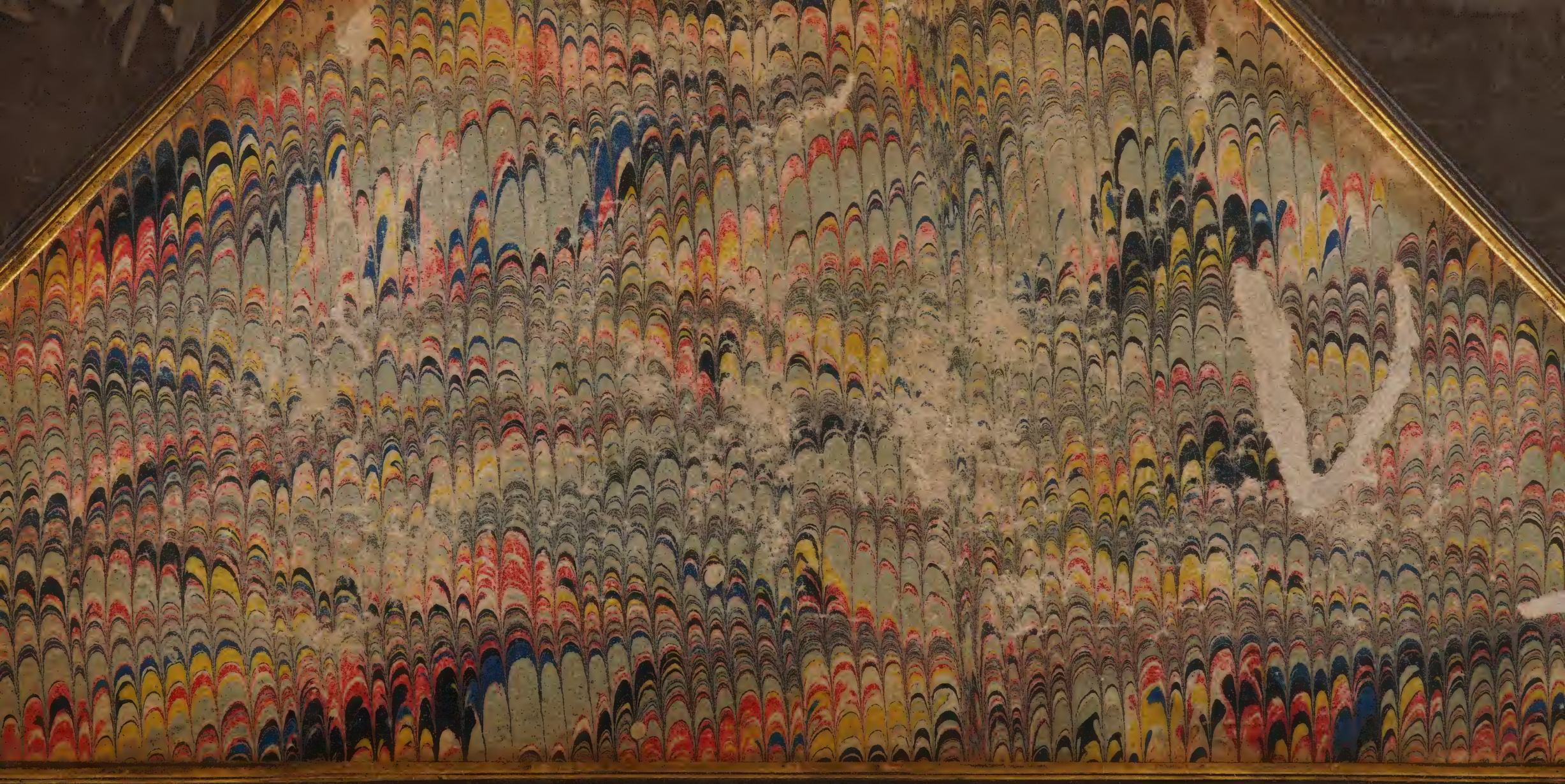
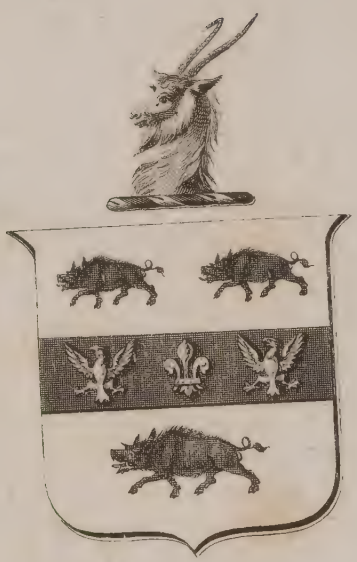
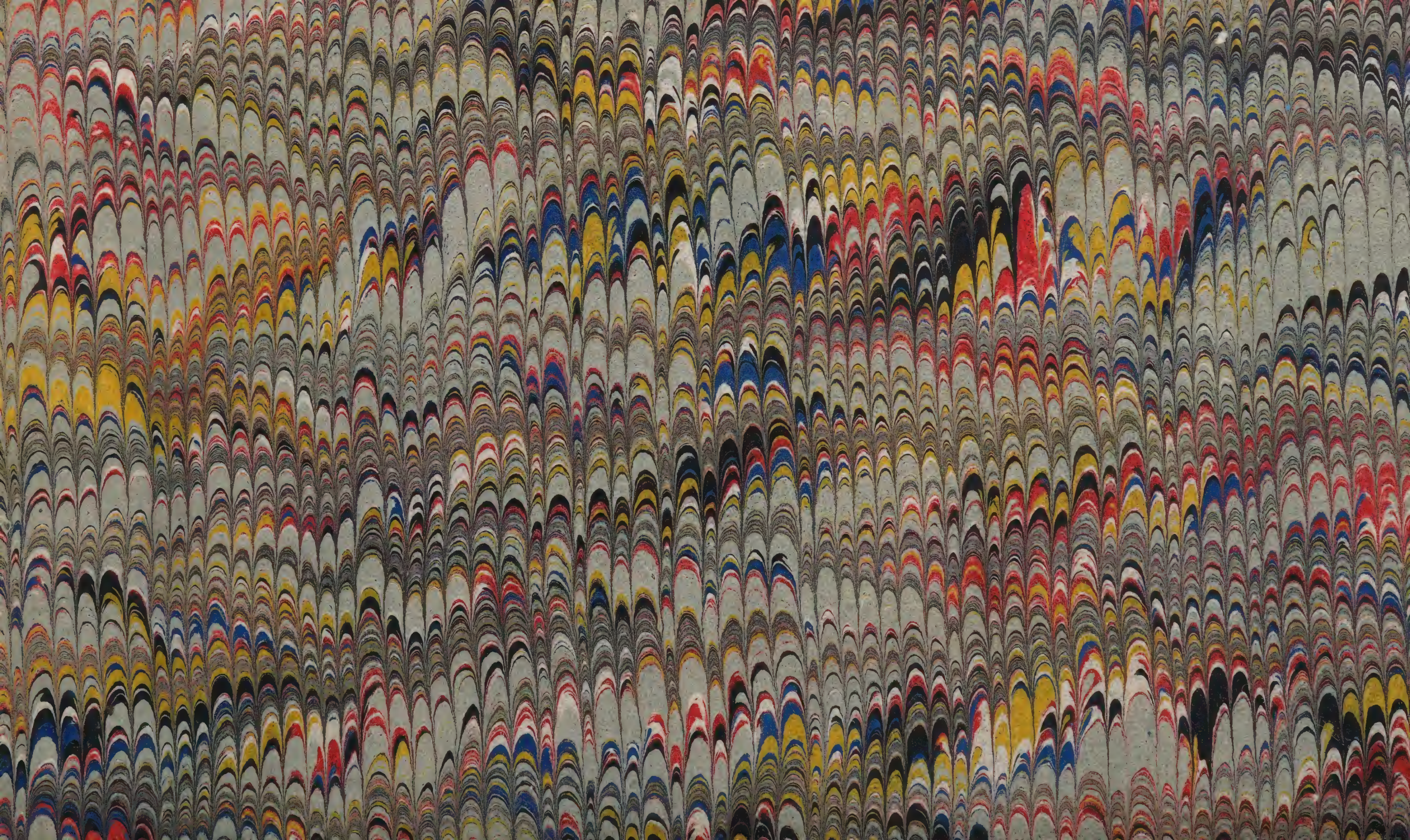




William Maddocks Bush.

