the root are impaired by keeping:* but when fresh, their taste is penetrating; and though neither bitter, nor very hot, it leaves a lasting impression in the mouth; and has a remarkable effect on the tongue, as observed long ago by Grew, in his work on Tastes. "The root being chewed, and for some time retained upon the tongue, after a few minutes it seemeth to be benumbed, and affected with a kind of paralytic stupor; or as when it hath been a little burnt with eating or supping any thing too hot." M. M. Feneulle and Capron have lately analyzed the root, but were unable to discover any alkali in its active principle, similar to that which is yielded by the White Hellebore. The following are its constituents, viz. a volatile oil; a fatty matter, a resin, wax, a volatile acid, a bitter principle, mucus, alumina, gallate of potash, acidulous gallate of lime, and a salt, with an ammoniacal base. Alcohol appears to extract its virtues most efficiently; from which it would appear, that they depend principally on its resinous part. A watery extract, also, possesses both its purgative and diuretic qualities: and its irritating properties are considerably lessened by boiling.

Poisonous Effects and Morbid Appearances.—That it is a violent *acrid poison*, the subjoined account will prove.

"Six grains of powdered hellebore were sprinkled over a wound, made in the interior of the thigh of a small young dog. There were

* Virtus: *rec.* venenata, rubefaciens, vesicans; *recenter siccatæ:* emetica, purgans, emmenagoga, antiphthiziaca, sternutatoria; *diu conservatæ:* vix purgans, alterans, diuretica.—Burgiu's *Mat. Med. v.* 2. *p.* 496.

no visible symptoms at the expiration of eight hours. The next day, twenty hours after the operation, the animal was lying down upon his side, and in a state of great dejection; he was quite sensible to external impressions: he could be moved like an inert mass of matter, and could not by any means keep himself on his legs. He died three hours after. No sensible lesion was perceived in the digestive canal, or in the lungs."—(Orfila.)

"Two persons took a decoction of this root in cyder, and M. Ferary communicated the particulars to the Societé Medicale d'Emulation at Paris. Three quarters of an hour after taking it, alarming symptoms were developed, without exciting suspicion of the real cause. One of the men, therefore, took another dose, when vomiting, delirium, horrible contortions, accompanied with immediate coldness supervened, and death at last ensued. On dissection, sixteen hours afterwards, the appearances in each were found precisely similar, except that in the one who took the largest quantity they were more strongly marked. The lungs were gorged with blood. The mucous membrane of the stomach was considerably inflamed, of a blackish brown colour, and reduced almost to a gangrenous state. The œsophagus and intestines were natural."*

In some, the stomach and intestines, but particularly the *rectum,* are highly inflamed,—a circumstance which will be observed in those who had died from taking the Colchicum *autumnale,* that, in its poisonous effects, very much resembles black hellebore. Slight congestions have also been noticed in the lungs, and the bladder has been observed to be red and thickened.

"A man, who appeared to be nearly fifty years old, being in the hospital on account of melancholia, was about to depart, when he took same extract of black hellebore, by which he was considerably purged. In the beginning of the night, at the seventh or eighth hour after taking it, he was attacked with vomitings and pains of the abdomen, which were allayed by warm broth. About the fifth hour of the night, those affections returned, and again appeared to be relieved. He lay down an hour afterwards, having vomited two or three spoonsful of a greenish matter. So quietly did he rest afterwards, that none of the patients, in the nearest beds, heard him; but at the eighth hour, they were attracted to his bedside by a peculiar noise from his mouth; and found him dead. He had taken about half a drachm of the extract; a quantity which had been administered to others with impunity. He had, however, neglected to drink copiously of whey; a precaution it was customary to recommend.

"Thirty hours after death the body was inspected. The limbs were neither rigid nor contracted. In some places, even externally, the stomach and intestines were inflamed: and the intestinum ileum was contracted in some parts, and dilated in others. Internally, the stomach, with the adjacent parts of the œsophagus, was partially inflamed:

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* Beck's *Elements of Medical Jurisprudence*, p. 514.

the intestines were likewise inflamed, but the inflammation was not violent in either part. The spleen was somewhat larger than natural, and so flabby, that the inner substance was almost fluid. The bile contained in the gall bladder was of a pale green colour. A little bloody fluid escaped from the cranium, when it was cut into. There was but little blood in the sinuses of the dura mater, or in the larger vessels, which ramify through the pia mater. The whole cerebrum was soft."*

Treatment.—According to the experiments of Orfila, the poisonous qualities of Hellebore are absorbed, and act much more rapidly when applied to the cellular texture of the thigh, than when introduced into the stomach. Hellebore, he says, occasions a remarkable stupefaction, which will be combated by an infusion of coffee and camphor in small doses, frequently repeated : and if these medicines are thrown up a short time after their injestion, they must be used in injections, and by frictions. Inflammation he recommends to be combated by emollient drinks : and emetics are only to be resorted to when vomiting has not been copiously excited by the poison : and this last advice applies to all other poisons of the *acrid* class. Were we called to a patient suffering from the effects of Hellebore, we should either produce or encourage vomiting. We should then give coffee, in which gum acacia might be dissolved. After this, small doses of laudanum might be administered, conjoined with Epsom salts and almond emulsion : and the latter might form the common drink for an indefinite period. To relieve delirium, or inflammation of the stomach, bleeding generally, or by leeches, might be advantageously employed; and the general antiphlogistic treatment persisted in. The same mode of treatment is required in cases of poisoning by Elaterium, Gamboge, Colocynth, the fresh roots of Arum, the different species of Rhus, Dephinium, Colchicum, Oenanthe *crocata* and *fistulosa*, several species of Ranunculus, the Euphorbiæ, and many other acrid vegetable poisons.

Medical Properties and Uses.—Before the grand discoveries which chemistry has made on the properties of metallic substances, the most violent vegetable medicines were boldly administered, and this plant has been highly extolled by Avicenna, Gesner, Klien, Milman, and others, in mania, dropsy, cu-

* Morgagni. *De Sed. Morb.* l. ix. 15.

taneous diseases, and worms. As an emmenagogue, it is occasionally given with success; but this property, as well as its hydragogue virtues, are reasonably supposed to depend on its powerful cathartic effects: effects which it sometimes exerts so violently, as to be seldom prescribed; and were it expunged from the list of our materia medica, we could easily fill up the vacancy by indigenous plants of greater utility. The slender fibres of the root only are used. To produce its full effect as a purgative, the dose should be from ten grains to a scruple; but it is very seldom prescribed in substance. The most common form is that of decoction, made with two drachms of the root to a pint of water. Of this an ounce or more is given every three or four hours. The extract, which is made by evaporating the decoction to a due consistence, is the basis of Bacher's celebrated hydragogue pills, composed of extract of black hellebore, myrrh, and powdered carduus benedictus, in the proportion of half a drachm of the first two ingredients, and five grains of the last, beat into a mass, and made into pills, each weighing a single grain. These pills, which formerly obtained a place in our Pharmacopœias, in doses from one to six, three or four times a day, were strongly recommended on the continent in dropsical cases, and were supposed to unite an evacuant and tonic power. Hence they were supposed particularly adapted to those cases where general debility and relaxation of the system occurs. Under the hands of their inventor, they acquired so great reputation, that after a trial in the military hospitals of Paris, the receipt was purchased by the French king, and published by authority. But like many other nostrums, since their composition became known, Bacher's pill has by no means supported the reputation which it had when kept a secret.

Dose.—The dose of extract is from grs. iij. to ℈j; of the tincture from gtt. xxx. to ʒj. every six hours, in a mucilaginous vehicle.

Off. Prep. Extractum Hellebori Nigri, E. D. Tinctura Hellebori Nigri, L. E. D. *olim*, Tinctura Melampodii.

Helleborus foetidus.

London. Published by John Churchill, Leicester Square, June, 1827.

XXI

HELLEBORUS FŒTIDUS.

Fœtid Hellebore, Bear's-foot, or Setter-wort.

Class XIII. POLYANDRIA.—*Ord.* VI. POLYGYNIA.

Nat. Ord. MULTISILIQUÆ, *Lin.* RANUNCULACEÆ, *Juss.*

GEN. CHAR. See Helleborus *niger*.

SPEC. CHAR. *Stem* many-flowered, leafy. *Leaves* pedate, glabrous; *Segments* oblong-linear.

Syn.—Helleboraster maximus, *Raii. Syn.* 271.; *Ger. Em.* 976. *f.*
Helleborus niger fœtidus, *Bauh. Pin.* 185.
Helleborus, n. 1193, *Hall. Hist. v.* 2. 87.
Veratrum nigrum tertium. *Dod. Pempt.* 386.
Helleborus fœtidus, *Lin. Sp. Pl.* 784; *Willd. v.* 2. 1337; *Fl. Brit.* 598.
PROVINCIALLY.—*Great Bastard* and *Stinking Black Hellebore*, *Helleboraster*, *Settle*, or *Settle-wort*, *Ox-heal.*
FOREIGN.—*Hellebore fœtide*, Fr.; *Eellboro fœtido*, Ital.; *Helleboro hediondo*, Sp.; *Stinkende Niesswrzell*, Ger.

THIS is an evergreen perennial plant, growing naturally in many parts of Britain, on pastures and in thickets, particularly on a calcareous soil. According to Sir James E. Smith, it grows abundantly on the castle hill at Castle-Acre, Norfolk; and Gerarde, who lived in the 16th century, says that it was wild in his time in many woods and shady places in England. Dr. Hooker, in his Flora of Scotland, states, that it occurs also plentifully on the banks of the Clyde at Blantyre Priory; on old walls at Barncluish, in the vicinity of Glasgow; and between Anstruther and Kepply, near Edinburgh. It is a well-known plant in gardens; flowering in March and April.

The root is small, bent, and surrounded by numerous dark-coloured fibres; the stem rises to about two feet in height; towards the bottom it is strong, round, naked, and marked with alternate cicatrices, the vestiges of former leaves; is divided, and

subdivided into branches, and compressed at the top, producing many flowers. The leaves, which stand upon long channelled footstalks, surrounding the middle of the stem, are divided as in black hellebore, into several leaflets, usually seven or nine in number, long, narrow, serrated, lanceolated, and of a dark green colour. The scaly leaves, or *bracteas*, placed at each ramification of the flower-stem, are smooth, trifid at the lower part, and bifid towards the top; but those near the flowers are ovate, pointed, and of a much paler green than the proper leaves. The flowers are numerous, terminal, drooping, of a pale green, and stand upon long footstalks, forming a sort of panicle: the petals are five, ovate or heart shaped, concave, permanent, and tinged at the apex with reddish purple: the nectaries are eight to ten, very minute, tubular, and placed in a circle within the petals. The stamens are very numerous, the length of the petals, supporting white anthers; the germens three or four, becoming beaked pods like those of black hellebore, containing many small oval seeds disposed in two rows.—Fig. (*a*) represents the stamens, with the situation of the nectaries; (*b*) the capsules, or pods.

Qualities.—The smell of the recent plant is very fœtid, its taste bitter, and remarkably acrid, excoriating the mouth and fauces. "The stipulis possess these qualities in a greater degree than the proper leaves." The plant loses much of its acrimony by drying.

Poisonous Effects.—When administered in an undue quantity, this plant proves an extremely virulent poison. Its action seems very much to resemble that of Helleborus *niger*; occasioning sickness, vomiting, pain in the stomach, violent catharsis, convulsions, and death. In Westmoreland, where this plant grows in great abundance, it has obtained, from its pernicious quality, the name of *felon-grass*. From the following fact, related by Mr. Martin, on the authority of Dr. Milne, it would appear that it is also a poison to sheep. Several years ago, when the ground was covered with a deep snow, a flock of sheep in Ox-meadow, near Fulborn, in Cambridgeshire, finding nothing but this herb above the snow, ate plentifully of it.

They soon appeared terribly disordered, and most of them died; a few being saved by having a quantity of oil administered to them in time, which made them vomit up the pernicious herb. Some of those which died, on being opened, were found to have their stomachs greatly inflamed. Notwithstanding its deleterious properties, the helleborus *fœtidus* is sometimes employed by the common people, and also by itinerant quacks for the destruction of worms, and not unfrequently proves fatal. The following account, by a Mr. Cooke of Leigh, in Essex, is taken from the *Oxford Magazine* for 1769, vol. ii. p. 99.

"It is much used by venturesome quacks in decoction and coarse powder to kill worms in the belly, which it never fails to do. But it has a deleterious, poisonous quality, which some bodies cannot overcome, and then it is dangerous. Where it killeth not the patient, it would certainly kill the worms; but the worst of it is, it will sometimes kill both. Wherefore it is so dangerous a drug, it ought never to be internally applied but upon very extraordinary cases, when other anthelmintic medicines have failed, if ever they do, and even then too by a very skilful hand: and yet, alas! nothing is scarcely more commonly used by women, especially in country places, than the decoction, or powder, of this violent vegetable, for the purpose aforesaid. It has been known to kill several youths, and an old woman also, near fifty, in three hours' time. Others, it violently vomits, and renders heart-sick, even to swooning away; and if, through mere strength of nature, they overcome its violent operation and recover, some have lost the hair and the nails from their fingers and toes; and the scarf-skin of the whole body has also peeled off from head to foot thereby—a plain proof of strong poison.

"I had a most melancholy story from a mother in this city, viz. that a country fellow gave some of this plant to his two sons, one of six, the other of four years old, to kill worms; and that before four in the afternoon, they were both corpses."

Treatment.—See article Helleborus *niger*.

Medical Properties and Uses.—The whole plant is acrid, and violently cathartic; it sometimes operates as an emetic, and in large doses is highly deleterious. It is used chiefly as a vermifuge; the dried leaves in powder, are given in ten grains to half a drachm; but its doses do not appear to have been precisely ascertained. The best form for children is a syrup. For this purpose, the bruised leaves are recommended to be first moistened with a little vinegar, then the juice is expressed from the leaves, and made into a syrup with coarse sugar. A tea-

spoonful is given at bed-time, and one or two in the morning, for two or three successive days, increasing or diminishing the dose according to the strength of the patient. In the western counties, according to Dr. Parr, a tincture is sometimes made of the leaves with cyder, and said to be a useful preparation. In whatever way, however, it is employed, says this able physician, no medicine acts with more certainty than bear's-foot as an anthelmintic. The root is often used in veterinary practice for the rowels for cattle; and if the powder of the leaves be applied to an ulcerated surface, a profuse discharge is excited. It is on account of these properties that it is vulgarly called *Oxe-heele*, *Setter-wort*, *Setter-grass*, from *settering*, a term used by farriers, and supposed to be a corruption of setoning. Its virtues, as a vermifuge, were known to Gerarde, and it is frequently used as a domestic medicine in Yorkshire; but, in consequence of its violent properties, medical men seldom prescribe it; and it might, with great propriety, be expelled the Pharmacopœia, into which it was introduced at the recommendation of Dr. Bisset, who says, "It is by far the most powerful vermifuge for long and round worms of any I have yet experienced. The decoction of about a drachm of the green leaves, or about fifteen grains of the dried leaves in powder, is the usual dose for children from four to seven years old. A full or sufficient dose generally proves more or less emetic, and often looses the belly a little. It is usually repeated on two and sometimes three successive mornings: the second dose has commonly a greater effect than the first, and never fails to expel round worms by stool, if there be any lodged in the alimentary canal." Happily for mankind, science is continually enlarging the sphere of our usefulness; and worms, which were formerly considered as the causes of disease, may generally (excepting the *tænia*) be treated as the consequences of disordered primæ viæ, and remedies worse than the malady discarded from practice. Dr. Bisset speaks of the plant as also useful in some asthmatic and hypochondriacal affections. Adamson says, that an injection of an ounce of the decoction of the roots is preferable to every other remedy in epileptic fits, arising from the presence of worms in the intestines.

Pl 87

Helleborus Orientalis

Weddell fecit.

Published by J. Churchill, Leicester Square, Sept. 1828.

HELLEBORUS ORIENTALIS.

Oriental, or True Officinal Hellebore.

Spec. Char. *Leaves* pedate, hairy underneath. *Flower-stalks* radical, with many flowers. *Bracteas* deeply-lobed, serrated.

Syn.—Helleborus niger orientalis, amplissimo folio, caule prælto, flore purpurascente, *Tour. Cor.* 20; *Geoffr.* ii. 71. 76; *Bellon.* 196.
Helleborus officinalis, *Salsb. in Trans. Lin. Soc. v.* 8. *p.* 305.
Helleborus Orientalis, *Willd. Sp. Pl. v.* 3. 1337; *Lamarck Dict. v.* 3. 96; *De Cand. Syst. v.* 1. 317; *Sm. Prodr. Fl. Græc. v.* 1. *fas* 6· *p.* 19.
Ellebore noir des Anciens, *Tourn. Voyage, tom.* ii. *Let.* xxi. *p.* 474.

We have great pleasure in being able to present our readers with a correct figure of this rare plant, made from a most admirable drawing by Mr. Ferdinand Bauer for the Flora Græca, and published in vol. i. fasc. v. of that celebrated work. The plant, as we have already observed, was gathered on Mount Athos, Delphi, and Mount Olympus in Anatolia, on the hills near Thessalonia, and abundantly near Constantinople, by Dr. Sibthorp, formerly Professor of Botany in the University of Oxford. It is unquestionably the true ελλεβορος μελας of Dioscorides, and is named σκάρφη, by the modern Greeks, and by the Turks *Zopleme*. Tournefort justly supposes his Helleborus niger orientalis, amplissimo folio, caule prælto, flore purpurascente, to be the Hellebore of the ancients, as he found it in the island of Anticyra, famous for the production of this medicine.

The root is perennial, somewhat fleshy, black externally, and surrounded with many very long, dark-coloured, simple fibres.

The stem is very tall, round, smooth, leafy, and of a purplish colour. The radical leaves are stalked, very large, pedate, composed of about nine elliptic, oblong, serrated, pointed lobes, of a dark green colour on the upper surface, and paler, hairy, and veined underneath; those on the stem numerous, on roundish, smooth foot-stalks, channelled above, sheathing at the base, and slightly hairy below. The flower-stalks, which are axillary or terminal, and accompanied by numerous fringed, serrated, leafy bracteas, do not rise above the leaves, but are branched, bearing five or six drooping, concave flowers, of a greenish or whitish colour, turning purple as they fade. The petals are five, roundish, concave, and persistent; the nectaries are numerous, placed in a circle within the petals, deciduous, each of one leaf, tubular, compressed, with a reflected lip, their base attenuated. The stamens are numerous, thread-like, with oblong anthers. The germens, which are five, of an oblong shape, terminated by the styles, become beaked pods, containing several seeds.—Fig. (*a*) represents a perfect flower, with the petals removed; (*b*) a single petal, to show three of the nectaries at its base; (*c*) the germens attached to the receptacle.

Medical Properties and Uses.—The roots of this species of Hellebore, formerly called *Melampodium*, from their black colour, are acrid and violently cathartic. They have been supposed to be useful in maniacal cases, epilepsy, paralysis, hypochondriasis, dropsies, and a variety of other diseases; but as the genuine oriental plant may not be accessible to us, it is useful to know that the Helleborus *viridis* is the safest substitute for it, though less active; while the H. *fœtidus*, which has sometimes been used by fraud or mistake, is more violent and dangerous. We learn from Mr. Curtis, in his Flora Londonensis, that great quantities of the roots of *viridis* are annually sent up from the country, and used for the true black Hellebore. It has also been conjectured that their qualities are the same; for this plant is more nearly allied to the ancient Greek plant than the Helleborus *fœtidus*. A full account of the medical properties and uses of Hellebore has been already detailed, under Art. *Helleborus niger*, which, till lately, was supposed to be the drug used by the ancients.

W Clark, del. et sculp.

London, Published by John

Pl. 111

Viola riviniana.

MENTHA PIPERITA.

Pepper Mint.

Class XIV. DIDYNAMIA.—*Order* I. GYMNOSPERMIA.

Nat. Ord. VERTICILLATÆ, *Lin.* LABIATÆ, *Juss.*

GEN. CHAR. *Corolla* not quite equal, 4-lobed. *Stamens* erect, spreading.

SPEC. CHAR. *Spikes* blunt, interrupted below. *Leaves* stalked, ovate, smoothish. *Calyx* very smooth at the base.

Syn.—Mentha spicis brevioribus, &c. *Raii Syn. ed.* 3. 234. t. 10. f. 2.
Mentha aquatica sive Sisymbrium, *Bauh. Hist.* v. 3. *p.* 2. 223. f.
Mentha piperita officinalis, *Sole Menth. Br.* 15. t. 7.
Mentha piperita, *Willd. Sp. Pl.* v. 3. 79; *Smith Tr. of Lin. Soc. v.* 5. 189; *Fl. Brit.* 613; *Eng. Bot. v.* 10. *t.* 687; *Woodv. t.* 169; *Stokes, v.* 3. 317.
FOREIGN.—*Menthe poivrée*, Fr.; *Menta piperita, It.; Ofeffermünze*, Ger.

SEVERAL species of Mint are cultivated for medicinal and culinary uses. Of these the most important are Pepper Mint, *Mentha piperita;* Spearmint, M. *viridis;* and Penny-royal, M. *Pulegium.* They are all of them indigenous to Britain, and hardy perennials; well worthy the attention of those who love to look into flowery hedges,

> "Or into the meadows, where
> Mints perfume the gentle aire,
> And where Flora spreads her treasure."

Pepper Mint grows wild in some parts of Britain, in watery places, and on the banks of streams, flowering in August and September; but it is not a common native plant. There are three varieties of this species; but the variety *α*, of Smith's "English Flora," is the one generally employed in medicine. The

specimen figured was obtained from Mitcham in Surrey, where considerably more than one hundred acres of this herb are cultivated for the supply of the London market.

From a creeping root arises a stalk that is nearly erect, quadrangular, branched, and generally of a purplish colour, with short recurved hairs, to the height of two or three feet. The leaves stand opposite, on short footstalks, are of a dark green colour, ovate, serrated, acute, varying in breadth, smooth and shining above, and paler, with white and purple veins beneath; the leaves are never downy, but the middle rib, on the under side, is beset with short hairs. The spike of flowers is solitary, bluntish, terminal about the length of the leaves, interrupted and leafy below, with the lowest whorls more distant, and sometimes spiked. The bracteas are lanceolate and fringed. The flower-stalks are either perfectly smooth, or very slightly hairy above. The calyx is slender, furrowed, covered with pellucid dots; the base quite smooth, and five-cleft, with the teeth dark purple and fringed. The corolla is funnel-shaped, longer than the calyx, and of a purplish colour. The filaments are awl shaped, straight, and shorter than the limb. The germen is four-lobed, superior, with a slender style, longer than the corolla, and terminated with a bifid stigma. Fig. (*e*) represents the calyx and pistil; (*f*) the corolla, with the stamens.

In external appearance, Pepper Mint corresponds with *Mentha viridis*, for which it may easily be mistaken; but in that the leaves are sessile, and narrower in proportion to their length; the spikes are longer, and composed of more whorls. "England," says Sir J. E. Smith, "has always been known as the country of the true M. *piperita*. What supplies its place in the north of Europe, is merely a variety of M. *hirsuta*, having a similar odour; and this is named *piperita* in the Linnæan herbarium." Two varieties, a narrow-leaved and a broad-leaved, are cultivated in gardens, and some variegated kinds are considered as ornamental plants, particularly a reddish variety called Orange Mint.

MENTHA VIRIDIS.—*Spear Mint.*

Spec. Char. *Spikes* interrupted. *Leaves* sessile, lanceolate, acute, naked. *Bracteas* bristle-shaped, somewhat hairy, as well as the teeth of the calyx. *Flower-stalks* smooth.

Syn.—Mentha, *Camer. Epit.* 477. *f.*

Mentha romana, *Ger. Em.* 680. *f.*

Mentha hortensis tertia, *Fusch. Hist.* 290. *f.*

Mentha romana officinarum, sive prestantior augustifolia, *Lob. Ic.* 507. *f.*; *Moris. v.* 3. 367. *sect.* 11. *t.* 6. *f.* 1.

Mentha viridis, *Lin. Sp. Pl.* 804; *Willd. v.* 3. 76; *Smith Tr. Lin. Soc. v.* 5. 185; *Fl. Brit.* 612; *Eng. Bot. v.* 34. *t.* 2424; *Sole Menth.* 11. *t.* 5; *Woodv. t.* 170. *Stokes, v.* 3. 311.

Foreign.—*Baume verte*, Fr.; *Menta Romana*, It.; *Menta*, Sp.; *Frauenmurze*, Ger.

Spear Mint grows naturally in marshy places, and by the banks of rivers; but is more rarely met with in this state than the preceding species. It was found many years ago by Hudson, on the banks of the Thames, and Mr. Sole mentions it as growing on a common between Glastonbury and Wells, in a meadow four miles from Bath, and in many places on the banks of the Avon. It produces its flowers in August.

From a root resembling that of the preceding species, rises a stem that is erect, branched, acutely angular, smooth, sometimes purplish, to the height of two or three feet. The leaves are of a lively green colour, about two inches and a half long, and an inch broad, lanceolate, nearly sessile, stand opposite, and are sometimes a little hairy underneath. The stems and branches are terminated by long panicled, acute spikes, the whorls of which are mostly a little remote, and furnished with narrow lanceolate bracteas; the flower-stalks are smooth and polished; the calyx is bell-shaped, generally smooth, having five nearly equal teeth, and sprinkled like the foliage with minute resinous dots; the corolla is funnel-shaped, smooth, and of a light purple colour;

sugar and vinegar, as a sauce to roasted meat, particularly lamb."

Off. Prep.—Aqua Menthæ Piperitæ. *L. E. D.*
Oleum Menthæ Piperitæ. *L. E. D.*
Spiritus Menthæ Piperitæ. *L. E.*
Infusum Menthæ Compositum. *D.*

Spearmint and *Penny-royal*, resemble the peppermint in their qualities, but are less pungent.

Spearmint is used for culinary purposes, and gives out its virtues both to water and alcohol: an essential oil is also obtained from it.

Off. Prep.—Aqua Menthæ viridis. *L. E.* sativæ, *D.*
Oleum Menthæ viridis. *L. D.*
Spiritus Menthæ viridis. *L.*
Infusum Menthæ Compositum. *D.*

The directions for this infusion are: "Take of the leaves of Spearmint dried, two drachms; boiling-water, as much as is sufficient fo afford six ounces of infusion when strained. Digest for half an hour in a covered vessel; strain the liquor when cold, and add to it, of refined sugar two drachms; oil of Spearmint, three drops, dissolved in half an ounce of compound tincture of cardamoms." It is a grateful stomachic, which may be used to obviate flatulence; or as a vehicle to cover the taste of unpleasant medicines.

Penny-royal yields an essential oil containing a small portion of camphor. It was formerly used as an emmenagogue; and although it possesses no such virtues, the Aqua Pulegii, known by the name of "hysteric water," is still much employed by the vulgar, to remove uterine obstructions. Like the other Mints it is a carminative stimulant, but is seldom precribed by medical practitioners.

Off. Prep.—Aqua Pulegii. *L. E. D.*
Oleum Pulegii. *L. D.*
Spiritus Pulegii. *L.*

Lavandula Spica.

W. Clark. del. et sculp.

London. Published by John Churchill, Leicester Square. Octr. 1827.

LAVANDULA SPICA.

Lavender, or Spike Lavender.

Class XIV. DIDYNAMIA.—*Order* I. GYMNOSPERMIA.

Nat. Ord. VERTICILLATÆ, *Lin.* LABIATÆ, *Juss.*

GEN. CHAR. *Calyx* ovate, somewhat toothed, supported by a bractea. *Corolla* resupine. *Stamens* within the tube.

SPEC. CHAR. *Leaves* linear-lanceolate. *Spike* interrupted, naked at the summit.

Syn.—Lavandula flore cæruleo, *Ger. Em.* 583. 1.
Lavendula major, sive vulgaris, *Raii Hist,* 512; *Park,* 73.
Nardus italica, sive Spica recentiorum, *Lob.* 1. 431.
Pseudo-nardus, quæ vulgo Spica. *Bauh. Hist. v.* 3. 282.
Lavendula foliis linearibus, spicis nudis. *Hall. Stirp. Helv.* n. 232.
Lavandula Spica. *Lin. Sp. Pl.* 800; *Willd. v.* 3. 60; *Woodv.* 150; *t.* 55; *Stokes, v.* 3. 304.
FOREIGN.—*Lavande,* Fr.; *Lavand,* Ital.; *Alhuzema,* Span.; *Lavendelblumen.* Ger.

LAVENDER is a dwarf, odoriferous shrub, a native of the south of Europe, and appears to have been cultivated in England previously to the year 1568; it flowers from June to September.

The plant is shrubby, much branched, and rises from two to four feet high; the bark of the younger shoots being of a pale green colour, while that of the stem is rough and brown. The leaves are numerous, linear, hoary, entire, slightly rolled back at the edges; the upper ones sessile, the lower petioled. The flowers form terminating spikes which consist of interrupted whorls, in which the flowers are from six to ten, and are furnished with small ovate bracteas. The corolla is of a bright blue colour,

and consists of a longish cylindrical tube, divided at the mouth into two lips, the uppermost of which is larger and bifid, the lower expanded downwards, and divided into three segments. The filaments are four, inclosed within the tubular part of the corolla, and support small simple anthers; the style is slender, and crowned with a bilobed stigma, and rises from four naked seeds at the base of the tube. Fig. *(a)* represents a flower magnified and cut open, to show the insertion of the stamens; *(b)* the germen and pistil; *(c)* the calyx; *(d)* a bractea.

There are three varieties of Lavender, namely, L. *angustifolia, flore albo;* L. *latifolia;* and the L. *Spica,* the subject of this article, which is largely cultivated in the vicinity of London; at Mitcham, in Surrey; Henley-on-Thames, and many other places.

Culture.—Lavender is propagated by cuttings or young slips, by planting them in rows, two or three feet asunder, any time in the spring months. The fourth season they will yield a a full crop, after which the plants will continue productive for three or four years. The spikes are gathered in June, dried in the shade, and put up in bundles for sale.

Qualities.—The flowers of Lavender possess an agreeable fragrant odour, and a pungent bitter taste. "*Alcohol* extracts their virtues completely, and elevates in distillation all their odorous parts; water acts less completely," but the oil is obtained in distillation from it.

Medical Properties and Uses.—Cullen observes that, whether applied externally or internally, the *essential oil,* commonly called oil of spike, is a valuable stimulant. The spirit of Lavender enters into the composition of a compound tincture, which is grateful to the palate, and forms a useful cordial for the nervous of the fair sex. The dried leaves were formerly used as a sternutatory, and still enter into the composition of some of the cephalic snuffs.

Off. Prep.—Oleum Lavendulæ. *L. E. D.*
Spiritus Lavendulæ. *L. E. D.*
Spiritus Lavendulæ compositus. *L. E. D.*
Linimentum Camphoræ compositum. *L.*

Marrubium vulgare.

J. Reid del. — London Published for the Authors Oct. 1. 1829 — W. Wright lith.

CXXXV

MARRUBIUM VULGARE.

Common White Horehound.

Class XIV. DIDYNAMIA.—*Order* I. GYMNOSPERMIA.

Nat. Ord. VERTICILLATÆ, *Lin.* LABIATÆ, *Juss.*

GEN. CHAR. *Calyx* tubular, funnel-shaped, with 10 furrows. Upper lip of the *corolla* bifid, linear, and straight.

SPEC. CHAR. *Calyx-teeth* 10, bristle-shaped, hooked. *Leaves* roundish-ovate, wrinkled, unequally serrated.

Syn.—Marrubium. *Matth. Valgr. v.* 2. 182. *f.*; *Camer. Epit.* 573. *f.*; *Fuchs. Hist.* 590. *f.*

Marrubium album. *Raii. Syn.* 239; *Riv. Monop. Irr. t.* 66. *f.* 1.

Marrubium n. 258. *Hall. Hist. v.* 1. 113.

Marrubium vulgare. *Lin. Sp. Pl.* 816; *Willd. v.* 3. 111. *Fl. Brit.* 636; *Eng. Bot. v.* 6. *t.* 410; *Hook. Scot.* 184. *Bull. Fr. t.* 165. *Woodv. t.* 97.

FOREIGN.—*Marrube blanc,* Fr.; *Marrobio bianco,* It.; *Marrubio blanco,* Sp.; *Marroyo branco,* Port.; *Witte malrove,* Ger.; *Andorn,* Swed.; *Rubike, Hvidmarru,* Dan.; *Marrub ili schandra,* Rus.

WHITE HOREHOUND is common in most parts of Europe as well as in Britain, on waste grounds and among rubbish, particularly in warm, dry situations, flowering copiously during the latter part of the summer. Willdenow enumerates fourteen species of Marrubium, and Mr. Don in the "Hortus Cantabrigiensis" notices thirteen that are cultivated in this country, most of which are European plants. Dr. Sibthorp has also added a beautiful new species, in the "Flora Græca," called *velutinum.*

The root is perennial, woody, and fibrous, sending up several stems, branching from the bottom, about eighteen inches high, quadrangular, leafy, and clothed with fine down. The leaves are roundish or oblong, pointed, crenate, wrinkled, veined, hoary, and stand in opposite pairs, on thick broad footstalks. The flowers are white, and produced in dense convex whorls, at the axillæ of the leaves; they are sessile, and furnished with setaceous, awned bracteas. The calyx is tubular, funnel-shaped, furrowed, and divided at the margin into ten narrow teeth, recurved at the point, the five alternate ones being smallest. The corolla is monopetalous, and consists of a cylindrical tube opening at the mouth into two lips, the upper of which is erect,

linear, and cloven, the under broader, reflexed, and divided into three deep lobes, with the lateral segments acute, and the middle one broad and slightly scolloped at the end. The filaments are, two long and two short, concealed within the tube of the corolla, and furnished with small oblong anthers. The germen is 4-lobed, surmounted by a thread-shaped style, with a cloven stigma. The seeds are four, at the bottom of the calyx.—Fig. (*a*) is a magnified flower cut open to show the position of the anthers; (*b*) the germen and style; (*c*) a seed; (*d*) the calyx; (*e*) the same cut open; (*f*) a bractea.