M. D. F.L.S.



Smith 1231.

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.
GRADUATE OF THE UNIVERSITY OF EDINBURGH;

AND

JAMES MORSS CHURCHILL, F.L.S.
MEMBER OF THE ROYAL COLLEGE OF SURGEONS, AND FELLOW OF THE MEDICO-BOTANICAL SOCIETY OF LONDON.

VOL. I.

LONDON:
JOHN CHURCHILL, CARLTON STREET,
WATERLOO PLACE.

MDCCCXXXI.

TO

HIS MOST EXCELLENT MAJESTY,

KING WILLIAM THE FOURTH,

THE

MUNIFICENT PATRON OF THE ARTS AND SCIENCES,

THIS WORK

ON

MEDICAL BOTANY,

ILLUSTRATIVE OF THE NATIONAL PHARMACOPŒIAS,

IS

With his Majesty's Gracious Permission,

VERY HUMBLY INSCRIBED,

BY

HIS MAJESTY'S

MOST LOYAL AND DEVOTED SERVANTS,

THE AUTHORS.

ADVERTISEMENT.

It will readily be acknowledged, that science, in her various departments, has made very rapid advances towards perfection, during the last twenty years: and should Botany, as it now is, be compared with what it was previously to that time, it will be perceived, that the disciples of Linneus and of Jussieu, have kept pace with those who have cultivated the different branches of chemical and mechanical philosophy.

Prior to the epoch to which we refer, little had been done, in this country, towards the improvement of knowledge in the medical properties of plants, if we except the crude efforts of Gerard, Turner, Parkinson, and some others. It was reserved for Woodville to place the subject before us in a well-digested arrangement; but even he was unaided by those rays of light which have since dawned upon us, through the indefatigable labours of modern botanists, scientific travellers and distinguished chemists, whose researches (especially of the latter class, in a neighbouring state) into the ultimate principles of vegetable organization, have been re-

warded by those brilliant discoveries, which have shed a lustre on their names, and conferred benefits on mankind, that will prove as lasting as their fame. Notwithstanding these, and many other important additions to our knowledge, no attempt worthy of notice had been made, to bring "Medical Botany" before the public in an improved dress, and therefore the Authors of this undertaking, being convinced of the expediency of such a task, have, after five years' incessant toil, and at an expense of nearly two thousand pounds, brought it to a conclusion.

They are, however, far from thinking that their work is perfect; but having laid down a plan of "illustrations and descriptions of the medicinal plants of our national pharmacopœias, including some new ones, lately introduced into practice, together with a popular and scientific description of poisonous plants," they have endeavoured to fulfil it in the spirit of those improvements, to which they have already adverted.*

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* For a detailed account of all the most important animal and inorganic substances which furnish articles of the Materia Medica, the reader may consult "Medical Zoology, or Illustrations and Descriptions of the Animals and Minerals employed in Medicine, and of the Preparations derived from them: including also a popular and scientific account of Animal, Mineral, Atmospheric and Gaseous Poisons:" which is intended to serve as a supplement to the present work. By John Stephenson, M.D. F.L.S.

Amidst the trouble and anxieties which necessarily attend a task of such magnitude, the authors have had abundant opportunities for observing the benign influence with which a cultivation of science imbues the human mind. Wherever they found it necessary to apply for advice, information, or assistance, they were immediately met by the kindest and most disinterested attention: and, although, it would be difficult to enumerate each individual to whom they are thus indebted, they cannot help adverting to the efficient aid of Mr. Don, Librarian of the Linnean Society, whose extensive knowledge is only equalled by his readiness to impart it—To the Trustees of the British Museum, and to the Curator of the BANKSIAN *herbarium*, they are, also, greatly indebted; and when both those important resources failed, they availed themselves of the use of the library and *hortus siccus* of Aylmer Bourke Lambert, Esq. F.R.S. whose collection of dried plants and costly works, on Natural History, are unequalled in this country. From the library of the Royal College of Surgeons, which is enriched by a vast number of expensive works on Materia Medica, they have likewise derived much assistance.

The authors have been sedulous in collecting *living* plants for the use of the artist; and when deprived of this advantage by inappropriate season, uncongenial locality, or other unfavourable circumstances, they re-

sorted to published plates and drawings of acknowledged accuracy, and compared these with the dried specimens in the herbarium of Linneus, of the late Sir Joseph Banks, of Mr. Lambert, and of the East India Company.

For specimens of plants they are under particular obligations to the Countess of Bridgewater, and Miss Carlos Syms; to William Aiton, Esq. F.L.S, Kew; to Adrian H. Haworth, Esq. F. L. S., Queen's Elm, Chelsea; Dr. William Horsefield, F.R.S. and F.L.S.; to Edward Forster, Esq. F.R.S.; and to Mr. Anderson, F.L.S., Curator of the garden of the Apothecaries Company, Chelsea: nor can they be too thankful to S. Curtis, Esq. F.L.S., for the kind liberality with which he allowed copies to be made from plates which appeared in the Botanical Magazine.

In the commencement of the work, the Authors proceeded in acknowledging the sources from whence they derived their information; but, as they advanced, they found it difficult to execute this part of their task with any degree of correctness, in consequence of the gross plagiarisms with which, many writers on the subject, abound. They have, therefore, contented themselves by giving, in conclusion, a general list of the works to which they have referred, and desire to take this opportunity of acknowledging, that from the various publications of the late Sir James

Edward Smith, P.L.S.; from Roque's Phytographie Médicale; Fee's Cours d'Histoire Naturelle Pharmaceutique; Orfila's Toxicologie Générale; Bidgelow's American Medical Botany; Barton's Vegetable Materia Medica of the United States; Thomson's System of Chemistry; Murray's Materia Medica; Duncan's Edinburgh Dispensatory, and his valuable Supplement to the Pharmacopœia, they have culled very freely.

It is a source of great satisfaction to them to know, that their efforts have given an impetus to the study of Botany amongst the members of the medical profession; and, that, their work has been encouraged by collegiate and corporate bodies, who, in their *curricula*, now insist upon an attendance on botanical lectures.

With sincere gratitude, they thank their subscribers and friends for the encouragement they have experienced, and cannot conclude this short address without recording their humble gratitude to King William the Fourth, for his ineffable condescension in permitting the work to be inscribed to His Most Gracious Majesty.

July, 5, 1831.