Qualities.—The leaves have a strong peculiar smell of an aromatic kind, which is completely lost by keeping. To the taste they are bitter, penetrating, diffusive, and durable in the mouth. "The infusion reddens tincture of litmus, gives a deep olive-green precipitate with sulphate of iron, a brown with nitrate of silver, and a pale yellow with muriate of mercury: acetate and superacetate of lead do not affect it. The active principles of horehound therefore appear to be a bitter extractive, volatile oil, and gallic acid."

Medical Properties and Uses.—This plant, which is still a very popular remedy with the poor, is tonic, produces an increased flow of urine, and when taken in considerable doses is gently aperient. It was formerly much commended for asthma, jaundice, cachexy, and visceral and uterine obstructions. It has however given way to more active remedies, but although seldom employed by medical men, is said by Dr. Thompson to have been of decided use in cases of phthisis. A drachm of the leaves in powder, or an ounce of the expressed juice; are commonly ordered for a dose. The infusion is made with one ounce of the dried leaves, and a pint of boiling water, and given in the quantity of a wine-glassful twice or thrice a day.*

Decoctum Marrubii compositum.

℞. Marrubii Fol. exsicc. ℥j.
Glycyrrhizæ Rad. concisæ,
Lini Usitatis. Sem. contus. sing. ℥ss.
Aquæ Ferventis Ojss. Macera per horas quatuor, et cola.—Dosis ℥j. ad ℥ij.

* The nostrum sold as *Balsam of Horehound* consists, according to Paris, of infusion of horehound and liquorice root, with double the proportion of proof spirit or brandy; to which is added opium, camphor, benzoin, squills, oil of aniseed and honey. A remedy for consumption forsooth!!

Origanum vulgare.

London Published, for the Authors, Sept.r 1.1829

ORIGANUM VULGARE.

Common Marjoram.

Class XIX. DIDYNAMIA.—*Order* I. GYMNOSPERMIA.

Nat. Ord. VERTICILLATÆ, *Lin.* LABIATÆ, *Juss.*

GEN. CHAR. *Calyx* without ribs. *Involucrum* of numerous dilated, flat leaves, one to each *flower*, collected into a spurious *catkin*.

SPEC. CHAR. Heads of *flowers* roundish, panicled, crouded, erect. Involucral *leaves* ovate, smooth. *Calyx* with five acute unequal teeth; throat hairy.

Syn.—Origanum vulgare spontaneum, *Raii. Syn.* 236.
Origanum anglicum, *Ger. Em.* 666. *f.*
Origanum. *n.* 233; *Hall. Hist. v.* 1. 102; *Riv. Monop. Irr. t.* 60. *f.* 1.
Origanum sylvestre, seu vulgare. *Fuchs. Hist.* 552. *f. Ic.* 315. *f.*
Majorana ovalifolia. *Stokes Bot. Mat. Med. v.* 3. *p.* 350.
Origanum vulgare. *Lin. Sp. Pl.* 824; *Willd. v.* 3. 135; *Fl. Brit.* 639; *Eng. Bot. v.* 16. *t.* 1143; *Curt. Lond. fasc.* 5. *t.* 39; *Hook. Scot.* 184; *Matth. Valgr. v.* 2. 62. *f*; *Camer. Epit.* 469. *f*; *Woodv. t.* 164. *Stokes*, 3. 344.

FOREIGN.—*Origan*, Fr.; *Origano*, It.; *Oregano*; *Erba d' acciughe*, Sp.; *Ourégao*, Port.; *Dosten*; *Gemeine Doste*; *Wilder Majoran*, Ger; *Duschisa*; *Dork*. Rus.

THE Common Marjoram is a perennial plant, a native of Europe, growing on dry gravelly hills. With us it chiefly occurs in thickets, on chalk or limestone; flowering in July and August.*

* We gathered it plentifully in Ingress Park, near Greenhithe, in Kent, on the 23rd of July, 1129; where we also found the following indigenous plants:—

Daucus *sylvestris*.
Hypericum *perforatum*.
——— *pulchrum*.
Scrophularia *aquatica*.
Scabiosa *columbaria*.
——— *arvensis*.
Echium *vulgare*.
Convolvulus *arvensis*.
——— *sepium*.
Salvia *verbenaca*.
Anthyllis *vulneraria*.
Thymus *Serpyllum*.
Euphrasia *officinalis*.
Nepeta *cataria*.

From a brownish, creeping, fibrous root, arise several erect, leafy, angular, purplish stems, about a foot high, clothed with short recurved hairs, and branched and panicled at the summit. The leaves are deflexed, ovate, pointed, dark green, entire, or slightly serrated, minutely fringed, petioled, and grow in pairs at the joints. The flowers are in dense, convex, terminal panicles, of a light purple or rose colour, and furnished with numerous ovate, sessile bractes, one under each flower, rather longer than the calyx. The calyx is tubular, five toothed; like the leaves covered with resinous dots, and fringed at the mouth with dense, very conspicuous white hairs. The corolla is funnel-shaped, with the upper lip erect, nearly flat, bifid, and obtuse; the under in three deep, spreading, nearly equal lobes. The filaments are four, thread-shaped, two longer than the corolla, supporting ovate two-lobed anthers. The style, which is filiform, with a

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Cucubalus *baccifer.*
Sisymbrium *officinale.*
Pastinaca *sativa.*
Clematis *Vitalba.*
Verbena *officinalis.*
Cichorium *Intybus.*
Arenaria *maritima.*
Samolus *Valerandi.*
Statice *Limonium.*
Carex *divisa.*
Scirpus *palustris.*
——— *maritimus.*
Trogopogon *porrifolius.*
Aster *Tripolium.*
Plantago *maritima.*
Reseda *lutea.*
——— *Luteola.*
Fumaria *capreolata.*
Dipsacus *sylvestris.*
Ballota *nigra.*
Senecio *vulgaris.*
——— *Jacobœa.*
——— *viscosus.*
Solanum *Dulcamara.*
Anethum *Fœniculum.*
Agrimonia *Eupatoria.*
Centaurea *Scabiosa.*
——— *Calcitrapa.*
Trifolium *fragiferum.*
——— *repens.*
——— *arvense.*
——— *glomeratum.*
Orchis *pyramidalis.*
Alopecurus *agrestis.*
Festuca *elatior.*
Papaver *Rhœados.*
——— *somniferum.*
Asperula *cynanchica.*

In the adjoining fields and hedges the botanist will find the corn-field madder, Sherardia *arvensis*; the long-rough-headed poppy, Papaver *Argemone*; the Saint-foin, Hedysarum *Onobrychis*; the Plowman's Spikenard, Conyza *squarrosa*; the officinal soap-wort, Saponaria *officinalis*; the Wild Basil, Clinopodium *vulgare*; the Corn-pheasant's eye, Adonis *autumnalis*; the Rampion, or esculent bell-flower, Campanula *Rapunculus*; the red Valerian, Valeriana *rubra*; the stinking Hawk's beard, Crepis *fœtida*; the common Hare's-ear, or Thorow-wax, Bupleurum *rotundifolium*; the great Mullein, Verbascum *Thapsus*, (lately admitted into the Dublin pharmacopœia on account of the reputed anodyne and emolient qualities of the leaves), and also the V. *Lynchnitis*, *nigrum*, and *Blattaria*. Upon the chalky cliffs he will meet with the Marsh Gentian, or Calathian violet, Gentiana *Pneumonanthe*; the autumnal Gentian, G. *Amarella*; the bird's nest Listera, Listera *Nidus avis*; the Spider orchis, Orchis *aranifera*; the Fly orchis, Ophris *muscifera*; the green Man orchis, Aceras *anthropophora*, and the perfoliate Yellow-wort, Chlora *perfoliata*. The marshes by the side of the Thames, near Greenhithe, will afford him the whorled Water-milfoil, Myriophyllum *verticillatum*; the wild celery, Apium *graveolens*; the sea Milk-wort, Glaux *maritima*; and the English scurvy-grass, Cochlearia *anglica*.

bifid reflexed stigma, rises from a four-lobed germen. The seeds are four, ovate, and lodged in the bottom of the calyx.—Fig. (*a*) represents a flower magnified; (*b*) view of the corolla, with the stamens, &c.; (*c*) the germen and style; (*d*) stamen and anther.

About eighteen species of this genus, natives of various countries, have been described, and of these the sorts usually cultivated are the common marjoram, Origanum *vulgare;* the pot marjoram, O. *Onites;* the sweet marjoram, O. *majorana;* the winter sweet marjoram, O. *heracleoticum;* the Egyptian marjoram, O. *ægyptiacum;* and the dittany of Crete or Candia, O. *Dictamnus.* Of the first there are varieties, with white flowers, and pale green stalks, with purple flowers and white variegated leaves, which is sometimes cultivated under the title of *pot marjoram.* The fourth sort is at present commonly known by the name of *winter sweet marjoram,* but was formerly called *pot marjoram,* and is chiefly used for nosegays. The leaves resemble those of common sweet marjoram, but the flowers are produced in spikes. The Origanum *Creticum* is the Wild Origanum, or Marjoram of Dioscorides and the modern Greeks. It has much the habit of the Common Marjoram of Britain, but the long slender spikes distinguish it both from that and the O. *smyrnæum,* or Smyrna Marjoram.

Qualities.—The leaves and flowering tops of this plant have an agreeable fragrant odour, and a warm pungent taste which resides in an essential oil.

Medical Properties and Uses.—This plant resembles Wild Thyme, both in its sensible qualities and medicinal properties, and may be used for the same purposes. Its effects are those of a mild stimulant and tonic; and it was formerly held in high estimation as an emenagogue; but is now justly fallen into disuse. The essential oil is sometimes applied to carious teeth on a dossil of lint or cotton, to relieve the pain of tooth-ache. The leaves when dried are used instead of tea, and are said to be exceedingly grateful; and the powder enters as an ingredient into the composition of some cephalic snuffs. For internal use, half of an ounce of the leaves are infused in a pint of boiling water, and drank at intervals, or ℈j. of the powder may be taken twice or thrice a day.

ORIGANUM MAJORANA.—*Sweet Knotted Marjoram.*

SPEC. CHAR. *Leaves* stalked, obovate, downy, obtuse. *Spikes* roundish, compact, downy, clustered.

Syn.—Amaracus, *Lob. Ic.* 498.
Majorana major, *Ger. Em.* 664.
Majorana vulgaris, *Bauh. Pin.* 224; *Raii. Hist.* 538.
Origanum majorana, *Lin. Sp. Pl.* 825. *Willd.* iii. 137; *Woodv.* iii. *t.* 165.
FOREIGN.—*Marjolaine*, Fr.; *Maggiorana*, It.; *Origano*, Sp.; *Majoran*, Ger.

THIS plant, which, like the common marjoram, has long been admitted into the British pharmacopœias, is a native of Portugal and Syria. It is supposed to be the *Amaracus* of the ancients, and is said to have been introduced into this country about the year 1573.*

The stems are numerous, woody, branching and rising more than a foot high; the leaves are ovate and obtuse, entire, petiolate, and downy. The flowers are usually white, with numerous bractes, and are collected into small roundish heads; from which last circumstance it is called knotted marjoram. The calyx is tubular, with five acute teeth. The corolla is funnel-shaped, with the upper lip erect and roundish, and the under divided into three acute teeth. The flowers appear in July.

QUALITIES.—The leaves and tops have an agreeable aromatic odour, and a moderately warm, bitterish taste. In distillation with water, they yield a considerable quantity of essential oil, amounting, according to Baumé, to ℥xvi from 150 lbs. of the plant. This on being long kept assumes a solid form.

MEDICAL PROPERTIES AND USES.—Sweet marjoram is aromatic and tonic, its virtues residing in an essential oil. It is seldom used medicinally; but is a good deal employed for culinary purposes to give relish to soups, omelets, stuffings, &c. The powder of the dried herb is sternutatory, and enters as an ingredient into the composition of some cephalic snuffs. Murray, in his Apparatus Medicaminum, speaking of this plant, says, "Tumores mammarum dolentes, scirrhosos, herba recens, viridis, per tempus applicata, feliciter dissipavit."

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* See Philips's *History of Cultivated Vegetables*, v. i. p. 337.

Digitalis purpurea.

C. M. Curtis del.

W. Clark sculp.

London. Published by John Churchill, Leicester Square. May 1827.

DIGITALIS PURPUREA.

Purple Foxglove.

Class XIV. DIDYNAMIA.—*Ord.* II. ANGIOSPERMIA.

Nat. Ord. LURIDÆ, *Lin.* SCROPHULARIÆ, *Juss.*

GEN. CHAR. *Calyx* 5-partite. *Corolla* bell-shaped, 5-lobed, ventricose beneath. *Capsule* ovate, 2-celled.

SPEC. CHAR. Segments of the *calyx* ovate, acute; *corolla* obtuse, upper lip undivided; *leaves* downy.

Syn.—Digitalis purpurea. *Lin. Sp. Pl.* 866; *Willd. v.* 3, 283; *Fl. Brit.* 665; *Raii. Syn.* 283; *Ger. Em.* 790. *f. i.*; *Bull. Fr. t.* 21.
Digitalis, n. 330. *Hall. Hist. v.* 1. 143.
Campanula sylvestris, seu Digitalis. *Trag. Hist.* 889. *f.*
FOREIGN.—*Digitale pourpree,* Fr.; *Guantelli,* Ital.; *Dijital,* Sp.; *Der gemeine Fingerhut,* Ger.; *Fingerbor,* Swed.; *Naperstok,* Russ.

FOXGLOVE may be considered not only as the most beautiful and conspicuous of our indigenous plants, but as one of the most valuable articles of the materia medica. It is equally remarkable for its stately growth, its elegant flowers, and its powerful effects on the animal economy. It is a biennial plant, growing abundantly in most parts of the island, particularly in the northern counties, on hedge-banks, and uncultivated places, delighting in a sandy or gravelly soil. We perceived it, but in no great plenty, in most of the woods near London; but Sir James E. Smith affirms that it rarely, if ever, occurs in Norfolk or Suffolk. It flowers in June and July.

Foxglove rises with a round, erect, downy, and generally undivided stem, to the height of three or four feet. The root is whitish, and consists of numerous long and slender fibres. The lower leaves are large, ovate, pointed, on short winged footstalks, and spreading upon the ground; the cauline ones are alternate, or elliptic-oblong, somewhat decurrent; and both kinds are downy, much wrinkled, crenate, and of a dull green colour on the upper surface, and paler underneath. The flowers are numerous, on short footstalks, drooping, of a bright reddish or purple colour, and terminate the stem in an elegant pyramidal spike. The calyx is divided into five acute segments; the upper one narrower than the rest; the corolla is bell-shaped, hairy, and spotted within, tumid on the lower side, and contracted at the base; the upper lip is slightly cloven, emarginate, and smaller than the lower one. The filaments are awl-shaped, inserted into the base of the corolla, bent downwards, and supporting large, oval, deeply cloven anthers; the germen is ovate, pointed, having a simple style with a bifid stigma. The capsule is ovate, the length of the calyx, bilocular, with two valves, containing numerous small, oblong, brownish seeds. A variety with white flowers is cultivated in gardens, as an ornamental plant.—Fig. (*a*) represents the germen and pistil; (*b*) the corolla cut away to show the insertion of the filaments, and the position of the anthers; (*c*) the calyx.

Although this plant is so elegant and stately in its appearance, it does not appear to have attracted the notice of the ancients. Fuschius, in his *Hist. Stirp.* 1542, is the first author who notices it: and from him it received the name of Digitalis, in allusion to the German name of *Fingerhut*, which signifies a finger-stall, from the blossoms resembling the finger of a glove. All parts of the plant, have at different times been used, and we understand that the flowers are still preferred by some practitioners in the west of England. It was first introduced into the London Pharmacopœia in 1721, (*folia, flores, semen*), was discarded in the ensuing edition of 1746, and has been since restored: having encountered a like alteration of favour and proscription in the Edinburgh College.

Our own countrymen have long been aware of some of its most self-evident effects, for according to Gerarde, p. 647 "boiled in water or wine and drunken, it doth cut and consume the thicke toughness of gross and slimie flegme, and naughtie humours. The same, or boiled with honied water and sugar, doth scoure and clense the brest, ripeneth and bringeth forth tough clammie flegme. It openeth also the stoppage of the liver, spleene, and milt, and of the inward parts:" and Parkinson not only recommended it to be externally applied to scrophulous diseases, but extols it as an expectorant, and "to clense and purge the body both upwards and downwards of tough flegme and clammy humours." He also states, that it is "effective against the falling sickness." Dr. Withering never observed any of our cattle to eat it.

Qualities and Chemical Properties.—The leaves of this plant should be collected just as it is about to blossom, and the same advice which we gave, respecting the drying and preservation of Conium *maculatum*, applies equally to them. When properly dried, they have a slight narcotic odour, and a bitterish nauseous taste. When reduced to powder, they are of a beautiful green colour, which will be preserved by exclusion from light and air. The active principle has been separated by M. le Rayer, and is termed *Digitaline*. It is inodorous, very bitter, deliquescent, and soluble in water, alcohol, and ether; and is decomposed by heat. He procured it by digesting the leaves in ether, and treating the solution with hydrated oxide of lead. Digitalis also appears to contain, ammonia, extractive, resin, and some saline matter. Both water and alcohol extract the virtues of the leaves; but boiling them impairs their power. Precipitates are produced by *sulphate of iron* and the infusion of yellow bark, &c. which are *incompatibles* in mixtures containing Digitalis.

Poisonous Effects.—When taken in an overdose, or injudiciously administered, it produces vertigo, drowsiness, vomiting, and purging; increased secretion of urine with frequent desire to empty the bladder and sometimes inability to retain it; the pulse also intermits, is slow, and exceedingly depressed. Delirium,

hiccough, cold sweats, indistinct vision, convulsions, and syncope, terminate the scene.

Case 1st.—Dr. W. Henry was called in October 1809, to assist a female, an out-patient of the Manchester Infirmary, labouring under dropsy, who had taken an overdose of decoction of Foxglove. It was prepared by boiling two handfuls of the leaves in a quart of water, and then pressing the mass, so as to expel the whole of the liquor. Of this, at seven A.M. she drank two tea-cups full, amounting in the whole to not less than ten ounces by measure. Before eight, she began to be sick, and vomited part of the contents of her stomach. Enough, however, was retained to excite vomiting and retching throughout the whole of that and the following day, during which, every thing that was taken was instantly rejected. In the intervals of sickness she was excessively faint, and her skin was covered with a cold sweat. The tongue and lips swelled, *and there was a constant flow of viscid saliva from the mouth. Very little urine was voided on the day she took the Digitalis, and on the following days the action of the kidneys was entirely suspended.* When Dr. Henry saw her, which was forty-eight hours after she had taken the poison, the tongue was white, the ptyalism continued, though in a less degree, and the breath was fœtid. The pulse was low, irregular, (not exceeding forty,) and after every third or fourth pulsation, an intermission occurred for some seconds. She complained also of general pains in the limbs, and cramps in the legs. By the use of effervescing draughts, and ether with ammonia, she gradually recovered her imperfect health. Dr. Henry remarks, that she had not taken any mercury, and that the ptyalism was entirely the effect of Digitalis.*

This case is exceedingly interesting. It proves how carelessly medicine of the most deleterious description is frequently administered, even in our charitable institutions; and it confirms the power of Digitalis, upon the salivary glands, which Dr. Withering supposed that it sometimes excites. Dr. Barton, of America, also has known it to produce salivation on several patients.

2d.—" It is sometimes customary, in pharmaceutical laboratories, to leave tinctures upon the dregs, after they have stood a due time, and gradually to pour off the clear part for use; the dregs are afterwards pressed out, and the last portion of the tincture acquires, by this careless proceeding, double the strength of the first. A person suffering under hydrothorax, who had been in the habit of taking forty drops of tincture of Digitalis, every night, went from home without his medicine, and was obliged to send to an apothecary in the country for an ounce of the tincture, of which he took his accustomed dose: its effects were much more violent than usual; and he died, exhausted by repeated fainting, in the morning."

3d.—" I know an instance of a person who suffered under anasarca

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* *Edinburgh Medical and Surgical Journal*, Vol. VIII. p. 148.

of the legs, and who applied for relief at a Dispensary, where he received a box of pills, one of which he was directed to take three times a day. On the evening of the third day, he complained of great debility and faintness, and in the course of the night vomiting and fainting fits came on: in the morning he died, upon attempting to get out of bed."*

These cases, as well as many others which could be adduced, prove the imperious necessity of closely watching the effects of this medicine.

Boerhaave and Haller were aware of its poisonous qualities: and M. Salerne, of Orleans, gave continued doses to a turkey; an interesting account of which may be found in *Hist. de l'Acad.* 1748, p. 84. On opening it, he found the heart, lungs, liver, and gall-bladder shrunk and contracted: the stomach was quite empty, but not deprived of its villous coat.

Treatment.—The effects of Digitalis must be combated by cordials, as for example, brandy, punch, aromatic confection, and ammonia. Small doses of opium have been found useful, and the dormant powers must be roused by frictions, blisters, cold effusions, &c. Should neither vomiting nor purging have been produced by the poison, they must be excited by appropriate medicines.

Medical Properties and Uses.—Were all that has been written on Digitalis to be collected, a ponderous volume of contradictions would be the result; for although the known virtues of the plant may be stated in a very small compass, it was at one time held forth as a never-failing remedy in the worst and most common of diseases—pulmonary consumption. It was of course prescribed by almost every practitioner throughout the united kingdom; but time, which settles down the minds of men to a just appreciation of the truth, has proved that it is only in the incipient stages of tubercular consumption, or in chronic inflammation of the substance of the lungs, that the sedative effects of Digitalis, which are so benign and truly valuable, can be advantageously produced. And even in such cases as these, although we call in to our assistance, all

* Brande's *Elements of Pharmacy*, p. 80 and 81.

the valuable auxiliaries of season, air, clothing, and diet, we shall often be disappointed: and debility, which we wish to control or prevent, will too often appear to be accelerated by it. The direct power that it exerts over the heart, whereby the pulse is reduced both in power and velocity, entitles it to our notice, as one of the most important of our indigenous medicines. We fear however that its effects in inflammatory diseases, and fevers, are not sufficiently known; for although it was formerly used,* and Dr. Clutterbuck recommends it in typhus, and other forms of fever, it is not very generally prescribed.

As a diuretic, it is much used and highly prized, being more powerful and certain in its effects than any other. Withering affirms, that it is most successful in those cases of dropsy, in which debility is completely marked, and when the countenance is pale, the pulse weak, and the muscular energy diminished; while in an opposite state of the system it is more liable to fail. These observations are very often borne out by experience; and in the latter state of constitution, the exhibition of squills, of cream of tartar, and other debilitating agents; or copious bleedings to effect a reduction of strength, will frequently ensure its diuretic effects. How these effects are produced, it is difficult to ascertain, for when administered to a person in good health, the secretion of urine is not increased. We must therefore suppose, that it exerts no direct action on the kidneys, but that the *diuresis* must be ascribed to a balancing or correction of the secreting and absorbent systems; the latter being stimulated not only to regain their lost power, but to act with a force sufficiently great to carry off the effused fluid. Should it produce nausea or purging, its diuretic effects will be impaired. Withering advises us to give the powder in a dose from one to three grains, or an ounce of the infusion every eight hours, when the constitution is robust. These doses are to be continued until the medicine acts on the kidneys, the stomach, the pulse, or the bowels; and is to be stopped on the first appearance of such effects.

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* Somerseti Angliæ rustica turba hujus decocto febricitantibus, purgationes et interdum superpurgationes et vomitiones humidioribus alvo molitur.—*Raii Historia Plantarum, art. Digitalis.*

Dr. Murray's remarks on this part of the subject are so valuable, that we make no apology for transcribing them. "Though Withering enjoined strictly the caution necessary in the use of Foxglove, the doses prescribed in his directions are perhaps rather large; and the propriety of the method which has sometimes been recommended, of progressively increasing the dose until the effects are obtained, is doubtful. If the dose be at first small, or at least, if having been raised to one grain of the powder, or one ounce of the infusion, twice in twenty-four hours, it be continued at this quantity, the diuretic operation will be obtained in no long time without any unpleasant symptom, and when it commences, will continue of itself, even though the dose is suspended. Or if, from peculiarity of habits, or the state of disease, the dose requires to be increased, it ought to be done slowly, and without that regularly progressive augmentation which has been recommended. And if the effects begin to cease before the reduction of the dropsical swelling be completed, it may be easily renewed by a repetition of this moderate dose. This mode of administering Foxglove is that suggested by the nature of its action. The peculiarity which is characteristic of it, is its tendency to accumulate in the system, its effects not appearing for a time, but at length being suddenly induced. There is no necessity, therefore, to increase its dose, or to give one that is large, with the view of speedily inducing its action, since from its continued administration, this will in no long time be established, and without that hazard which is otherwise incurred from this peculiarity in its operation."

It does not appear to be very useful in ovarian dropsy, nor in hydrocephalus internus, or water of the brain; and in hydrothorax, or dropsy of the chest, however valuable, it is a doubtful remedy; for it too often sinks the pulse, and diminishes the vital energy generally; and is particularly distressing from its producing nausea, and endangering deliquium; results which ought more especially to be guarded against in dropsy of the chest, as it is, in most cases, not merely a disease of debility, but of enfeebled age. When the full effects of Digitalis are exerting themselves, it is advisable that the patient should be kept in a recumbent posture, as many sudden deaths

are on record, which are attributable to a neglect of this precaution; for "upon any sudden, and often upon any trifling exertion, the pulse immediately quickens, the heart throbs violently, nausea and fainting come on, and persons under the full influence of Digitalis have not unfrequently died suddenly under such circumstances." When opium disagrees, Digitalis may be substituted for it in cases of diarrhœa, and should always be preferred where there is any disposition to inflammation of the mucous membrane of the bowels. Palpitation of the heart, phlegmasia dolens, aneurisms, and pneumonia after bleeding, are often relieved by it; and in the acute stages of gonorrhœa virulenta, it is a valuable medicine. Cases of its success in epilepsy have been lately recorded; and in conjunction with copious bleeding, in a case of that rare disease, Paruria inops, in which there is no secretion of urine, and where the patient generally dies in a few hours from serous apoplexy, it effected a cure. "It has also been found of the greatest service when conjoined with nitrous acid, in the dropsy which occurs in broken-down constitutions that have been harassed by mercury; but will not cure a dropsy attended with palsy, unsound viscera, or other complications of disease: but by allaying the urgency of the symptoms, it gains time for other medicines to act."

Formerly it was externally applied by fomentations and ointments; and so highly was it prized by the Italians, that they have the adage, "Aralda tutte le piaghe salda," Foxglove cures all wounds. It is now fallen into disuse,although strongly recommended by Murray,* Hulse, and other eminent practitioners. The infusion of Digitalis is a good form of administration in dropsy; or should the powder be given, it must be prescribed in the form of a pill, as in an interesting case, by E. Chantourelle,† it remained several days in the stomach, adhering closely to the parieties of that organ, and producing violent and dangerous effects. Its existence in the bowels was proved by its appearance in the dejections. The root has been occasionally used, but as the plant is biennial, it cannot be depended on.

Off. Prep.—Decoctum Digitalis. *D.*
Infusum Digitalis. *L. E.*
Tinctura Digitalis. *L. E. D.*

* Murray *Apparat. Med.* i. p. 491. † *Journal Général de Médicine*, October 1822.

Cochlearia Armoracia L.

COCHLEARIA ARMORACIA.

Horse-radish.

GEN. CHAR. *Pod* emarginate, turgid, rugged, 2-valved. *Seeds* numerous.

SPEC. CHAR. Radical *leaves* oblong, crenate; those of the *stem* lanceolate, either cut or entire.

Syn.—Raphanus rusticanus, *Raii Syn.* 301; *Ger. Em.* 241. *f.*; *Matth. Valgr. v.* 1. 401. *f.*; *Camer. Epit.* 225.
Raphanus sylvestris, *Fuchs. Hist.* 660. *f. t.* 379. *f.*
Nasturtium n. 504 *Hall. Hist. v.* 1. 218.
Cochlearia Armoracia, *Lin. Sp. Pl.* 904; *Willd. v.* 3.451; *Fl. Brit.* 690; *Eng. Bot. v.* 33. *t.* 2323; *Woodv. t.* 150.

FOREIGN.—*Cranson de Bretagne*; *Raifort Sauvage*; *Moutarde des Allemands*, Fr.; *Rafano rusticano*, It.; *Marvisco*, Sp.; *Murrettich*, Ger.

HORSE-RADISH is a perennial plant, growing naturally by the sides of ditches, on the banks of rivers, and in waste grounds, from the refuse of gardens. It has long been received into our materia medica, and was cultivated in Britain in the time of Gerard, who says, "Horse-radish for the most part groweth, and is planted in gardens, yet have I found it wild in sundrie places, as at Namptwich in Cheshire, in a place called the Milne Eye, and also at a small village near London, called Hogsdon, in the field next vnto a farm house, leading to Kingsland, where my verie good friend Master Bredwell, practitioner in physick, a learned and diligent sercher of symples, and Master VVilliam Martin, one of the Fellowship of Barbers and Chirurgians, my deere and louing friende, in company with him, found it, and gaue me knowledge of the place where it flourisheth to this day." The specimen from which our figure was designed, grew by the side of the Thames, between the Red-House, Battersea, and

COCHLEARIA OFFICINALIS.—*Common Scurvy-grass.*

SPEC. CHAR. *Radical leaves* roundish; those on the *stem* oblong and somewhat sinuated. *Pod* globose.

Syn.—Cochlearia, *Raii Syn.* 302; *Bauh. Hist. v.* 2. 942. *f.*; *Camer. Epit.* 271. *f.*;
Cochlearia rotundifolia, *Ger. Em.* 401. *f.*
Nasturtium, *n.* 503.; *Hall. Hist. v.* 1. 218.
Cochlearia Armoracia, *Lin. Sp. Pl.* 903; *Willd. v.* 3. 448.; *Fl. Brit.* 688.
Eng. Bot. v. 8. *t.* 551.; *Woodv. t.* 29.; *Hook. Lond.* 195.

FOREIGN.—*Cranson officinal.* Fr.; *Coclearia,* It.; *Gemeine Löffenkraut,* Ger.

SCURVY-GRASS is a low, annual plant, growing wild on the sea-coasts of Britain and other countries, and not unfrequently in mountainous situations far inland. It varies considerably in size and luxuriance, and somewhat in the shape of its foliage. The stem is angular, smooth, usually a foot high, and, in the month of May, ornamented with numerous tufts of flowers of a snow-white colour. The leaves are all smooth, and rather succulent: the radical ones on long footstalks, of a roundish-heart shape, and wavy; the stem leaves smaller, embracing the stem, oblong, sinuated, or deeply toothed. The calyx leaves are ovate, obtuse, concave; petals obovate, with longish claws; stamens six, incurved; pod nearly globular, slightly rugose, and crowned with a short style. A thick-leaved variety called Dutch scurvy-grass is sometimes cultivated in gardens for medicinal purposes.

QUALITIES.—The whole herb has a warm, acrid taste, and a pungent rather unpleasant smell when bruised. Its active matter is extracted by maceration, both by water and alcohol; but its principal virtue seems to reside in an essential oil, separable in very small quantity by distillation in water.

USES.—Scurvy-grass has long enjoyed the reputation in the world as one of the most powerful of the antiscorbutic plants. Sydenham and Lewis recommend it strongly, combined with arum and wood-sorrel, in rheumatic and paralytic affections. As an antiscorbutic, the expressed juice of the plant should be taken in the quantity of a pint a day, or the smaller leaves daily eaten as a salad. Of equal virtue, however, with scurvy-grass is the horse-radish, mustard, the tops of turnips, water-cress, lime-juice, oranges, and many other vegetables.

Sinapis

nigra. alba.

W. Clark del. et sculp.

London Published by John Churchill, Leicester Square, Nov.r 1827.

SINAPIS ALBA.

White Mustard.

Class XV. TETRADYNAMIA.—*Order* II. SILIQUOSA.

Nat. Ord. SILIQUOSÆ, *Lin.* CRUCIFERÆ, *Juss.*

GEN. CHAR. *Pod* nearly cylindrical, with 2-valves. *Seeds* subglobose. *Calyx* spreading.

SPEC. CHAR. *Pods* hispid, spreading, shorter than the broad ensiform beak. *Leaves* lyrate.

Syn.—Sinapi album aliquâ hirsutâ, semine albo vel rufo, *Raii Syn.* 295; *Bauh. Hist. v.* 2. 858. *f.*
Sinapi album, *Ger. Em.* 244. *f.*
Sinapi primum genus, *Fuchs. Hist.* 538. *f.*
Sinapi secundum, *Matth. Valgr. v.* 1. 515. *f.*; *Camer. Epit.* 333. *f.*
Sinapi, n. 466. *Hall. Hist. v.* 1. 203.
Sinapis alba, *Lin. Sp. Pl.* 933; *Willd. v.* 3. 555; *Fl. Brit.* 721; *Curt. Lond. fasc.* 5. *t.* 46; *De Cand. Syst. v.* 2. 620; *Stokes v.* 3. 474.
FOREIGN.—*Moutarde*, Fr.; *Senape bianca*, Ital.; *Grano de Mostaza*, Sp.; *Senfsamen*, Ger.; *Gortschiza*, Russ.; *Kabar*, Arab.