Hexandria Monogynia

Allium Cepa V: Europ: Sepiaria

Allium Porrum Do Do

Allium Sativum Do Do

Allium Schoenoprasum Do Do

Lilium Candidum Do Do

Diandria Monogynia

Olea Europea V: Europ: Sepiaria

Syringa Vulgaris Do Do Persondata

Jasminum Officinale Do Do Verticillata

Diandria Digynia

Piper Longum Do Do Sparsa

Cubeba Do Do

Nigrum Do Do

Triandria Monogynia

Valeriana Officinalis Do Do Sparsa

Crocus Sativus Do Sicilia 11 0 d

Iris Florentina Do Do

Triandria Digynia

Saccharum Officinarum V: Ind: Gramina

Do Do

Secale Cereale Do Do

Hordeum Vulgare Do Do

Avena Sativa Do Do

Zea Mays Do Do

Tetrandria Monogynia

Rosmarinus Officinalis Do Italia Labiata

Pentandria Monogynia

Anchusa Tinctoria Europa Mediterranea Asperifolia

Myosotis Scorpioides Do Do

Lycopsis Arvensis Do Do Scabrata

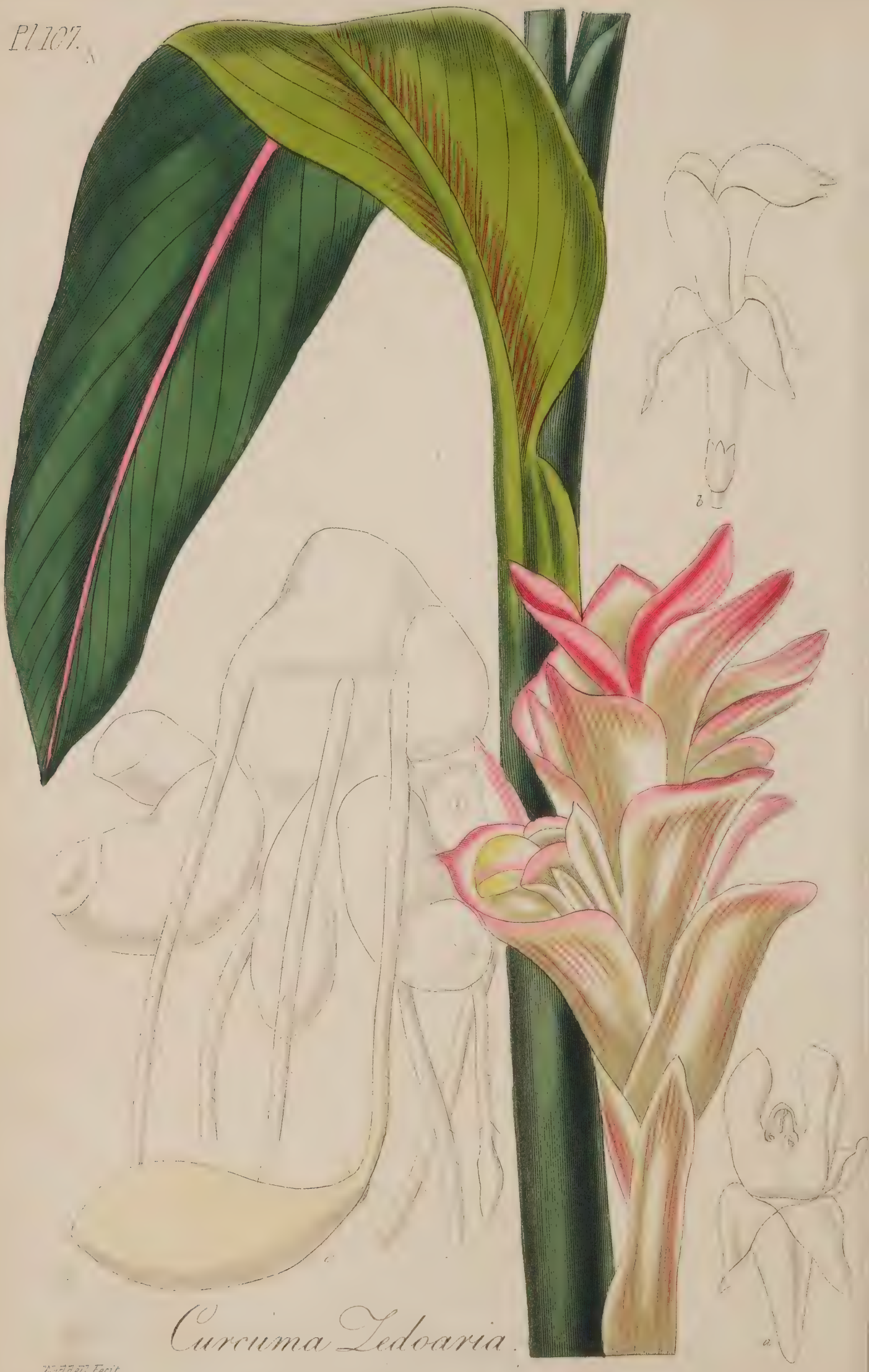
Coffea Arabica Arabia

Convolvulus Sepium Do Europa Convolvulacea

Scammonia Do Do

Convolvulus Jalapa	do	do	Campanacei
Viola Odorata	do	Violaceæ	Violaria
Anagallis Arvensis			Rotaceæ
Erythræa Centaurium			
Datura Stramonium	do	Solanæ	Luridæ
Hyoscyamus Niger	do	do	
Nicotiana Tabacum	do	do	
Strychnos Nux Vomica		Apocineæ	
Capsicum Annuum	do	Solanæ	
Solanum Dulcamara	do	do	
" Nigrum	do	do	
Atropa Belladonna	do	do	
Cinchona Condaminea	do	Cinchonaceæ	Coutorla?
" Cordifolia	do	do	
" Oblongifolia	do	do	
Cephaelis Ipecacuanha	do	do	Aggregata
Rhamnus Cathartica		Rhamneæ	Dumosæ
Vitis Vinifera		Vitis	Sarmentaceæ
Bonplandia Trifoliata		Diosmeæ	Quassiæ
Diosma Crenata		do	Multisiliquæ

Pl 107.



Curcuma Zedoaria.

W. Hatfield Fecit.

Published by J. Churchill Leicester Square March 1829.

CURCUMA ZEDOARIA.

Zedoary.

Class I. MONANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. SCITAMINEÆ, *Lin. Roscoe.* CANNÆ, *Juss.*

GEN. CHAR. *Anther* double, embracing the style, 2-spurred. *Filament* petal-like, central lobe bearing the anther. *Capsule* 3-celled. *Seeds* numerous.

SPEC. CHAR. *Leaves* broad-lanceolate, smooth, with a purple cloud down the middle. *Spikes* lateral. *Bracteas* emarginate.

Syn.—Kua *Rheede Hort. Malab. v.* 11. *t.* 7.
Zerumb. *Rumph. Amb. v.* 5. *t.* 6.
Amomum Zerumbet, *Konig in Retz. Obs.* 3. 55.
Curcuma Zerumbet. *Roxb. in Asiat. Res. v.* 11. 333. & *Flor. Ind.* p. 20.
Curcuma Zedoaria, *Bot. Mag. v.* 37. *t.* 1546.
Amomum Zedoaria, *Sp. Pl. Willd. v.* 1. 7.

FOREIGN.—*Zedoire*, Fr.; *Zedoaria*, It.; *Zedoar wurzel*, Ger.; *Catchu, Cachura, Cachoramu*, &c. of the Hind. and Teling.; *Sat'hi* or *Sote*, Beng.

THIS plant is a perennial, growing in sandy open places in various parts of India, particularly in Ceylon and Malabar; flowering during the hot season. The root is tuberous, oblong, about the thickness of a man's thumb, fleshy, aromatic, and of a pale straw colour. The leaves are radical, as it is only the sheaths that create the appearance of a short stem; they are broad lanceolate, inequilateral, smooth on both sides, of a green colour, with a ferruginous or purple cloud down the middle on the upper and a fainter cloud in each side of the mid-rib below. They are bifarious and herbaceous, making their appearance with the first

showers of April or May, and perish about the beginning of the cool season in November. The inflorescence is a simple erect scape, which rises from among the leaves, and is terminated by a loosely imbricate, cylindrical, truncated, lateral spike of flowers. The outer limb of the corolla is straw-coloured; the lip ovate, emarginate, yellow towards the apex. The filament is petal-like, 3-lobed, bearing the anther in the middle. The anthers are double; the lobes separated by a deep groove, through which the style passes; the lower end of each lobe ending in a large conspicuous spur, which is the essential character of the genus. The germen is superior and 3-celled; style filiform; stigma somewhat bilabiate. The capsule is ovate, smooth, pale straw-colour, thin and nearly pellucid, 3-celled; seeds several in each cell. Fig. (*a* and *b*) represent the flower; (*c*) the root.

The pale colour of the roots, crimson bracteas, and ferruginous mark down the centre of the leaves, which is a constant character in this elegant species, readily distinguish it from every other.

Qualities and Chemical Properties.—The root is brought over in oblong pieces, about the size of the little finger; or in roundish ones about an inch in diameter; of an ash colour on the outside, and white within. They vary little in power, and are therefore used indiscriminately. Zedoary has an agreeable camphoraceous smell, and a bitter aromatic taste. It impregnates water with its smell, a slight bitterness, a considerable warmth and pungency, and a yellowish-brown colour. It imparts more bitterness, but less odour to spirit. It yields in distillation with water, a ponderous, and pungent essential oil; and the decoction thus deprived of the aromatic matter, and concentrated by inspissation, is disagreeably bitter and subacrid.

Medical Properties and Uses.—This root is a very useful aromatic and stomachic. It was formerly much celebrated for colic, in hysteric affections, when attended by flatulency, and in scurvy; and, as its virtues depend principally on its camphoraceous volatile oil, we see no reason for so readily discarding it from the materia medica, as some authors recommend.