THERE are two species of Mustard admitted into our national pharmacopœias: the White Mustard, *sinapis alba*, and the Black, or Common, *sinapis nigra*. Both are indigenous annuals, growing naturally in fields, and both have been cultivated here, and in most parts of Europe for an unknown period. The White Mustard flowers in June, and ripens its seed in July.

White Mustard has a small tapering root. The stem is erect, branched, rough, with slender reflexed hairs, and rises to the height of about two feet. The leaves are lyrate, deeply cut, roughish, and of a bright green colour. The flowers are yellow, and form terminal spikes, or racemes, each having four petals disposed in the form of a cross. The leaves of the calyx are

linear, green, and spread horizontally. The filaments, germen, and pistil, resemble those of the following species. The flowers are succeeded by short, two-edged, very tumid pods, spreading on nearly horizontal stalks, rough, with numerous minute refexed bristles, interspersed with larger upright ones; the beak is longer than the pod, is bristly, sword-shaped, curved upwards, and terminated by the compressed style and cloven stigma. The seeds are rather large, few, and of a pale yellowish brown colour. Fig. (*a*) represents a lower leaf; *(b)* the stamens, pistils, and glands; *(d)* a pod, or silique.

SINAPIS NIGRA.—*Common Black Mustard.*

GEN. CHAR. See *Sinapis Alba.*

SPEC. CHAR. *Pods* quadrangular, smooth, pressed to the stem. *Lower leaves* lyrate; *upper* linear-lanceolate, entire, smooth.

Syn.—Sinapi sativum secundum, *Raii Syn.* 295; *Ger. Em.* 244.
Sinapi siliquâ latiusculâ glabrâ semine rufo, sive vulgare, *Bauh. Hist. v.* 2. 855. *f.*
Sinapi sativum primum, *Ger. Em.* 244; *Dod. Pempt.* 706.
Sinapi primum, *Matth. Valg. v.* 1. 514. *f.*; *Camer. Epit.* 332. *f.*
Sinapi n. 465; *Hall Hist. v.* 1. 202.
Sinapis nigra, *Lin. Sp. Pl.* 933.; *Willd. v.* 3. 555.; *Fl. Brit.* 722.; *Woodv. t.* 151.; *De Cand. Syst. v.* 2. 608; *Stokes*, 3. 475.
FOREIGN.—*Senevè*, Fr.; *Senape*, Ital.; *Mostaza nigra*, Span.; *Schwarzer Senfe*, Ger.

COMMON Mustard sends up a smooth, branched stem, which is taller and more spreading than the preceding, to the height of three or four feet. The *lower* leaves are large, lyrate, rough, variously lobed and toothed; the *upper* ones petioled smooth, lanceolate, entire, and spreading or hanging downwards. The flowers are pale yellow, and smaller than the preceding. The calyx is yellowish and spreading; petals obo-

vate; filaments simple, erect, supporting oblong anthers; germen cylindrical, tapering into a short style, which is crowned with a knobbed stigma. The pods are small, smooth, obtusely quadrangular, pressed close to the stem, and terminated by the permanent style and capitate stigma. The seeds are numerous, round, shining, and of a dark brown colour. The French call the plant "*senevè*," and confine the term "*moutarde*" to prepared table mustard.—Fig. (*c*) represents a pod or silique of common mustard burst open, shewing the situation of the seeds.

The generic name Sinapis, which occurs with slight variations in the orthography, in the works of Plautus, Pliny, and Columella, is retained in our modern nomenclature from these celebrated authors. Theophrastus and Dioscorides call it Σινηπι. It is met with also under the terms σιναπι and ναπυ; παρα το σινεσθαι τους ωπας, from its pungency affecting the eyes. De Theis conjectures that this word comes from *Nap*, a Celtic name for all plants allied to the radish. The colour of the respective seeds suggested the trivial appellations alba, and nigra.

Distinctive Characters.—The difference in point of form betwixt the leaves and pods of the present species, and those of the preceding sort, distinguish the two plants at once. The Black Mustard is a taller plant than the white; the upper leaves of the black are narrow and pendent, the flowers small, the pods quite smooth, and lying close to the stem; while, in the white, the flowers are large, the pods rough or hairy, and standing out from the stalk.

As *substitutes* for either the black or common Mustard, most of the Cruciferæ may be used, especially the Sinapis *arvensis*, Myagrum *sativum*, Sisymbrium *officinale*, the Erisymum, Lepidium, Turrites, Brassica, Sinapis *orientalis*, *Chinensis* and *brasicata*; the latter is commonly cultivated in China. The Raphanus *Raphanistrum*, or wild radish, is said to be so complete a substitute, that the seeds are often separated in the process of cleaning grain by farmers, and sold to the mustard or oil millers, who dispose of it as Durham Mustard.

Qualities and Chemical Properties.—The seeds of both the black and white mustard agree in their sensible qualities, and are used indiscriminately at our tables. They are pungent and acrimo-

nious when bruised, and by the addition of vinegar become much more so. A mild oil, which soon turns rancid, is yielded by expression, the acrid matter being retained by the fecula. Unbruised, they simply yield mucus to boiling water, which resides in the skin. Water takes up all the active properties of the powder of mustard, and alcohol but little. They yield ammonia by trituration with lime water, and their other constituents are stated to be mucus, starch, a bland fixed oil, and an acrid volatile oil. The French chemists state that they have separated the active principle in the shape of a salifiable base, but we are unable to give the particulars.

Medical Properties and Uses.—A large tea-spoonful of the powder of mustard seed mixed in water, produces vomiting, and on account of its stimulating properties, is perhaps preferable to other emetics, when the stomach has been rendered torpid, by apoplectic, or paralytic affections. It is even asserted that it has acted in such cases, when other emetics have failed; and diffused in a large quantity of warm water, it is always a useful auxiliary to them. The unbruised seeds, swallowed in doses of half an ounce to an ounce, have relieved chronic rheumatism, and taken in the same manner, are a popular remedy for amenorrhœa and chlorosis. Bergius, who is extremely fond of combining other agents with cinchona bark, says that its activity is much increased, by being mixed with flower of mustard, and he even asserts that he has cured intermittents solely by its use. The great Boerhaave, also, gives the case of a girl at Amsterdam, who after taking a variety of medicines for chorea, was at last restored to perfect health by white mustard seeds. They are proper, he observes, in hypochondriac affections, obstructions of the liver, and spleen, in dropsy, scurvy, cachexy, and chlorosis. Combined with horse radish, they are stimulant and diuretic, and as such are useful in broken down constitutions. In cases of dyspepsia, attended by habitual costiveness in leucophlegmatic constitutions, two or three tea-spoonsful of the whole seed, repeated two or three times a day, will frequently prove beneficial, by stimulating the chylopoietic viscera to a regular performance of their functions: but the injudicious manner in which their virtues have lately been lauded, has led to the abuse of a useful remedy, which in improper hands, has produced ulceration of the mucous membrane of the stomach, and intestines, and other serious consequences. In typhus fever, when there is extreme depression of the vital powers, or determination of blood to the head; and in comatose affections, cataplasms, or sinapisms, as they are more often termed, composed of equal parts of flower of mustard and of crumbs of bread, made into a paste with hot vinegar, are applied to the feet, and act as powerful rubefacients. If continued too long, very intense pain is produced by them, and inflammation, which it is difficult to subdue.

Off. Prep.—Cataplasma Sinapis. *L. D.*

*** Whitehead's "Essence of Mustard," consists of oil of turpentine, camphor, and spirits of rosemary; to which is added a little flour of mustard. His "Essence of Mustard Pills" are Balsam of Tolu, with resin!

Tamarindus indica.

TAMARINDUS INDICA.

The Tamarind Tree.

Class XVI. MONADELPHIA.—*Order* I. TRIANDRIA.

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

GEN. CHAR. *Calyx* in four deep segments. *Petals* three. *Barren filaments* seven. *Style* one. *Legume* pulpy within.

Syn.—Tamarindus, *Ger. Em.* 1607; *Park. Theatr.* 207; *Raii Hist.* 1748; *Rumph. Amb. v.* 2. 90. *t.* 23.
Tamarindus occidentalis, *Gærtn. Fruct. v.* 2. 310.
Siliqua Arabica, quæ Tamarindus, *Bauh. Pin.* 403.
Balam-pulli, *Rheed Malab.* 1. 39. *t.* 23.
Tamarindus indica, *Lin. Sp. Pl.* 48; *Willd. v.* 3. 577; *Jacq. Amer.* 10. *t.* 10. 179. *f.* 98; *Woodv. v.* 3. *t.* 166.

FOREIGN.—*Le tamarinier*; *Tamarin*, Fr.; *Tamarindo*, It. Sp.; *Tamarinho, Tamarinheiro, Tamarino*, Port.; *Der Tamarindenbaum*, Ger.; *Tamarindenboom*; *Tamaryn*, Dut.; *Tamarintræ*, Dan.; *Tamarintrad*, Swed.; *Tammer bendi*, Arab.; *Balam-pulli*; *Maderam-pulli*, Malab.; *Assam*, Java; *Cay me*, Cochin-ch.

THE Tamarind-tree, the *tetul* of Upper Hindostan, is a native of Egypt, Arabia, and the East Indies. In the West India islands, where it has become naturalised, it is cultivated for the sake both of its shade; and its acid, cooling, highly grateful fruit; the pulp of which, mixed and boiled with sugar, forms an important article of commerce. It is very abundant in Jamaica, growing to a vast bulk, and thrives well in the Savannahs, but most luxuriantly in a deep rich brick mould. There is only one known

species, the subject of the present article; and for the beautiful drawing, we are indebted to the lady whose name is attached to the plate.

The stem is lofty, and of considerable thickness, terminated by spreading branches, bearing tufts of alternate, abruptly-pinnate, smooth, bright green leaves, each composed of many pair of elliptic-oblong, sessile, entire leaflets, about half an inch in length, and one sixth of an inch broad, rather glaucous beneath. It is observed, that these leaflets close at the approach of evening; or in cold moist weather, like those of the sensitive plant. The flowers are in simple clusters, terminating the short lateral branches: the calyx is inferior, of one leaf, divided into four deep, ovate, acute, deciduous, straw-coloured segments; the petals three, yellowish, beautifully variegated with red veins; ovate, acute, concave, wavy, reflexed. the length of the calyx, and inserted into the tube. The filaments are also three, awl-shaped, purplish, as long as the corolla, connected at the base, curved upwards, inserted into the mouth of the calyx, in the vacancy opposite to the uppermost petal, and bearing large, ovate, incumbent anthers. Besides these, there are seven rudiments of stamens, five of them setaceous threads. The germen is oblong, compressed, incurved, furnished with an awl-shaped style, rather longer than the stamens, and an obtuse stigma. The pods are oblong, compressed, with a joint, 1-celled, and of a dull brown colour when ripe. Those from the West Indies, from two to five inches long, with two, three, or four seeds; but those from the East Indies are almost twice as long, and contain five, six, and even seven seeds. The seeds in both are roundish, somewhat angular, flattened, hard, polished, with a central circumscribed disc at each side, and lodged in a quantity of a soft pulp. Fig. (*a*) represents the pod, and a single seed.

This tree, which is common in almost every part of India, as well as in the West Indies, grows most luxuriantly in all the eastern islands. The soil of Java is said to bring the fruit to very high perfection; and those of the depending island of Madura are reputed to be the best; they are of a dark colour, with a large proportion of pulp to the seed. The natives of India

consider it to be dangerous to sleep under the tamarind-tree, especially during the night; "and grass,'" says Dr. Ainslie, "or herbs of any kind, are seldom seen growing in such situations, and never with luxuriance;" which facts have been lately confirmed to us by a gentleman, who spent many years in India.

According to Long, in his valuable history of Jamaica, "the fruit or pods are gathered in June, July, and August, according to their maturity. The pods must be fully ripe, which is known by their fragility, or easily breaking on a small pressure between the finger and thumb. The fruit taken out of the pod, and cleared from fragments of shells, is placed in casks, in layers, and the boiling syrup from the *tache* or first copper in the boiling house, is poured in, just before it begins to granulate, till the cask is filled; the syrup pervades every part quite to the bottom, and when cool, the cask is headed for sale. The more elegant method is with sugar well clarified with eggs, till a clear transparent syrup is formed, which gives to the fruit a much pleasanter flavour. The East Indian tamarind differs not from that of the West Indies; but the pulp of the fruit is preserved without sugar, and exported to Europe in this form." Mr. Crawford says, that those exported from one part of the Archipelago to another, are merely dried in the sun, but those sent to Europe, are cured with salt.

Qualities and Chemical Properties.—The pulp of the tamarind, which is inodorous, is brought to us from the West Indies, for medicinal purposes, mixed with the seeds, and small fibres, over which, as already stated, boiling syrup is poured. It possesses an agreeable, sweetish, acidulated taste, and is considered as no little luxury by travellers passing through the deserts of Arabia, who generally take care to supply themselves with it at Cairo. By treating this pulp first with cold water, and afterwards with hot, Vauquelin separated the following substances:

Supertartrate of potass	300
Gum	432
Sugar	1152

Jelly	576
Citric acid	864
Tartaric acid	144
Malic acid	40
Feculent matter	2880
Water	3364
	9752

Ann. de Chim. lxxiv, 303.

According to Ratier, a spurious article is frequently sold for the tretamarind.*

Medical Properties and Uses.—This fruit is cooling and laxative: but while it gratefully allays the thirst of ardent fever, it must be taken in large quantities to insure the latter effect, and is then apt to produce flatulence. It is generally added to cathartics that are given in infusion, with a view to promote their activity, or to cover their taste, and is a useful application to sore throats. The natives of India prepare a kind of sherbet from it; and the Vytians, like us, use it in their laxative electuaries. A decoction of the acid leaves of the tree they often employ externally, in cases requiring repellent fomentations, and in their collyria; and, internally, they are supposed by the Tamool doctors to be useful in jaundice. The stones of the tamarind, which to the taste are very astringent, are prescribed by the Vytians in dysenteric complaints, and for menorrhagia; and in times of scarcity, after being divested of the skin which covers them, by the processes of soaking and roasting, they are boiled, or fried, and resembling in taste a field-bean, are eaten by the poor of India. A decoction of the leaves is used in the West Indies to destroy worms in children.

Off. Prep.—Confectio sennæ. *Lond.*
Electuarium sennæ comp. *E.*
Infusum sennæ comp. *E.*
Inf. sennæ cum Tamarindis. *D.*

* Il est rare aujourd'hui de trouver dans le commerce du véritable tamarin; on le falsifie avec la pulpe de pruneaux et l'acide tartrique: cette fraude est très-difficile a reconnaître.—*Pharm. Française*, p. 138.

Althæa officinalis.

London Published by John Churchill, Leicester Square, June 1828.

ALTHÆA OFFICINALIS.

Common Marsh-mallow.

Class XVI. MONADELPHIA.—*Order* VIII. POLYANDRIA.

Nat. Ord. COLUMNIFERÆ, *Lin.* MALVACEÆ, *Juss.*

GEN. CHAR. *Outer Calyx* 6 or 9-cleft. *Capsules* numerous, 1-seeded.

SPEC. CHAR. *Leaves* simple, soft and downy, obsoletely 5-lobed.

Syn.—Althæa vulgaris, *Raii Syn*, 252; *Park*, 303.
Althæa Ibiscus, *Ger. Em.* 933. *f.*
Althæa, *n.* 1074; *Hall. Hist. v.* 2. 23.
Althæa *Fuch's. Hist.* 15. *f.*; *Camer. Epit.* 667. *f.*; *Matth. Valgr. v.* 2. 276. *f.*
Althæa officinalis, *Lin. Sp. Pl.* 966; *Willd. v.* 3. 770; *Fl. Brit.* 739; *Eng. Bot. v.* 3. *t.* 147; *Hook. Scot.* 208; *Woodv. v.* 1. *t.* 53; *Stokes, v.* 3. 530.
FOREIGN.—*Guimauve*, Fr.; *Altea*, Ital.; *Malvarisco*, Sp.; *Eibisch*, Ger.

THE Marsh-mallow is a perennial plant, a native of Britain, growing in marshes near the sea; it occurs among other places, in great abundance on Romney Marsh, Kent; flowering from July, to September.

The roots of this plant are spindle-shaped, and somewhat woody. The stems are annual, round, leafy, simple, erect, branching towards the top, downy, and two or three feet in height. The leaves, which are about two inches and a half in length, of a hoary green colour, and downy on both sides, feel smooth and velvetty when rubbed between the fingers; they are alternate, ovate, or heart-shaped, plaited, unequally serrated, more or less deeply divided into five acute lobes, and stand upon longish footstalks. Towards the lower part of the stem they are broader, and more heart-shaped at the base. The flowers are of an uniform pale blueish colour, and grow in very short, dense, axillary panicles. The outer calyx has 8, 9, 10, or 12 narrow deep divisions, the inner is less deeply cleft into five broader segments. The petals are five, inversely heart-shaped, and attached by their claws to the base of the tube of the stamens.