Dr. Ainslie informs us, that the best comes from Ceylon, where it is used as a tonic and carminative. It is evidently the *zerum-*

bet of Serapion, and *zerumbad* of Avicenna who extols it highly: "Discutit flatus, cor recreat, vomitionem compescit ad venenatarum bestiolarum morsus efficax est."—*Canon. Med. lib. ii. tract.* ii. p. 11. The modern Arabs consider it to be tonic, deobstruent, and aphrodisiac. Its spirituous extract once made an ingredient in the cordial confection of the London Pharmacopœia; but an infusion is the form generally prescribed.

Dose.—In substance, gr. x. to ʒss.

CURCUMA LONGA.—*Turmeric, or Indian Saffron.*

Spec. Char. *Leaves* ovate-lanceolate. *Bracteas* spatulate.

Syn.—Amomum Curcuma, *Jacquin, Hort. Vind.* 3. *t.* 4.
Curcuma, *Rumph. Amb.* 5. 162. *t.* 67.
Curcuma longa, *Rosc.* 3; *Sp. Pl. Willd.* 2.

The root of this plant, which has been admitted into the Dublin Pharmacopœia, and is used by the dyers to give a yellow colour, is a native of the East Indies, China, and Cochin-China, and is very generally cultivated over the southern parts of Asia. The root, according to Louriero, is perennial, creeping, fleshy, palmate, with cylindrical branches, and covered with a pale saffron coloured bark. Stem none. Leaves broad-lanceolate, large, quite entire, smooth, annual, pale green, densely furrowed with oblique slender lines; petioles long, erect, dilated at their base, minutely supporting and clasping each other. Scape external, three inches long. Flowers sessile, white, with a yellow nectary, one within each scale of the spike.

It is brought chiefly from the East Indies; but is common in the gardens of the Chinese, who use it as a sternutatory, and it grows abundantly in Malacca, Java, and Balega. In England it was first cultivated by Miller in 1759. The dried root is externally greyish, and internally of a bright yellow or saffron colour;

is very hard, and somewhat resembles ginger in figure and size. It should be chosen large, fresh, resinous, hard to break, and heavy.

Qualities and Chemical Properties.—Turmeric has a slightly aromatic odour, and a bitterish somewhat acrid taste. It readily gives out its active matter, both to aqueous and spirituous menstrua, communicating to the former a deep yellow, and to the latter a fine yellowish-red tint. Distilled with water it yields a small quantity of a gold-coloured essential oil. The alcoholic extract is moderately warm, nauseous, and bitter.

Medical Properties and Uses.—The medical virtues of turmeric are those of a slight stimulant and tonic. In Eastern countries this root, besides its use in colouring food, is considered as cordial and stomachic, and is accounted one of the most effectual remedies in mysenteric obstructions, uterine disorders, and affections of the kidnies and urinary passages. It is a constant ingredient in curries,* and is prescribed by the Tamool doctors, in those watery diarrhœas which are so troublesome and difficult to subdue in weak habits. Although the use of this root has been celebrated formerly as a powerful remedy in dropsies, intermittent fevers, and as a specific in the jaundice, it is now very rarely prescribed. It tinges the urine of a deep yellow, after being taken for a short time. The *dose* in substance is from ʒfs to ʒij : in infusion, made with ℥fs of the root in a pint of water, two or three tablespoonsful, three times a day.

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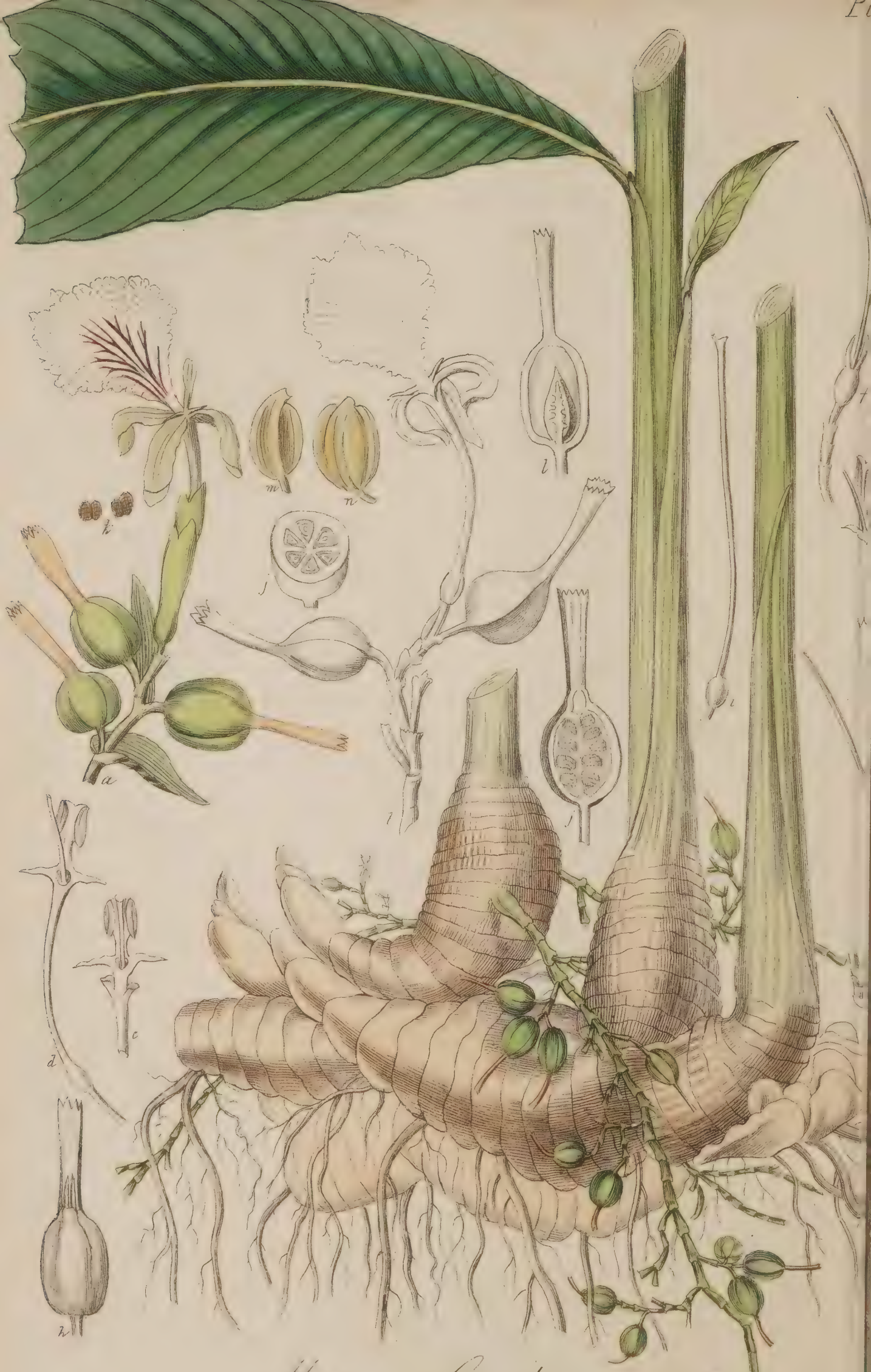
* Curry Powder.—The following receipt for curry powder is taken from the "Cook's Oracle." The ingredients are the same as those used in India, with this difference only, that some of them are in a raw green state, and are mashed together and afterwards dried and powdered:—Turmeric, three ounces. Coriander seed, three ounces. Black pepper, mustard, and ginger, one ounce of each. Lesser cardamoms, half an ounce. Cayenne pepper, cummin seed, a quarter of an ounce of each. Thoroughly pound and mix together, and keep them in a well-stopped bottle.



Alpinia Cardamomum.

Weddell Sc

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

MATONIA CARDAMOMUM.

The Lesser or Malabar Cardamom.

Class I. MONANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. SCITAMINEÆ, *Lin.* CANNÆ, *Juss.*

GEN. CHAR. *Capsule* 3-celled and 3-valved, with a central receptacle. *Anther* of two distinct lobes. *Filament* with two triangular lobes at the base, emarginate and simple at the summit. Outer limb of the *corolla* in three oblong lobes; outer a single lip. *Seeds* rough, tunicated.

SPEC. CHAR. *Leaves* elliptic-lanceolate, acute. *Calyx* notched. *Capsule* ovate-oblong, obtusely triangular.

Syn.—Cardamomum simpliciter in officinis dictum Cardamomum verum, Angl. *Bauh. Pin. p.* 414.

Cardamomum cum siliquis sive thecis brevibus, *Bauh. Hist. Plant. v.* 2. *lib.* 15. *p.* 205.

Elletari, *Van Rheede Hort. Malab. v.* 2. *p.* 9. *t.* 4. 5.

Cardamomum minus, *Clusii de Aromat. lib.* 1. *c.* 24. *p.* 187; *Matthiol. sur Diosc. (Pinet) p.* 6; *Bodæi Annot. in Theophrast. p.* 1014. *f.*

Cardamomum Ensal dictum, *Burman Thes. Zeyl. p.* 54.

Amomum Cardamomum, *White Trans. of Lin. Soc. v.* x. 230. *t.* 4. 5.

Amomum repens, *Sonner. Voy. tom.* 2. *p.* 240. *t.* 136; *Roscoe in Trans. Lin. Soc. v.* 8. *p.* 353.

Cardamomum minus, *Matth. Valgr. v.* 1. 25; *Camer. Epit.* 11. *f.* 3; *Ger. Em.* 1542; *Geoffr. Mat. Med. p.* 368; *Lin. Mat. Med. p.* 2.

FOREIGN.—*Petit Cardamome*, Fr.; *Amomo minore*, It.; *Cardamomo*, Sp. and Port.; *Kleine Kardamomen*, Ger.; *Kadamome*, Dan.; *Kardamome*, Rus.; *Kákula*, Arab.; *Purbi* and *Guzrate Clachi*, Hind.; *Capulaga*, Malay.

THE Malabar Cardamom has been regarded by most botanical writers as a species of Amomum; but Mr. Roscoe has shown that it differs in the filament or antheriferous petal not being produced beyond the anther, as in that genus. Dr. Roxburgh, in his account of the plants of Coromandel, considers it to be an

Alpinea; but in this the inflorescence is terminal, whereas in the Cardamom it issues horizontally from the tuberous annulated part of the stem: hence it has lately been removed to a new genus, called ELETTARIA, from *Elettari*, the original Malabar appellation, as given in the Hortus Malabaricus. The name MATONIA, by which it is now distinguished, was, we believe, originally suggested by Sir James Edward Smith, in honour of his friend Dr. Maton, the learned physician and naturalist, who first clearly established the genus.

We have great pleasure in presenting to the public a correct representation of the plant which yields Cardamom seeds. The botanical description and natural history were first communicated to the Directors of the East India Company, by Mr. David White, surgeon on the Bombay establishment; and it is to his paper, together with the valuable remarks of Dr. Maton, published in the tenth volume of the Transactions of the Linnean Society, that we are chiefly indebted for the account we now write.

The plant which produces the Cardamom seeds, (Matonia *Cardamomum*,) is a native of the mountainous parts of Malabar, on lofty hills, whose summits are ever clothed with clouds, growing most luxuriantly in shady places, in a moist atmosphere; flowering when the rainy season begins, in April and May, and ripening its seeds in October and November. The district of Wyniaûd, situated on the summit of the western Ghaûts, about the twelfth degree of latitude, produces the best Cardamoms in India.

The Lesser or Malabar Cardamom has a whitish perennial, annulated, tuberous root, sending off many long slender fibres. The cultivated plant does not flower till it is four years old. The stems, which emerge from the root, are tuberous, clubbed, and jointed at the base for two or three inches; the lower part giving out viviparous shoots, the upper part panicles. They are erect, and tapering as the continued sheaths send off the leaves; when bearing, from six to ten feet high, and from eight and twelve to thirty in number, smooth, with varying shades of glossy green and pale at the base; which distinguishes this species from a congener frequent on the same scite, but with a red or fuscous base. The leaves are alternate and sheathing, elliptic-lanceolate,

pointed, from nine inches to two feet and a half long, and from one to five inches broad, spreading, dark green, smooth, entire pale sea-green beneath, and glossy, with a silky softness. The midrib of the leaf on the upper surface is channelled, on the under keeled. The flowers are in panicles, which issue laterally from the tuberous jointed base of each stem near the root. The panicles are much branched, jointed, a span long, smooth, many-flowered, and spread horizontally on the ground. The bracteas are alternate, ovate, oblong, acute, at the base of each partial stalk, withering; the partial ones solitary, tubular, closely embracing the germen and calyx, almost as long as the latter and resembling it in shape, but deciduous. The calyx is monophyllous, double, tubular, cylindrical, and 2 or 3-cleft at the margin. The corolla is monopetallous, and funnel-shaped; tube longer than the calyx, cylindrical, slender, curved; outer limb in three equal, oblong, recurved segments, inner a somewhat obovate, large, notched, crenate, undivided lip, with a short claw. The filament is stout, erect, with a lanceolate, acute, horizontal lobe, simply notched at the summit, without any crest or extension beyond the anther, which consists of two oblong, distant lobes, about half the length of the filament. The germen is inferior, nearly globular, having a slender thread-shaped style lying close to the filament between the lobes of the anther, and bearing a funnel-shaped, obtusely triangular stigma. The capsule is 3-celled, with three coriaceous valves; when fresh it is fleshy, smooth, elliptic-oblong, or somewhat ovate, but becoming bluntly triangular, coriaceous and pale brown, when dried. The seeds are numerous, roundish, somewhat angular, rough, each enveloped in a fine membranous evanescent tunic. The receptacle is central, shorter than the capsule, when dry, and originally connected with the central ridge of the valve. The plate represents a full-grown Cardamom plant, with its stems cut off.—Fig. (*a*) the partial panicle with its germs and flower viewed in front; (*b*) the back view of the corolla; (*c*) the tube only of the corolla, with the inner calyx, &c.; (*d*) the same without the calyx; (*e*) part of the style, stigma, and anthers in situ; (*f* and *g*) the naked pistilla, one with the germinal appendices a little separated, the

other with the same in situ; (*h*) a half-grown germen, with the persistent inner calyx and its 3-toothed border; (*i*) the naked pistil, style, and stigma; (*jj*) longitudinal and transverse sections of the full grown pericarp, as it is taken from the plant before drying; (*k*) two seeds, a little magnified; (*l*) the bare capsule, one side removed to show the triangular seed-receptacle; (*mm*) the Cardamom pod, as it comes to market from the drying process.

The glistening polish of its stems, (says Mr. White,) the sea-green glossy surface of its leaves waving with the least impulse, and the general symmetry of the whole, easily distinguish it from its rival neighbours in the woods. It outshines them also in the elegance of its flowers: the vivid pink, surrounded by the pale white of the spreading division of the upper border of the corolla, presents a most delicate contrast.

In Malabar, its native soil, it is simply named *Ela*, or *Ela-tari*, and *Ela-channa;* the former addition signifying a young plant, the latter a full-grown one. The ripe pod is styled exclusively *Ela-tari*, *ari* in Malabar signifying any small grain: e. g. *ari*, rice, *mont-ari*, natcheny or raggee.

The Cardamom Farms.—"The spots chosen for these," continues Mr. White, "called in the Malabar language *Ela-Kandy*, literally signifying Cardamom plots, are either level or gentle sloping surfaces on the highest range of the Ghaûts, after passing the first declivity from their base. The extent of climate hitherto known in Malabar to produce them, lies between 11° and 12° 30′ north latitude, or thereabouts.

"The months of February and March are, on account of the prevailing dry weather, selected as the most proper for commencing their labours, the first part of which consists in cutting down the large and small trees promiscuously, leaving of the former, standing at nearly equal distances, certain tall and stately individuals, adapted to that degree of perpendicular shade which experience teaches them to be most favourable for the future crops. The grass and weeds are then cleared away, and the grouud disencumbered from the roots of the brushwood; the large trees lie where they fall; the shrubs, roots, and grass are filled up in different small heaps, and their spontaneous and gradual decomposition fertilizes the space they cover.