The stamens are numerous, capillary separate at the summit, and support kidney-shaped anthers. The germen is orbicular, surmounted by a cylindrical style, divided into many bristle-shaped stigmas, which rise above the anthers. The capsules, generally about 20 in number, are compressed, and ranged in a circle round the columnar receptacle; each of two valves, and containing a solitary, kidney-shapened, flatened, smooth, brown seed. Fig. (*a*) represents the pistil, with its bristle-shaped stigmas and germen; (*b*) the anthers and filaments, united into a tube; (*c*) a single stigma; (*d*) a single anther; (*e*) the outer calyx; (*f*) the inner calyx.

Qualities and Chemical Properties.—"All parts of this plant yield a mucilage by infusion or decoction in water; the root does so most abundantly, and freed from the outer bark, is kept in the shops. It is white, inodorous, and insipid."

M. M. A. Payen, and A. Chevalier, state, that an alcoholic infusion of the flowers, (previously dried by a steam heat, out of contact of light,) gives a sensible tinge of green, on being mixed with pure water, containing $\frac{1}{200000}$ of potash, $\frac{1}{1000}$ part carbonate of soda, and $\frac{1}{25}$ of lime-water.

It is generally believed that the mucus contained in what are termed demulcent drinks, relieves diseases of the bladder and urinary passages, by passing off with the urine. We enter our protest against such an unphysiological notion; for it is evident that warm water would be quite as efficacious, could the stomach retain as much in its simple state, as when combined with mucilaginous particles; which no doubt, passes into *chyle*, at the same time that the aqueous part of the potion becomes absorbed, and being filtrated through the kidnies, dilutes the the urine, and renders it less stimulating. On these grounds, simply, we recommend the decoction of marshmallow in urinary diseases; while we are willing to admit that irritation of the fauces and intestinal canal may derive benefit from the lubricating properties of mucus; and as this is more pure in marshmallow root than in linseed, it ought to be preferred.

The roots well boiled, and beaten into a pulpaceous mass, are sometimes applied as poultices; and a decoction, either of them or of the leaves, is a useful application to irritable eruptions, and ulcers. It forms also a useful vehicle for injections.

Off. Prep.—Decoctum Althæa Comp. *E.*

Syrupus Althæa. *L. E.*

Pl. 103.

Polygala Senega.

Weddell sc.

Pub. Jan. 1. 1829. by J. Churchill, Leicester Square.

POLYGALA SENEGA.

Rattle-snake Milkwort.

Class XVII. DIADELPHIA.—*Order* III. OCTANDRIA.

Nat. Ord. LOMENTACEÆ, *Lin.* PEDICULARES, *Juss.* POLYGALEÆ, *De Cand.*

GEN. CHAR. *Calyx* 5-leaved, with two of the leaflets wing-like and coloured. *Standard* of the *corolla* cylindrical. *Capsule* obcordate, 2-valved, and 2-celled.

SPEC. CHAR. *Leaves* alternate, lanceolate. *Flowers* alternate, beardless. *Spike* terminal, slender, solitary, tapering. *Stem* erect, simple, herbaceous, leafy.

Syn.—Planta Marilandica, (Polygala?) caule non ramoso, spico in fastigia singulari e flosculis albis composita, *Raii Syn.* 640.

Polygala caule simplici erecto, &c. *Gron. Flor. Virg. ed.* 1. *p.* 80.

Polygala floribus imberbibus spicatis, &c. *Gron. Virg.* 103.

Polygala Senega, *Lin. Sp. Pl.* 990; *Willd. v.* 3. 894; *Amæn. Acad.* 2. *p.* 139. *t.* 2; *Michaux Flor. Amer. Bor.* 2. *p.* 53; *Woodv. v.* 2. *t.* 93; *Stokes v.* 3. 504; *Bot. Mag. v.* 26. *t.* 1051; *Barton Mat. Med. U. S. v.* 2. *p.* 111. *t.* 36; *Bigelow, Amer. Med. Bot. t.* 30.

ENGLISH.—*Seneka Snake-root; Rattlesnake-root; Officinal Milkwort, or Snake-root; Seneka.*

FOREIGN.—*Polygalaie de Virginie; Senega; Racine de serpent à sonnettes*, Fr.; *Poligala Virginiana*, It.; *Senegawurz; Klapperschlangenwurz*, Ger.

THE Polygala *Senega* is a hardy perennial, a native of North America, growing in most latitudes in the United States, on the sides of hills and in dry woods. It is abundant in Kentucky, Ohio, and Tennessee; flowering from June to August. It was first cultivated in England by Philip Miller in 1759; but having little beauty to boast, it is rarely met with in our gardens. There is a variety with whitish flowers in a dense spike or cluster, and another with rose-coloured flowers in a lax spike and narrower

leaves. The rose-coloured variety, as it has been considered by Michaux and Pursh, is said to be a distinct species. Some varieties, which Professor Bigelow possesses from Carolina, have branching, pubescent stems, and very long loose spikes. Of this genus M. De Candolle enumerates above one hundred and sixty species, growing in every quarter of the globe; but one only, Polygala *vulgaris*, or common Milkwort, is British.

The root of Polygala *Senega* is woody, branched, contorted, about half an inch in diameter, and covered with a thick dull yellowish or greyish bark; it sends up several annual stems, about a foot in height, erect, slender, round, simple, smooth, of a dull purple colour below, and greenish towards the top. The leaves are alternate, scattered, lanceolate, pointed, smooth, somewhat undulated, occasionally tinged with red, and nearly or quite sessile: towards the base they are smaller and nearly ovate. The flowers are in loose, terminal spikes, papilionaceous, generally white, often tinged with purple, and sometimes pale yellow. The calyx, which in this genus is the most conspicuous part of the flower, consists of five leaflets; the two largest of which are roundish-ovate, white, and slightly veined. The corolla is small, closed, having two obtuse lateral segments, and a short crested extremity. The stamens are all united at the bottom, and attached to the corolla; with eight tubular anthers opening at the summit. The fruit is an obcordate, compressed, 2-celled, 2-valved capsule, containing two oblong-obovate, slightly hairy, curved, blackish seeds. The spike opens gradually, so that the lower flowers are in fruit while the upper ones are in blossom.—Fig. (*a*) represents the three smaller leaves of the calyx; (*b*) the different parts of the papilionaceous corolla, &c.; (*c*) the capsule and seeds; (*d*) the root.

The generic name is compounded of two Greek words, πολυς, *much*, and γαλα, *milk*, in allusion to its reputation of increasing the secretion of milk in those animals that partake of it. But at this time, the species which gave origin to this idea is not known.

Qualities and Chemical Properties.—The root of the Polygala *Senega* has little or no smell; but to the taste is bitter,

pungent, subtle, and peculiar. After chewing, it leaves a sensation of acrimony in the mouth, and still more so in the fauces, if it have been swallowed. Both aqueous and spirituous menstrua extract its virtue; but the alcoholic most completely. The powder in substance is, however, more active than either the tincture or decoction. The bark of the root contains the most active power of the plant; the ligneous portion being comparatively inert. Alcohol dissolves a substance apparently of the resinous kind, giving a precipitate when water is added. Iron produces little change in solution of this root, and gelatin occasions no alteration whatever.

A peculiar vegetable principle has recently been discovered by Gehlen, in the root of the Polygala *Senega*, to which he has given the name of *senegin*. It is obtained by treating the alcoholic extract with water and ether; the latter abstracting a portion of resin, and the former dissolving a little mucilaginous and saccharine matter. It is a solid substance of a brown colour, and excites violent sneezing like tobacco. It has a disagreeable taste, is soluble in alcohol, but insoluble in water and ether.

M. Reschier is also said to have isolated from six ounces of the root of Senega, a hundred grains of a peculiar alkaline principle, '*Polygaline;*' which is united to an acid termed, '*Polygalinique.*' It is regarded as a substance *sui generis*, and as containing the active principle of the plant; but we know not whether it be identical with the *senegin* of Gehlen.

ANALYSIS BY

Fenuile, *Journ. Chim. Med.* ii. 437.	Dulong, d'Astafort, *Journ. Pharm.* 1827, 567.
Colouring matter, of a pale yellow.	Peculiar alkaline matter.
Bitter matter.	Resin.
Gum.	Gummy matter.
Pectic acid.	Colouring do., analogous to wax.
Albumen.	Yellow matter.
Volatile oil.	A substance turning to red by the action of sulphuric acid.
Fatty oil.	Pectic acid.
Malate of lime.	Phosphate of lime.
Sulphate, carbonate, and phosphate of lime.	Malate of potass and lime.
Carbonate of potass.	Sulphate of potass.
Chloruret of potassium.	Chloruret of potassium.
Silex.	Iron.

Medical Properties.—This root is sudorific and expectorant in small doses, and emetic and cathartic in larger ones. More than ninety years have elapsed since Dr. Tennant, of America, invited the attention of physicians to this medicine as an antidote to the bite of the rattle-snake; and a reward was voted him by the legislature of Pennsylvania for the promulgation of this supposed property. It was from the Senagaroos, a tribe of Indians, that he obtained a knowledge of this their secret remedy; which they applied externally and internally. Dr. Tennant himself saw, or thought he saw, beneficial effects ensue: but when we consider the number of cases of recovery from the bite of this serpent, under every variety of treatment, as recorded in many American publications, we naturally infer that spontaneous recoveries are perhaps as frequent as those which are promoted by medicine.

More certain success appears to attend the use of Senega in pneumonia and some diseases related to it. In the advanced stages of pneumonic inflammation, after venesection and the other usual remedies have been carried to their proper extent, and the cough still remains dry and painful, the debility of the patient forbidding further depletion, it is said to afford very marked relief by promoting expectoration, and relieving the tightness and oppression of the chest. Various medical writers have spoken favourably of its employment in these cases, amongst whom are Bigelow, Bouvart, De Jussieu, and Lemory.

Benefit has been derived in asthma from the use of the plant. "Decoction of Seneka," says Dr. Bree, "is eminently useful in the first species, administered to old people; but in the paroxysms of young persons I have found it too irritating. This distinction applies to convulsive asthma purely uncomplicated, but the disease is frequently observed in middle-aged and elderly persons to take the character of *peripneumonia notha* in the winter and spring, and seneka is then the most useful medicine that I have tried. In such cases it should be united with the acetated ammonia, during the febrile state, and as this state gives way, the addition of squill and camphorated tincture of opium will be found to promote expectoration, perspiration, and urine in a most powerful manner."

Sir Francis Millman, Dr. Percival, and others, have spoken highly of it as a diuretic in dropsies; and in consequence of its well ascertained power of exciting salivation, it was introduced into notice by Dr. Archer of Maryland, as a remedy of great power in croup. In the early stages of this complaint, however, it may be questioned, as Professor Bigelow justly observes, how far a medicine, which acts as a stimulant to the fauces and neighbouring organs, is entitled to reliance in a local inflammation of the trachea. Dr. Barton and other celebrated medical practitioners in America, place great reliance on it as an auxiliary to the other remedies that are usually employed in croup; and a series of well conducted experiments by any able man in our country, to ascertain its real merits in this disease, would be a boon gratefully received by the profession. Dr. Archer's mode of administering it is, to give a tea-spoonful of a strong decoction once or twice in the hour, according to the urgency of the symptoms; and during the intervals, a few drops occasionally, to keep up a sensible action upon the mouth and throat, until it acts as an emetic or cathartic.* For amenorrhæa, a saturated decoction, given to the extent of a pint in twenty-four hours, commenced about a fortnight before the expected menstrual period, has been found a very beneficial practice. In consequence also of its universally stimulant and diaphoretic effects, it has been found a powerful remedy for chronic rheumatism.

Dose.—In powder, from twenty to thirty grains.

Decoctum Senengæ. *L. E.*

"Take of the root, *one ounce*, water, *two pints*. Boil down to a pint and strain." Dose, one to three ounces three or four times a day.

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* Mr. Morson, of Southampton Row, well known to the profession by his valuable collection of articles of the Materia Medica, and by his scientific acquirements as a chemist, has lately imported a considerable quantity of this root.

POLYGALA RUBELLA.—*Bitter Milk-wort.*

SPEC. CHAR.—"*Stems* simple. *Leaves* linear, oblong, mucronated. *Flowers* racemed; those of the stem winged; those of the root apterous."—*Big.*

Syn.—Polygala Rubella, *Muhlenberg, Catal.; Bigelow Amer. Med. Bot. t.* 54; *Pursh. v.*2. 464; *Willd. Sp. Pl. v.* 3. 875. *Nuttall Gen.* 2. 87.

NATIVE of North America, in dry, gravelly, or sandy soils; flowering in June and July.

The root somewhat fusiform, perennial, and branching. Stems numerous, ascending, smooth, angular, simple. Leaves scattered, smooth; the lower ones obovate, smaller; the upper ones linear-lanceolate, obtuse, mucronated, sessile. Flowers purple, short-crested, in terminal racenes: bractes small, ovate-lanceolate, caducous: corolla small, of three segments, the middle one largest and crested.

MEDICAL PROPERTIES.—Like some of the European species, this plant is a powerful bitter, imparting its sensible properties both to water and to alcohol. It has long attracted the notice of medical practitioners in the United States of America, and is administered in small doses as a useful tonic and stimulant to the digestive organs. In large doses it operates as a cathartic, and excites diaphoresis. "Its powers," says Dr. Bigelow, "appear to resemble those of Polygala *vulgaris*, and P. *amara* of Europe, to which it has a close botanical resemblance; and which have enjoyed a certain degree of medicinal reputation as tonics and expectorants."

Pl. 168.

Pterocarpus erinaceus.

G. Reid. del. W. Clark sc.

London. Published for the Authors. July. 1830

CLXVIII

PTEROCARPUS ERINACEUS.

African Pterocarpus, or Kino Tree.

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.

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 Dochard, 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*, looses 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 bracteas at the base of each pedicel. The calyx is bell-shaped, unequally toothed, pubescent, and furnished with two small awl-shaped bracteas. 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 uncatus* 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 diarrhœas, uterine and intestinal hæmorrhages, either alone, or combined with other astringents. Externally, it is applied as a styptic, and to constringe 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.

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.

Pl. 67.

Spartium scoparium.

W. Clark, del.

London, Published by John Churchill, Leicester Square, May, 1828

SPARTIUM SCOPARIUM.

Common Broom.

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

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

GEN. CHAR. *Filaments* all united into a tube at the base. *Stigma* linear, hairy. *Legume* flat.

SPEC. CHAR. *Leaves* oblong, ternate, or solitary. *Branches* angular, unarmed. *Flowers* axillary, peduncles short. *Legume* many-seeded; fringed.

Syn.—Genista, *Ger. Em.* 1311. *f.*; *Camer. Epit.* 950. *f.*; *Dod. Pempt.* 761; *Fuchs. Hist.* 218. *f.*; *Trag. Hist.* 961. *f.*
Genista angulosa trifolia, *Raii Hist.* 474.
Genista scoparia, *Lob. Ic. v.* 2. 89. *f.*; *Hook. Scot.* 211.
Spartium n. 354. *Hall. Hist. v.* 1. 154.
Spartium scoparium, *Lin. Sp. Pl.* 996; *Willd. v.* 3. 933; *Fl. Brit.* 753; *Engl. Bot. v.* 19. *t.* 1339; *Curt. Lond. fasc.* 5. *t.* 52; *Woodv. t.* 89; *Fl. Dan. t.* 313.
FOREIGN.—*Genet à balais*, Fr.; *Ginestra*, It.; *Esparto*, Sp.; *Giesta*, Port.; *Pfriemenkraut*, Ger.

THIS is a large, indigenous shrub, growing plentifully on dry sandy heaths and waste places; flowering in May and June.

It is a bushy plant, from three to eight feet in height, with innumerable ascending, long, straight, angular, smooth, dark evergreen twigs. The leaves are deciduous, sessile, scattered, petioled, and ternate; but the upper ones are generally simple; the leaflets are small, obovate, entire, and smooth, but silky when young. The flowers are papilionaceous, large, and showy, very numerous, axillary, solitary, or in pairs, on simple stalks, longer than the leaves, of a deep golden yellow, sometimes tinged with

orange, and occasionally of a pale lemon-colour. The calyx is cup-shaped, bilabiate, reddish-purple, having the upper with two, the lower with three small teeth. The corolla consists of five petals; the standard inversely spear-shaped, the whole reflexed, very large; the wings ovate-oblong, connected with the filaments; the keel of two petals, lanceolate, oblong, attached to the filaments, and connected at the lower margin by soft hairs. The filaments are ten, all united into a single tube, and support oblong orange-coloured anthers. The germen is oblong, hairy; the style awl-shaped, curved, and the legume compressed, brown, oblong, ciliated, and containing about fifteen or sixteen small, compressed, shining seeds.—Fig. (*a*) represents the calyx; (*b*) the germen and style; (*c*) the stamens forming a tube at the base; (*d*) the legume or pod.