"The size of the Ela-Kandy is various. The largest Mr. White saw among fifty did not exceed sixty yards in diameter. Their form varies likewise, very commonly oblong or oval, sometimes a contour irregularly rounded. The variety in these respects is chiefly owing to the convenience of the standard or permanent trees for shade. Those

with lofty, straight stems, extensive heads, and those that are in an adolescent state, and known to be long-lived, are preferred for this purpose, and left standing at fifteen or twenty yards from each other. Much more diminutive plots are also cultivated by a race of Hill people called *Kourchara* and *Cadura*, who are not exactly slaves, but locally attached, and acknowledging certain obligations of a feudal, and perhaps reciprocal kind to the Nairs in the neighbourhood.

" After the operations now described, no further labour is bestowed for four years. At the revolution of the fourth rainy season, and towards its close, they look for a crop, and their hopes are rarely disappointed; this first effort of nature is generally scanty; for instance, only one-half of what is reaped the following year, and only one-fourth of what is yielded after the sixth rains, at which period the plant has reached its acme of prolific vigour. Now and then, however, this routine is interrupted, and its progress protracted, by causes of which they are not very solicitous to investigate the nature; they remark, however, excessive and uninterrupted rains to be one source of failure.

" In the dry season succeeding to the first crop, they grub up the undergrowth of shrubs, and clear away the weeds and grass, laying them up as before in heaps to rot; but in no case do they set fire to these, the consequence of which practice would be the certain failure of the crops. This process of cleansing being yearly repeated, the same spot will continue productive for fifty years and upwards.

" The barren state of the Ela-Kandy is replaced by the establishment of another, on a fresh site, and with similar properties to the former; in the choice of which they can never be at a loss, from the great extent of mountain and wood in a state of nature, and, the same operations repeated, the customary routine of crops will follow.

" As the Cardamom plants spring up from scattered seeds dormant on the spot, or washed thither by rains from the adjacent parts, we do not find any regularity in their disposition, nor is the industry of the natives ever exerted to correct this. Accordingly we see them variously grouped; in some places crowded and extremely luxuriant; in others thin and stunted; some roots sending forth from twenty to thirty stems, two-thirds or three-fourths of which bear, others from eight to twelve, and down to four or five. Hence it is difficult to calculate the rate of produce of any one plant. Each stem sends forth from its thickened base from two to four strings of fructiferous panicles; from these issue alternately short clusters bearing from two to three ripe pods. The length of the common string or stalk varies from four inches to eighteen, and is sometimes two feet; but these last extremes are not fertile in proportion. In good years, from four to six plants will yield of dried pods one *dungally*, a measure of capacity equal to four pints Winchester.

" The abundance of crop, is best insured by a moderate routine of weather, with respect to dry and wet: the extremes of each are injurious; they dread most, however, deluging rains, particularly for the young plantations, and during the flowering season, which commences on the first fall of the rains in April and May, and continues for two months. The flower being very delicate, and the recumbent and

repent posture of the fruit-panicles, exposes them particularly to the bad effects of drenching moisture. Repeated torrents, descending from above, commit their devastation by baring the roots, and sweeping away the finest portion of the mould, which furnishes a nutriment so essential to the vigour of the plants. In August and September the pods increase and acquire the greatest size. In the first half of October they begin to ripen; then the gathering of the early part commences; the ripening proceeds through all that month and November. A longer continuance of the rainy season may protract the final gathering till the middle of December. About a fortnight earlier than here stated, the Cardamoms on the western or sea-side of the Ghaûts are gathered. The process of reaping keeps pace with the simplicity of the previous management. A dry day being chosen, the fruit-stalks are plucked from the roots, carried to their houses, and laid out to dry on mats placed upon a threshing-floor; a series of four or five dry days is sufficient to complete the desiccation. The pods being extricated by stripping with the fingers, are separated into three or four sorts, denominated from their respective qualities:—1. *Talli-Kai*, the head fruit; 2. *Nadu-Kai*, the middle; and 3. *Poulo-Kai*, the abortive fruit. The last being thrown away, the two former are mixed together; the purpose of the separation being to ascertain the relative proportions, and to render the whole uniform and marketable. They are then laid up in mat-bags, made of the Pandanus *sylvestris* of Rumphius, a plant growing every where around their houses and fields. These bags are of two sizes, one holding thirty-two pounds avoirdupois, or a company's *maund* in Malabar, and the other sixteen pounds.

"The bundles thus prepared by the cultivator are immediately carried down to shops, or little storehouses, erected by Mopla merchants or agents in different places along the whole range of hills, and at a little distance from the farms. Here they are subjected to another and final operation by the venders to the wholesale merchants on the coast. This consists in holding them over a gentle and slow fire in flat baskets, while the assistants continue rubbing them betwixt their hands for a certain time; which has the effect of detaching what remains of the permanent calyx and foot-stalks, or other adhering membranes, and gives the pod that appearance and marketable quality delineated in pl. 106, figs. *m* and *n*. This operation is termed in Malabar, *Terimbous*, a word expressive of its nature. The Cardamoms are now weighed for the purpose of ascertaining the respective quotas of rent payable by the different farmers. The result of this is expected to correspond with a previous estimation of the quantity of the crops, taken on the ground before they arrive at maturity; on the approach of which an official deputation, consisting of public officers and some of the head men of the country, well acquainted with the subject, repairs to the Ela-Kandy's, attended by the proprietors, and there makes the calculation from the combined consideration of the extent of ground, age of the plantation, and general appearance of the fruit-stalks then in full bearing. Four or five of the visitors, whose interests are supposed to be neutral, and equally unbiassed betwixt Government and the Ryot, successively and seriously deliver their

opinions; from the average of which the official attendants strike a mean, and mutual satisfaction is generally the consequence. The duties, or customs, are paid only on exportation from the province; they amount to twelve per cent., and the average price is rated at 1200 rupees per candy of 640 pounds avoirdupois.

"The total produce of Wynaûd may amount, one year with another, to something above fifty candies, perhaps fifty-six; and this grows on an extent of more than 100 miles, reckoning the sinuosities and angles of the hills. The kingdom or country of the Coorja Rajah produces less than ten or fifteen candies. The whole site of the growth of this spice on the continent of Hindostan extends from the Soubramany Ghaût, nearly due east from Maugalore, to Mannaar Ghaût in the same direction from Calicut."

Mr. White, to whom we are indebted for the preceding account of the natural history of this plant and its cultivation, under the name of Amomum *Cardamomum*, in Trans. of Lin. Soc. vol. x. speaks of the seed as amongst the most important articles of modern luxury, and as "a grateful and salubrious accessary of diet." Its general use in Asia, indeed, renders the plant a very important and profitable object of culture, though the harvest, occurring at the most unhealthy season, is not unattended by serious dangers. Fevers, fluxes, the bite of innumerable minute leeches, (Hirudo *geometra*,) and the instantly fatal sting of the whip-snake, are mentioned as not uncommon mischiefs; to which is added the caustic quality of a shrubby plant, called by the natives *Mouricha*, whose botanical characters have not been ascertained, but whose leaves produce dangerous and sometimes fatal ulcers of the skin. The profit of the Cardamom farms, however, is so considerable as to overcome all difficulties in their cultivation, and Mr. White thinks they might easily be greatly extended.

What the cardamom of the ancients was, it is now scarcely possible to determine. It is extremely probable, however, as Dr. Maton justly observes, that the article bearing that name in their materia medica, was not the common cardamom of our shops. The plant producing it was not satisfactorily made known, until the publication of the *Hortus Malabaricus*, in which the delineation of it is sufficiently striking. From the mistake made by Burmann, in referring to Bontius's Java (p. 126) for the true cardamom, appears to have originated the erroneous description and discordant references, on the subject of the cardamom in the works of Linneus; the latter illustrious author having confounded the Javanese cardamom, Amomum *compactum* of Solander, with that of Malabar. In Java the plant grows wild in the woods, and is there called *kápalúga*, but its produce is much inferior

to that of the Malabar cardamom. The Amomum *Cardamomum* (Cardamomum *minus* Rumph. Amb. 5. p. 152. t. 65. f. 1.) is the species, the seeds of which come the nearest in taste and virtues to the officinal article, and are said to be used as a substitute for them by the Malays. The plant is a native of Sumatra and other islands to the eastward of the bay of Bengal, and was sent, according to Dr. Roxburgh, (Flora Indica, p. 37,) to the botanical garden at Calcutta, where it blossoms in April.* Dr. Francis Hamilton, in his Account of the Kingdom of Nepal mentions a large fruited species of cardamom (Amomum?) which he found growing there, hitherto undescribed by botanists. The plant producing the greater cardamom seeds of commerce or Grains of Paradise, is the Amomum *Grana Paradisi*, of Linneus.

The officinal cardamoms are brought to this country from Bengal in cases, each containing about 120lbs weight. The seeds are dried and imported in their capsules, by which their flavour is better preserved.

Qualities.—These seeds have an extremely grateful aromatic odour, and a warm pungent taste. They communicate all their virtues to alcohol and ether, and nearly so to water. In distillation they afford an essential oil, which is pungent to the taste, and in this seems to reside all the active qualities. "The watery infusion has a turbid appearance, and lets fall a flocculent precipitate, on the addition of alcohol, the acids, solutions of sulphate of iron, muriate of mercury, and acetate of lead; but the sulphate of iron does not alter its colour. The alcoholic tincture is rendered milky by water. The ethereal has a yellowish green hue, and, when evaporated on the surface of water, leaves neither resin nor extractive, but a considerable portion of essential oil, which has the flavour and taste of the seeds in perfection. Cardamoms, therefore, seem to be entirely composed of fecula, mucus, and essential oil."

Medical Properties and Uses.—Cardamom seeds have been long employed in medicine as a valuable cordial, carminative, and stomachic. They afford a grateful warm aromatic, less heating and stimulant than many of the other spices, and are, perhaps, on this account better adapted for general use. They enter into several of the officinal preparations, and are frequently combined with bitters in dyspeptic cases, or with purgatives, to obviate flatulence and griping. In India these seeds are highly prized as an agreeable condiment, and their use as such is so universal, that they are now regarded as a necessary of life by most of the natives of Asia.

* "The true original Amomum of the shops, still to be met with at Venice, and in other parts of the south of Europe, is the Amomum *Cardamomum*, Cluster Cardamom, (*Lin. Sp. Pl.* 2; *Willd. n.* 1; *Roscoe n.* 1; A. verum, *Ger. Em*,) though generally supplanted by the more valuable lesser Cardamom, Amomum *repens* of Sonnerat, which Linneus confounded herewith."—Smith *in Rees's Cyclopædia.*

There are two tinctures of cardamoms in the British pharmacopœias, viz. a simple and a compound tincture; the first named *Tinctura Cardamomi,* prepared by digesting for eight days, three ounces of the bruised seeds in two pints of proof spirit. It possesses all the virtues of the seeds, and may be given in doses of one drachm to three. The other named *Tinctura Cardamomi composita,* (formerly called *Tinctura stomachica,*) prepared by digesting for fourteen days two drachms of the cardamom seeds, two drachms of carraway seeds, two drachms of cochineal, half an ounce of cinnamon, and four ounces of stoned raisins, in two pints of proof spirit. It would be an improvement in this preparation, as Dr. R. Pearson justly observes, if the proportion of cardamom seeds were increased, if the cochineal were omitted, and if, instead of four ounces of raisins, one ounce of pulverized sugar-candy were to be added, after the digestion is over. The usual dose is from two drachms to half an ounce or more. Both these tinctures are often ordered in stomachic infusions, and joined with ether, opium, and other antispasmodics, in flatulent colic, and in gouty, and spasmodic affections of the stomach. "Among all the aromatics," says Dr. Parr, "there are none that answer so well, in general as this simple tincture, for rendering mineral waters and other saline solutions easy and agreeable to the stomach."

Dose.—The dose in powder is from grs. v to ℈i.

AMOMUM GRANA PARADISI.—*Grains of Paradise Amomum.*

Gen. Char. *Anther* of two distinct lobes, attached by the back, below the summit. *Filament* with a 3-lobed crest, above the anther. *Capsule* 3-celled. *Seeds* tunicated.

Spec. Char. *Stalk* simple. *Bracteas* numerous, closely

imbricated. *Leaves* crouded, ovate-lanceolate. *Capsule* oblong, bluntly triangular, minutely hispid.

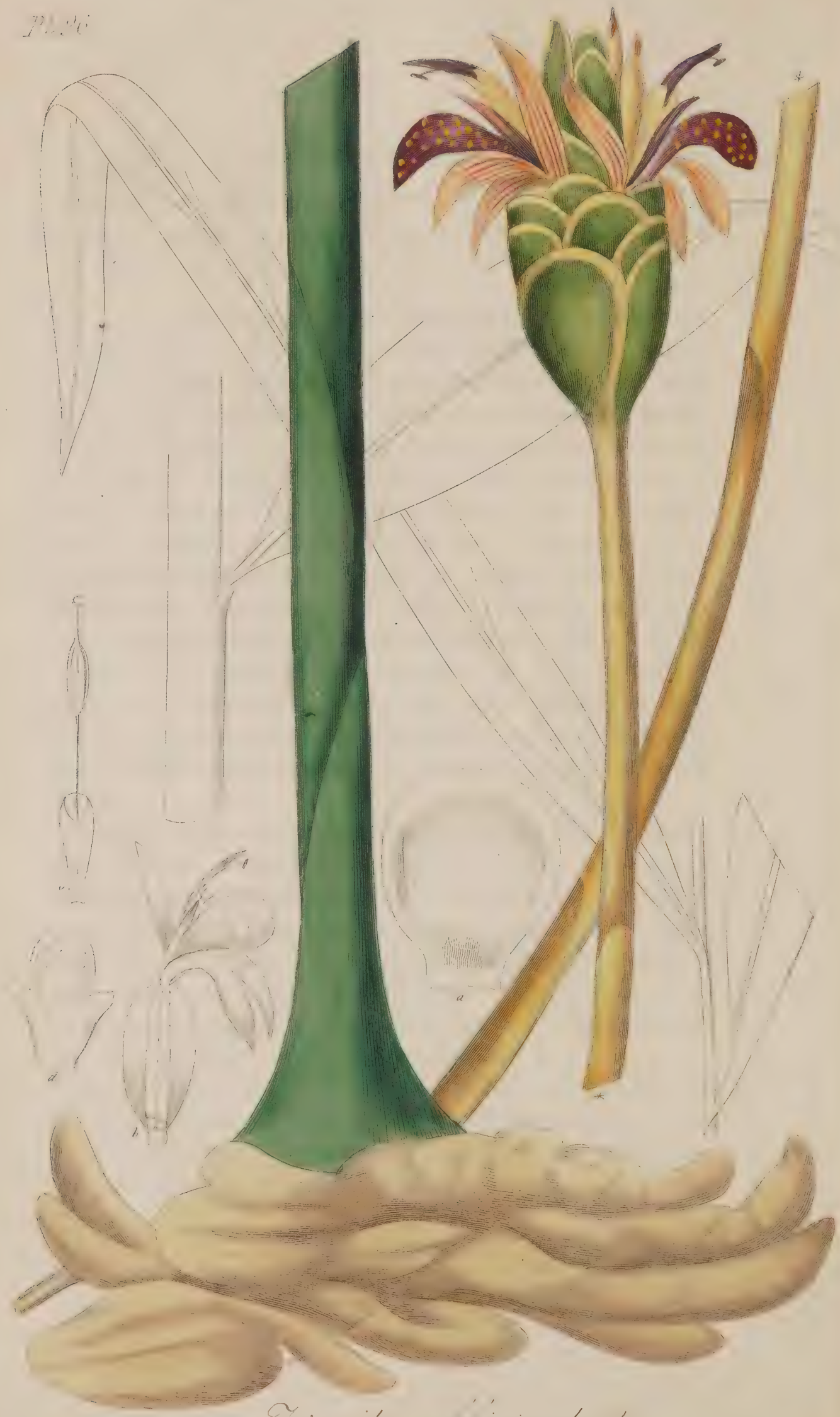
Syn.—Grana Paradisi officinale, *Bauh. Pin.* 413; *Dale Pharmac.* 277.
Amomum Grana Paradisi, *Lin. Sp. Pl.* 2; *Ait.* 3; *Berg. Mat. Med. v.* 1. 3.