Qualities.—The leaves and tops have a disagreeable odour, and a nauseous bitter taste, imparted by infusion both to water and spirit. The tops and seeds are directed for medical use.

Medical Properties and Uses.—Broom tops have long been celebrated for their cathartic, and diuretic powers, and have been successfully employed in dropsical cases. His Royal Highness the late Duke of York is reported to have taken the decoction with considerable effect.

An ounce of the green tops may be boiled in a pint and a half of water down to a pint, and a teacupful of this decoction given every hour till it operates freely on the bowels; and may be repeated every day, or every second day. The seeds and flowers are said to be emetic, but according to Woodville, "the evidence upon which this assertion rests is not wholly to be relied on, as the former, when roasted, have been recommended as a substitute for coffee, and the latter employed as a pickle." Sydenham recommends the ashes, and their utility has been confirmed by Monro, and others; but their whole power, no doubt, depends upon the subcarbonate of potash which they contain.

Off. Prep.—Extractum Cacuminum Genistæ. *D.*

Pl. 179.

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.; *Cadjuct,* 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 Horsefield, 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 øf 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.

Astragalus cretaicus.

G. Reid. del.

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

ASTRAGALUS CRETICUS.

Cretan Milk-vetch.

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.

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 viscidity 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

* *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 reddish 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
Adragantine . . .	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 then gum arabic, excepting for pharmaceutical purposes, in which it is preferred in the manufacture of troches, on account of its greater viscidity.

Off. Prep.—Pulvis Tragacanthæ comp. L.
Mucilago Astragali Tragacanthæ. E. D.

Pl 134

Glycyrrhiza glabra?

G Reid del

Weddell sc

London Published for the Authors Oct^r 1 1829

CXXXIV

GLYCYRRHIZA GLABRA.

Common Liquorice.

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

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

GEN. CHAR. *Calyx* bilabiate; upper lip 3-cleft, lower undivided. *Legume* ovate, compressed.

SPEC. CHAR. *Legumes* smooth. *Flowers* spiked. *Leaflets* ovate, blunt, the terminal one on a longish stalk.

Syn.—Glycyrrhiza vulgaris. *Ger. Em.* 1302. *Raii. Hist.* 90. *Dod. Pempt.* 341.
Glycyrrhiza radice repente, *Bauh. Hist. v.* 2. *p.* 328.
Glycyrrhiza siliquosa, vel germanica. *Bauh. Pin. p.* 352. *Moris. Hist. v.* 2. *p.* 89.
Glycyrrhiza glabra. *Lin. Sp. Pl.* 1046; *Willd. v.* 3. 1143; *Woodv. v.* 2. *t.* 167. *Lamar. Illust.* 183. *t.* 625; *Ait. Kew. ed.* 2*d. v.* 4. *p.* 329.

FOREIGN.—*Réglisse; Racine douce,* Fr.; *Legorizia; liquirizia,* It.; *Regaliz,* Sp. and Port.; *Süsholz; Lackrizen,* Ger. *Lakris,* Dan.; *Lakrits,* Swed.; *Dubez solotkoi,* Rus.; *Jét'himand'h,* Hind.

THE common Liquorice is a native of the south of Europe; but has been cultivated in our gardens ever since the time of Turner in 1562. Stowe informs us that "the planting and growing of Licorish began about the first year of Queen Elizabeth." It was formerly cultivated to a considerable extent at Pontefract, in Yorkshire; Worksop, in Nottinghamshire, and Godalming, in Surrey; but the greater part of what is now used in England, is grown at Mitcham, Battersea, Fulham, and other places near London. It flourishes most in a light sandy soil, producing its flowers in August.

The root is perennial, running very deep into the ground, and creeping to a considerable distance. When full grown it is as thick as the thumb, round, slender, flexible, and furnished with a few scattered fibres, of a brownish colour externally; yellowish, succulent, and fibrous within. From the root proceed three or four erect, herbaceous stems, of a pale green colour, and striated, with few branches, to the height of four feet and up-

wards. The leaves are alternate, pinnated, and composed of five or six pairs of leaflets, with a terminal one standing on a longish footstalk; the leaflets are ovate, blunt, veined, petiolated, nearly two inches long, and of a yellowish green colour, and clammy on the under-side. The flowers are small, bluish or purplish, and papilionaceous, standing on naked pedicels, in long axillary spikes. The calyx is persistent, tubular, cut obliquely into two lips, and divided into narrow pointed segments. The corolla consists of an ovate, lanceolate, obtuse, erect, concave *vexillum;* two oblong, obtuse *alæ,* and a similar shaped, but shorter *carina.* The filaments are ten, nine of which are united at the base, and all of them furnished with simple roundish anthers; the germen is short, with a tapering style and blunt stigma. The legumes are oblong, smooth, compressed, pointed, and 1-celled, containing two or three small kidney-shaped seeds. Fig. (*a*) a flower magnified; (*b*) the vexillum; (*c*) alæ; (*d*) carina; (*e*) the nine united stamens; (*f*) germen and style; (*g*) the legume; (*h*) a seed.

From Dr Fleming's Catalogue of Indian plants, it appears that liquorice grows in the Bengal provinces; and Dr. Ainslie asserts it to be a product of the Malabar coast, where it is called *irattimadhiram.* The greater part, however, of what is sold in Lower India, is imported from Persia, where it grows in great abundance in the date groves near Bussora, and on the banks of the Sewund river. The roots of the wild Jamaica liquorice (Abrus *precatorius,* Lin.) a beautiful climbing shrub, resemble so much the true liquorice root in appearance and qualities, that they are often sold in India, and used as such.

The liquorice plant is very faithfully and accurately described by Dioscorides, under the name γλυκιῤῥίξα, though he says the flower is like a hyacinth, which probably alludes to the colour only, whether his νακινθος be the Delphinium or Hyacinthus of modern botanists. The word is compounded of γλυκυς, sweet, and ῥιξα, a root, and the name in apothecaries latin, *liquirita,* as well as the English one liquorice; the French *reglissė,* the Italian *legoriza,* and all their corruptions originate from it.

Culture.—The liquorice is propagated by cuttings of the small roots divided into sections, five or six inches long, each having one or more good buds. The proper season for procuring the sets for planting, is in open weather, about the middle of March. A light sandy soil is

the best adapted for this kind of crop, as its goodness consists in the length of the roots. The ground should be trenched three spades deep; then having traced out rows a yard asunder, plant the sets along each row, at intervals of eighteen inches, covering them entirely with mould. The London gardeners usually sow a crop of onions or lettuce on the same ground the first year, between the rows. During spring and summer, all weeds must be kept down by the hoe, care being taken not to cut off the top shoots of the liquorice plants, as it would greatly injure them. In the autumn, when the stems of the liquorice are in a decaying state, they should be cut down, and a very little rotten dung spread upon the surface. In the following spring about March, the ground should be slightly dug between the rows of liquorice, burying the remaining part of the dung, being very careful not to cut the roots. During the summer they must be kept quite clean by occasional hoeing. The same operations must be annually performed, so as to keep the ground and plants in perfect order. In three years after planting, the roots of the liquorice will be fit to take up. The proper season for this is from November till February; for they should neither be taken up before the stalks are fully decayed, nor deferred till late in spring, otherwise the roots will be apt to shrivel and diminish in weight. In taking them up, the small side roots are trimmed off, the best divided into lengths for fresh sets, and the main roots tied in bundles for sale. They are sold to the brewers and druggists; the price of the best roots varying from 40*s.* to £3. per cwt. The Glycyrrhiza *echinata*, or prickly-podded liquorice, is sometimes cultivated, but its roots are less sweet and succulent than the officinal species.

Qualities.—Liquorice root is inodorous; it has a sweet mucilaginous taste, and is almost the only saccharine substance that does not produce thirst. It yields all its virtues to water by coction; but alcohol extracts only the sweetness, with a small portion of mucilage. The medical properties of the root are supposed to depend on a distinct principle, to which has been appropriated the name *glycyrrhizine*. Prof. Döbreiner prepares it by precipitating the infusion of liquorice by the pro-muriate of copper, washing the precipitate with water, and then boiling it in alcohol, which dissolves the glycyrrhizine, and affords it again on evaporation. It is soluble in water, and precipitated from its solution by the acids. Its taste is sweet; it is brittle, semi-transparent, and has a resinous appearance.

The *extract* is directed to be prepared by macerating for twenty-four hours, one pound of liquorice-root sliced, in a gallon of boiling water; then boiling down to four pints, straining the hot liquor, and evaporating it to a proper consistence. A purer extract may be made by a repetition of the process of solution and evaporation; and is kept in the shops under the name of "refined liquorice." The extract is, however, usually prepared on a large scale abroad, and is imported into this country, in an impure state, particularly from Spain. The powder of liquorice usually sold, is often mixed with flour, and probably too often with substances not quite so wholesome; the best sort is of a brownish yellow colour, (the fine pale yellow being generally sophisticated), and of a very rich sweet taste, much more agreeable than that of the fresh root.

Medical Properties and Uses.—Unlike other sweets, liquorice has had the reputation from time immemorial of allaying thirst, which property is attributed, by Cullen, to an acrid and bitter matter, which follows the extraction of the sweetness by chewing. In consequence of this virtue, it was designated by the name ἀδιψον, and according to Galen, alleviates the desire for drink in dropsical cases. With us it is principally used as a pleasant demulcent, and in the form of decoction; or, combined with other mucilaginous substances, is frequently prescribed for severe colds, and for those other affections of the air passages requiring lubrication. It is also useful to obtund the acrimony of vitiated secretions in the stomach and bowels; or, as a substitute for the natural mucus of the stomach, when deficient in quantity. From its bulk it is seldom given in substance, but a tea-cupful of a decoction of the root, may be frequently drank. Under the form of extract it is in common use as a demulcent, in coughs and hoarsenesses; and is sometimes taken to relieve acidity of the stomach. It is also employed to cover the unpleasant taste of several bitter and nauseous drugs, particularly aloes and Peruvian bark.

Off. Prep.—Decoctum Sarsaparillæ. comp. *L. D.*

Infusum Lini. *L.*
Pil. Hydragyri. *L. D.*
Confectio Sennæ. *L. E.*

Geoffroya inermis.

G. Reid, del. Weddell. Sc.

London. Published for the Authors. Dec. 1824.

CXLIV.

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 Jamaique*, 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 savanhas. 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

* 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-spoonsfull; of the extract, three grains; of the powder, 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.

G. *Jamaicensis*.	G. *Surinamensis*.
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.

Citrus Aurantium

CITRUS AURANTIUM.

The Seville Orange-tree.

Class XVIII. POLYADELPHIA.—*Ord.* III. ICOSANDRIA.

Nat. Ord. POMACEÆ, *Lin.* AURANTIÆ, *Juss.*

GEN. CHAR. *Calyx* 5-cleft. *Petals* five, oblong. *Anthers* 20, the filaments united into different bundles. *Berry* 9-celled.

SPEC. CHAR. *Leaves* winged, elliptical, acuminate. *Stem* arborescent. *Fruit* globose, with a rough skin and bitter pulp.

Syn.—Malus Aurantia major, *Bauh. Pin.* p. 436.
Malus Aurantia vulgaris, *Park. Theatr.* 1508.
Malus Aurantia, *Ger. Em.* p. 1463; *Raii. Hist.* p. 1658.
Citria mala, sive mala medica, *Camer. Epit.* 148.
Aurantium vulgare, *Ferrar. Hesp.* p. 337. *t.* 369.
Citrus Aurantium, *Sp. Pl. Willd.* iii. 1100; *Hort. Kew.* iii. 101.
FOREIGN.—*Oranges*, Fr.; *Arancio*, Ital.; *Naranja*, Sp.; *Pomeranzin*, Ger.

THE Orange-tree is originally a native of the warmer parts of Asia, though it has been long naturalized in the south of Europe, as well as in the West India islands, and the tropical parts of America. In this country, it is chiefly prized as a green-house plant. Sir Francis Carew is said to have introduced orange trees into England, in the reign of Elizabeth; but whether he brought plants, or raised them from seeds brought home by Sir Walter Raleigh, has not been satisfactorily ascertained.* In our

* The Orange-tree has also been supposed to be a native of the Hesperides, or Canary islands, and its fruit to be the golden apples which the daughters of Hesperus caused to be so strictly guarded by a dragon; and under this idea, Ventenat has changed the name of the natural order to which it belongs, from *Aurantia* to *Hesperideæ*.

hot-houses the trees produce their pure white and very fragrant flowers in June; and after the first season of flowering, blossoms and fruit appear together on the same plant; the latter remaining a year, or fifteen months, on the tree before it be ripe.

The Orange is a middle sized ever-green tree,* much branched, and covered with a greenish brown bark. In some trees the branches are furnished with short, solitary spines. The leaves are alternate, of a shining green colour, entire, nearly elliptical, pointed, and furnished with winged foot-stalks, by which they are distinguished from those of the lemon. The flowers are large, very fragrant, and arise from the smaller branches, upon simple and branched peduncles. The calyx is saucer-shaped, and divided into five small pointed segments. The petals are five, oblong, white, concave, and beset with minute glands. The stamens are about twenty, united at their base into several sets, and support yellow anthers placed vertically. The germen is superior, roundish, and has a cylindrical style, with a globular stigma. The fruit is a globular berry, of a reddish-yellow colour externally, and internally divided into nine cells, filled with a mucilaginous pulp, each containing from two to four cartilaginous seeds. The rind is composed of two distinct coats; the outer, thin and glandular; the inner, thick, whitish, and spongy.—Fig. (*a*) represents the pistil; (*b*) the stamens.

Of the Orange there are two principal varieties; 1. The sweet orange, including the China orange, the Portugal orange, and similar kinds; and 2. The bitter orange, including the Seville orange, which alone is directed in the Pharmacopœias; and other varieties, called *bigardes* by the French. The species

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* Virgil not only refers to the general character of the Orange tree, but proves that he was acquainted with the virtues of its juice (which it possesses in common with other vegetable acids) as an antidote to narcotic poisons.

" Media fert tristes succos tardumque saporem
Felicis mali: quo non præsentius ullum
(Pocula si quando sævæ infecere novercæ,
Miscueruntque herbas, et non innoxia verba)
Auxilium venit, ac membris agit atra venena.
Ipsa ingens arbos, faciemque, simillima lauro:
Et, si non alium latè jactaret odorem,
Laurus erat: folia haud ullis labentia ventis:
Flos apprimà tenax: animas et olentia Medi
Ora fovent ille, et senibus medicantur anhelis."

Georg. lib. 2. v. 126.

of the genus *Citrus*, which contains not only the Orange, but the shaddock, citron, and lime, are best distinguished, according to Miller, by the petiole, or leaf-stalk; in the orange and the shaddock, this is winged; in the lemon, citron, and lime, which are considered varieties belonging to one species, it is naked. The form and colour of the fruit also differs; thus in the orange and shaddock it is almost spherical, and of a yellowish red colour; in the lime it is spherical, but of a pale yellow; while the lemon is oblong, with a nipple-like protuberance at the end; the citron is also oblong, with a very thick rind.

Qualities.—The juice of the Seville orange is of a sour taste, combined with a sweetness and bitterness; and contains citric acid, though not in so great a proportion as that of the lemon. The outer rind, or cortical part, is of a grateful aromatic odour, and possesses a warm bitter taste; both of which depend on an essential oil, residing in distinct vesicles; from which it can be either expressed or distilled. Both the bitter and aromatic constituents are extracted by water and alcohol: and from the flowers may be distilled a grateful perfume, known under the name of "Orange flower water." The unripe fruit, or berries of the orange tree, commonly called *Curaçoa oranges*, are more bitter and aromatic, and, when dried, retain their flavour: infused in brandy, they furnish us with the Dutch liquor, termed Curaçoa.* An oil distilled from the flowers, is imported from Italy, under the name of *oleum* vel *essentia neroli*.

Medical Properties and Uses.—The juice of the Seville orange is sometimes recommended as a refrigerant: but is neither so grateful, nor so plentiful, as that of the lemon. The rind, which should be thin, free from the white part, and from mouldiness, is a very grateful stomachic bitter; and is, therefore, frequently combined with other tonics; especially with cinchona; to which it is a most useful adjuvant. The confection of oranges, and cinchona powder, made into an electuary with the syrup of orange-peel, is an excellent form of medicine

* Dr. Kitchener's receipt for making this agreeable *liqueur*, is as follows: to a pint of *rectified spirits*, add two drachms and a half of *sweet oil of orange-peel*, shake the mixture, and let it stand till the following day; then add one pint of *clarified syrup*, and filter.

for ague; as the taste is by no means disagreeable, and the stomach is seldom affected by the bark. The *infusum aurantii compositum* of the London pharmacopœia, is an elegant vehicle for small doses of neutral salts; for bitter tinctures; ammonia; magnesia; &c.: and combinations of this kind are frequently prescribed, with advantage, in gout and dyspepsia. The flowers and leaves, in doses of ʒß to ʒj, were formerly recommended as a remedy for epileptic and convulsive disorders; but experience has not confirmed the virtues attributed to them.

The China orange contains a large quantity of saccharine matter and mucilage, united to an agreeable acid; hence it is much employed as a wholesome, cooling, and antiseptic article of food for the sick, particularly in febrile, inflammatory, and scorbutic affections. Eaten, however, in too large a quantity, the orange is liable to produce great disorder of the stomach and bowels; cholic, diarrhæa, and cholera; and, like other sub-acid fruits, is hurtful in calculous complaints, diabetes, and generally in all those diseases arising from, or connected with, an imperfect assimilation in the primæ viæ.

"The dried unripe fruit (*Aurantium curassaventium*) is employed as an internal remedy in the same cases as the rind of the ripe orange. It is, however, more commonly used as a mechanical irritant in issues; for which purpose the smaller fruit is selected, and is generally made round and smooth in the turning lathe. It is preferred for this purpose on account of its odour only; for the heat and moisture of the part in which the orange lodged, swells it as much as the common pea; and, therefore, it requires to be removed once in twenty-four hours."

Dose.—Of the infusion, from ℥j. to ℥ij, three or four times a day; of the tincture. ʒj to ℥ß.

Off. Prep.—Infusum Aurantii compositum, L.
Tinctura Aurantii, L. D.
Syrupus Aurantii, L. D.
Confectio Aurantii, L. E. D.
Aqua Citri Aurantii, E.

Pl 92.

Citrus Medica.

W. Clarke Del.

Weddell Sc.

Published by J Churchill Leicester Square Nov^r 1828

XCII

CITRUS MEDICA.

The Lemon Tree.

SPEC. CHAR. *Petioles* linear. *Leaves* ovate, acuminate.

Syn.—Malus medica, *Bauh. Pin.* 435.
Citrus Limon, *Brown Jam.* 309. *n.* 6; Lourier. *Cochin-chin.* 465; *Sloane Jam.* 2. 187; *Lamarck Illust. t.* 659. *f.* 2.
Lima acris *Ferr. Hesp.* 331. *f.* 333.
Citrus medica, *Lin. Sp. Pl.* 1100, *Willd.* 3. 1426; *Raii. Hist.* 1654; *Ger. Em* 1462; *Woodv. t.* 184.

FOREIGN.—*Limonier*, Fr.; *Limone*, It.; *die Limone*, Ger.

THOUGH the Lemon-tree, as well as the Orange, has long been successfully cultivated in the West Indies and the South of Europe, it is, properly speaking, a native of Asia, whence it was brought into Greece and Italy. The citron and the lime, are generally considered as mere varieties of the Lemon, differing chiefly in the form and qualities of the fruit; but Dr. Roxburgh, in the Hortus Bengalensis, seems to regard the lime as a distinct species, under the name of Citrus *acida*. All the varieties have linear petioles, a character by which they may readily be distinguished from the orange and the shaddock, which have winged leaf-stalks. Both the citron and the lime appear to have been well known to the Romans in the days of Virgil and Pliny; though their propagation and culture were but little understood. The latter writer, in his 13th book, chap. iii., speaking of fruit trees, says: "I will begin with that, which of all others is the most wholesome, the citron-tree, called also the Assyrian-tree, and by some the Median-apple; the fruit is a counter-poison, and singular antidote against all venom: the leaves, he says, are like those of the arbutus, and the tree is armed with thorns. The pome-citron," he continues, "is not good to be eaten as a fruit, but is very odoriferous, as are the leaves, which are used to be put in wardrobes among apparel, to give a perfume, and to drive away moths and spiders." "This tree," he

adds, " bears fruit at all times of the year, for when some fall, others begin to ripen, and some to blossom. Many have tried to transplant the trees into their own country; and for this purpose they have had pots made, and enclosed them well with earth; but for all the care and pains taken about them, to make these trees grow in other countries, yet would they not forget Media and Persia, and liking no other soil, would soon die."

The Lemon-tree is a beautiful evergreen, attaining, in warm countries, the height of twenty feet or more, but in our hot-houses seldom exceeding the size of a large shrub. The leaves are stiff, like those of the laurel; alternate, ovate-oblong, pointed, three or four inches long, of a bright green colour, shining, smooth, slightly serrated, and without an appendage to the foot-stalks, it being linear. The flowers, which appear the greater part of summer, are large, white, odoriferous, and placed on simple, or branched peduncles, arising from the smaller branches. The petals, calyx, filaments, germen, and other parts of inflorescence, resemble those of the orange, which has been already described. The germen is oval, and becomes an oblong berry, with a nipple-like protuberance at the end; it is externally of a straw-yellow colour, internally divided into many cells, usually nine, but sometimes only seven or eight, containing four seeds in each, and filled with vesicles abounding in an extremely acid juice. The rind, like that of the orange, consists of two coats, or layers; the exterior coat thin, yellow, and containing, in minute vesicles, a very fragrant oil; the interior thicker, whitish, and coriaceous. Our figure was made from a specimen which grew in the Botanic Garden, Chelsea.—Fig. (*a*) represents the stamens, &c.; (*b*) the calyx removed to show the germen and style; (*c*) a transverse section of the fruit to shew the cells, which, in this individual, are eight in number.

Varieties.—The Lemon-tree was cultivated in the Botanic Garden at Oxford in 1648, and is common in our green-houses; where, under proper management, it produces large and ripe fruit. The most remarkable sub-varieties, according to Miller, are the sweet-lemon, plain and variegated; the pear-shaped; the imperial; the lemon called Adam's Apple; the furrowed fruited:

the childing ; and the lemon with double flowers. The orangeries in this country are supplied, either by plants raised from the seed, and budded, inarched, or grafted by our gardeners, or by small budded trees imported in chests from Italy. But it is chiefly the shaddock (Citrus *decumana*, L.) and citron that are thus imported. The *citron*, which is considered a variety of the lemon, is, like that fruit, a native of all the warmer parts of Asia. Another variety, the *lime*, is also a native of the East, and has long been cultivated in the West Indíes on account of its juice, which is esteemed a much more grateful acid than that of the lemon. From one of the varieties, the well-known perfume called *Essence of Bergamot* is obtained, which is said to have derived its name from Bergamo, in Italy, where the variety was first cultivated in Europe, and where it is still preserved.

Lemons are brought to England from Spain and Portugal, packed in chests, each lemon being separately rolled in paper.

Qualities and Chemical Properties.—Lemon-*juice* owes its sour taste to the *citric acid* which it contains, in combination with mucilage, extractive matter, a small portion of sugar, and water. Scheelé was the first who obtained this acid in a pure state ; his process consists in saturating lemon juice with chalk, an insoluble compound of citrate of lime being precipitated : as much sulphuric acid, previously diluted with six times its weight of water, is then added ; lastly, the solution, after being filtered, is set aside, and affords the acid, crystallized in double four-sided pyramids, or sometimes in rhomboidal prisms, which may be purified by repeated solutions, and crystallizations. The acid, thus obtained, has a less agreeable flavour than that of lemon-juice, but as it can be kept in its crystalized state for any length of time, it is generally substituted for it. The citric acid exists also in some other vegetables, and has been obtained in considerable quantities from the unripe fruit of the common gooseberry.

Medical Properties and Uses.—The juice of this fruit is one of the most grateful of the vegetable acids, and is the principal source of citric acid, a very valuable article both for pharmaceutical and culinary purposes. Properly diluted with water, and rendered palatable by the addition of sugar, it forms

lemonade, which is perhaps the most agreeable, and refreshing beverage that can be employed to quench thirst and diminish heat in febrile, and inflammatory diseases. The juice is also used in the same manner as the acetic acid, in the preparation of effervescing, and saline draughts. A draught of this sort made with ℈i of the carbonate of potass, dissolved in one ounce of any aromatic water, and ℥ss of lemon-juice, taken in a state of effervescence, is advantageously employed to check vomiting, and diminish morbid irritability of the stomach. Dr. Whytt, found the juice given alone to the extent of a table-spoonful for a dose, to allay hysteria, and palpitations of the heart; and Dr. Bancroft, in his History of Guiana, assures us, that the usual remedy for the bites of poisonous animals, is a cataplasm of the pulp of lemons, mixed up with sea-salt, and applied to the wounded part. Like the other vegetable acids, it is also given as a means of counteracting the fatal effects of narcotic poisons, especially opium. As it possesses very remarkable powers in the cure of scurvy, large quantities of it, in a concentrated state, are generally taken on board ships destined for long voyages. Lemon-juice is also given in combination with camphor mixture, cinchona, and aromatic confection; or mixed with ardent spirit, sugar and water, it forms *punch*, which is a useful cordial in gangrenous affections, putrid sore throat, and low fevers. The rind contains a very fragrant essential oil, which is used as perfume, and having a degree of bitterness, it enters into the composition of some stomachic medicines.

Off. Prep.—Syrupus Limonis, L. E. D: Aqua Citri Medicæ, E.
Infusum Aurantii comp. L.
Infusum Gentianæ comp. L. D.
Spiritus Ammoniæ Arromaticus, L. D.
Unguentum Veratri L.

Candied Lemon Peel.—This well known sweatmeat is made by boiling lemon-peel with clarified syrup, and then exposing it to the air till the sugar crystallizes.

Essential Salt of Lemons.—The preparation sold under this name, for the purpose of removing iron-moulds from linen, consists of cream of tartar and super-oxalate of potass, or salt of sorrel, in equal proportions.—*Paris's Pharm.*

Melaleuca Cajuputi

Weddell fecit

Published by J. Churchill Leicester Square Sept 1828

MELALEUCA CAJUPUTI.

Lesser Cajeput Tree.

Class XVIII. POLYADELPHIA.—*Order* IV. POLYANDRIA.

Nat. Ord. HESPERIDEÆ, *Lin.* MYRTI, *Juss.*

GEN. CHAR. *Calyx* 5-parted, semi-superior. *Corolla* 5-petalled. *Stamens* (about 45) very long, conjoined in five bodies. *Style* single. *Capsule* 3-celled. *Seeds* numerous.

SPEC. CHAR. *Branchlets* pendulous. *Leaves* alternate, short-petioled, narrow-lanceolate, three and five-ribbed. *Spikes* terminal and axillary, comose, villous. *Bracteas* lanceolate, 3-flowered.

Syn.—Arbor alba minor, *Rumph. Amb. v.* 2. 76. *t.* 17.
Melaleuca Cajuputi, *Pharm. Lond.* 1809; *Trans. Med. Bot. Soc. n.* 1. 27. *t.* 1.
Cajuputi, Daun-Kitzjil, and *Kaju-Kilau* of the Malays.

THIS elegant and useful tree, which affords from its leaves, by distillation, the fragrant essential, known in the shops under the name of Cajeput oil, is a native of the Molucca Islands. This oil was long supposed to be the produce of the Melaleuca *Leucadendron;* but it appears, from specimens of the plant sent home by Mr. Christopher Smith, that the species is different, and that it agrees with the *Arbor alba minor* of Rumphius's Herbarium Amboinense, (vol. ii. t. 17. fig. 1.), Drs. Maton, and Smith, have fixed it as a new species under the name of M. *Cajuputi.*

The following description of the Melaleuca *Cajuputi* was furnished by Thomas Henry Colebrooke, Esq. F. R. S. a practical and accomplished botanist, from the MS. of Dr. Róxburgh, and the same gentleman has communicated to the Medico-Botanical Society of London, the drawing of that plant, made under the direction of Dr. Roxburgh, from which our engraving is taken.

As, says Mr. Colebrooke, it is from the leaves of this plant that the valuable medicine called Cajeputi Oil is obtained, " it became an object of importance to try if it would grow in Bengal, where the medicine is frequently used with the best success. During my absence at the Cape of Good Hope, on account of bad health, in 1798, Dr. John Fleming, had charge of the Botanic Garden. At the same time, Mr. Smith, the nurseryman, was employed on the Molucca islands, collecting plants for the garden, consequently an excellent time for obtaining growing plants of the tree. Dr. Fleming therefore gave Mr. Smith strict orders to be very careful to get the proper sort, (two or three being mentioned by Rumphius,) from which the best oil was obtained. This commission Mr. Smith executed to our satisfaction; many thriving plants having been sent to the garden by the close of the year, where they continued to grow freely; and in six or seven years they began to blossom at various times of the year, which they have hitherto continued to do. From them numerous plants have been reared, and not only distributed over many parts of the continent of India, but sent to various other quarters of the world. It is from the original young trees, now (1811) thirteen years old, that the following description and the accompanying figure is taken."

The trunk is tolerably erect, and covered with a very light or whitish ash-coloured, soft, thick, smooth, spongy bark, the external lamina of which peels off from time to time like the birch tree. The branches are scattered with slender twigs, often drooping as completely as in the weeping willow; they are round and smooth, the *young shoots* being sericeous. The leaves are alternate, on short petioles, not unlike those of the willow, from three to five inches long, and from half to three quarters

of an inch broad, lanceolate, and while young sericeous; when full grown, smooth, deep green, three to five nerved, and sometimes slightly falcate. On being bruised, they smell strong of the substance they yield, yet the cells which contain this aromatic fluid are scarce visible in the fresh leaves. The spikes are terminal, and from the extreme axils, downy; while in young flowers there is only a scaly cone at the apex; which soon advances into a leafy branchlet. The flowers are small, white, sessile, inodorous, and accompanied by solitary, lanceolate, sericeous bracteas. The calyx is urceolate, sericeous, and divided at the margin into five semilunar deciduous segments. The petals are five, orbicular, short clawed, and much longer than the segments of the calyx. The filaments are from thirty to forty, united into five portions at the base, three or four times longer than the petals, and with them inserted into the large villous 5-lobed rim of the calyx, alternated with its segments: anthers ovate-cordate, with a yellow gland on the apex. The germen is ovate, crowned with a slender style longer than the stamens, and an obscurely 3-lobed stigma. The capsule is completely enveloped in the thick, fleshy, gibbous, permanent tube of the calyx, 3-lobed, 3-celled, and containing many small regularly wedge-shaped seeds.—Fig. (*a*) represents a single petal with the filaments and anthers; (*b*) a section of a flower magnified; (*c* and *d*) the capsule and seed.

Mr. Crawford, in his "History of the Indian Archipelago," states that there are three varieties of this tree, native to Amboyna, Java, and Borneo. The bark of the largest, which is a mountain tree, grows in continuous forests; and the bark of it yields them aterial with which the natives of the Moluccas caulk their ships. The smaller, which yields the *kyápootie*, or *Cajaputi oil*, thrives near the sea-coast, and has got its name from its colour, *káyu-puti*, which signifies *white wood;* and hence Rumphius gave it the name of "*arbor alba minor.*" "Besides its current name, it is known in Malay countries," says Dr. Ainslie, by other terms, as *galam, daun, kibsjil,* &c.; in Ternate, by *bajule;* in Amboyna, by *kilam, ilam,* and *elam;* and in Ceram, by that of *sakelan.*

Qualities.—This oil, (formerly called oleum Wittnebianum,

from Wittnebin, who first gave an account of the process for obtaining it,) is distilled from the leaves of the plant, and is generally brought to this country in copper vessels, that hold about three pints; and, as it is generally of a green colour, it has been supposed to acquire this tinge from the copper; but after careful investigation, we have not been able to trace the smallest portion of that metal in it. Sometimes the oil is nearly white, clear, and very limpid. It has a strong volatile smell, resembling camphor and cardamoms mixed; and a strong pungent taste, like that of the latter. It is often adulterated; and when it is of a dark colour, and not perfectly soluble in alcohol, it should be rejected. A solution of camphor in oil of turpentine, tinged with verdegris, is often sold by fraudulent druggists for the genuine article.

Medical Properties and Uses.—This oil appears to be a powerful medicine, and is much esteemed on the continent, as well as in the East Indies, as a general remedy in chronic and painful diseases. It is used for the same purposes for which we employ the officinal æthers, to which it appears to bear considerable affinity. It is, however, more active and pungent; for if five or six drops be taken, it heats and stimulates the whole system, and is a very certain diaphoretic; by which, probably, the good effects it is said to have in dropsies and intermittent fevers are to be explained. For its efficacy in various spasmodic and convulsive affections it has been much used; and numerous instances of its successful employment are cited by Murray from their respective authors. It is said, that if a drop be rubbed on the temple, it will occasion a pungent pain in the eyes, and a discharge of tears; hence it has been used in chronic affections of the eyes, and is a powerful remedy for the relief of toothach. It is, no doubt, a highly diffusible stimulant, antispasmodic, and diaphoretic; and may be efficaciously given in chronic rheumatism, palsy, hysteria, and flatulent colic; in doses of from two, to six, and eight drops on a lump of sugar; and when mixed with olive oil it forms a valuable stimulating embrocation.

Its smell is supposed to keep off insects from collections of natural history; and as it dissolves *caoutchouc*, a good varnish may be obtained.