This species of Amomum, the fruit of which is well known under the name of Grains of Paradise, or Mellegetta Pepper, is a native of Guinea, about Sierra Leone, from whence the seeds were brought very soon after the discovery of that country by European navigators. The root is perennial, creeping horizontally. Stems erect, simple, slender, three feet high, leafy, but destitute of flowers. Leaves numerous, crouded, alternate, a span long, entire, smooth, lanceolate or slightly ovate, with a long taper point. Footstalks sheathing, linear, very long, smooth, and striated. Flowerstalks radical, solitary, an inch or two in length, ascending, clothed with numerous close sheathing bracteas; the lower ones very short; the upper gradually much larger. Of the parts of the flower we have no satisfactory account. Capsules an inch and a half long, oblong, bluntly triangular, rough, with minute hairs. Seeds numerous, roundish, of a shining golden brown colour.

The old authors confounded this species with the Cardamomum *majus*, figured in Camerarius's Epitome 11. f. 1, which is the Amomum *augustifolium* of Sonnerat, Voyage aux Indes, v. 2. 242, found in marshy ground in Madagascar. The habit of this plant is not very unlike what we have described, but the capsule is ovate, flattened on one side, and nearly twice the size of the above; and the seeds have none of that extremely hot acrid taste for which the Grains of Paradise are remarkable.

Uses.—These seeds are much less aromatic and grateful than the lesser cardamom seeds; and the taste is extremely hot and acrid, approaching in this respect to pepper, with which they agree also in their medicinal properties.

Pl. 96



Zingiber officinale

Waddell Lec.t

ZINGIBER OFFICINALE.

Narrow-leaved Ginger.

Class I. MONANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. SCITAMINEÆ, *Lin. Brown.* CANNÆ, *Juss.*

GEN. CHAR. *Anther* 2-lobed. *Filament* elongated beyond the anther with an awl-shaped, channelled beak, embracing the style. Outer limb of the *corolla* ringent; inner a 3-lobed lip.

SPEC. CHAR. *Bracteas* ovate-lanceolate, acute. Segments of the outer limb of the corolla linear, revolute. Middle lobe of the lip entire. *Nectary* 3-lobed.

Syn.—Zingiber, *Browne's Jam.* 119; *Sloane's Jam.* 1. *p.* 163.
Zingiber majus, *Rumph. Amboin. v.* 5. 156. *t.* 66. *f.* 1.
Ischi, *Reede Hort. Malab. v.* 11. 21. *t.* 12.
Amomum Zingiber, *Lin. Sp. Pl.* 1; *Willd. v.* 1. 6; *Jacq. Hort. Vind. v.* 1. 31. *t.* 75; *Roscoe in Lin. Soc. Trans. v.* 8. *p.* 347.

FOREIGN.—*Gingembre*, Fr.; *Zenzero*, It.; *Ingwer*, Ger.

THE Ginger plant is a native of the East Indies, and of various parts of Asia, but is now extensively cultivated in the warmer parts of America, and in the West India Islands, from whence it is chiefly imported into Europe. It is a stove plant in England, flowering in September, and is said to have been raised here by Edward Lord Zouch, before the year 1605.

The root is perennial, tuberous, fleshy, of a compressed roundish form, covered with an ash-coloured bark, and sending off many stout fibres. The whole herb is smooth, and partakes of the hot, gratefully aromatic flavour of the root. The *barren* stems are several, upright, annual, herbaceous, wand-like, round, leafy, and about three feet high. The leaves are alternate, linear-lanceolate, acute, entire, single-ribbed, spreading, with long, close, sheathing, abrupt foot-stalks. The *flower-stalks* are radical, a foot high, and clothed with tubular sheathing bracteas. The

spikes are solitary, erect, club-shaped, enveloped in broader, shorter, less pointed, crowded bracteas, each accompanied by a solitary, sessile flower, twice its own length, of a delicate texture, and short duration. The corolla is monopetalous, tubular, and cut into three unequal acute segments: the outer limb of a very pale yellow, or straw-colour, revolute; the upper segment rather the broadest, having the lip spotted with crimson. There is only one filament, which is extended beyond the anther; and has an awl-shaped, channelled beak, embracing the style. The germen is inferior, roundish; style thread-shaped, embraced by the filament, and scarcely extending beyond its beak: stigma small, projecting a little beyond the beak. The capsule is smooth, containing many seeds. *Fig.* (*a*) represents the outer bractea; (*b*) the inner bractea and flower; (*c*) the anther and style; (*d*) the lip.

The Greek name for ginger, Ζιγγιβερ, is evidently derived from *Zungebeel*, its Persian appellation; and as it is indigenous at *Gingi* in China, it is supposed to have obtained its English name from that place.

It is a native of many eastern countries, but is no where to be found, says Ainslie, of a finer quality than on the coast of Malabar. It is the *ischi* of the Hort. Malab. (11. p. 21. t. 12.), and the *zingiber majus* of Rumphius (Herbarium Amboinense, pars 5. p. 156. t. 66. f. 1.)

This plant was introduced into New Spain, by Francisco de Mendoza; from whence it was carried to the West India Islands, where it grows so plentifully, particularly in Jamaica, even in a wild state, as to induce a belief that it was indigenous to the soil. Since its introduction into Jamaica, it has become an article of considerable export; for which purpose it is generally cultivated. It is calculated that about one million pounds of it are annually consumed in Europe.

Ginger was known in England in Queen Elizabeth's reign, as Gerarde says, "Our men which sacked Domingo in the Indies digged vp ginger there in sundry places wilde." He adds, "Ginger groweth in Spaine, in the Canarie Islands, and the Azores. It is most impatent of these our northern regions, as

myself have found by proofs; for that there haue been brought vnto me at seuerall times, sundry plants thereof, fresh, greene, and full of iuice, as well as from the West Indies, as from Barbarie, and other places; which haue sprouted and budded foorth greene leaues in my garden in the heate of somer; but as soon as it hath bin but touched with the first sharp blast of winter, it hath presently perished, both blade and roote."

It appears to have been known in London about the year 1566-7, and was evidently introduced by the Dutch; as Gerarde states that about thirty years or more, before he published his account, (1597,) "an honest and expert apothecarie William Dries, to satisfie my desire, sent me from Antwerpe to London, the picture of ginger, because I was not ignorant that there had been oft ginger rootes brought green, new, and full of iuice, from the Indies to Antwerpe: and further, that the same had budded and grown in the said Dries' garden."

When the stalks are wholly withered, the roots are fit to take up, which is generally in January or February. Being picked and cleaned, they are gradually scalded in boiling water: after this they are spread, and exposed to the sun, till the whole is sufficiently cured; they are then divided into parcels of about one hundred weight each, and put into bags for the market: this is called *black ginger*. The *white* is never scalded, but every root is picked, washed, and scraped separately, and then dried in the sun and air.

To preserve this root in syrup, it is dug when the shoots do not exceed five or six inches in height. Being picked and washed, they are scalded till tender: then put into cold water, and scraped and peeled gradually: this operation may last three or four days, during which time the roots are kept in water, constantly renewed. They are then put into jars, and covered with a thin syrup, which after two or three days is shifted, and a richer put on: this is sometimes again removed, and even a fourth put on; but it seldom requires more than three syrups. The shifted syrups are diluted, and fomented into a pleasant liquor, called cool drink.

Ginger should be chosen in large roots, new, not easily broken, of a light brownish green colour, and of a hot, pungent, aromatic

taste. That which is small, dark coloured, soft, or very fibrous, should be rejected. It is sometimes imported *green* from the East Indies. In freight, 16 cwt. of dry, and 20 cwt. of green ginger, are allowed to a ton.

Qualities.—The active matter of this root is yielded to alcohol, and in a great measure to water. It affords, by distillation, a small quantity of essential oil, upon which the flavour of ginger depends; while its pungency appears to reside in a resino-extractive matter, united with a great quantity of starch, which constitutes the chief bulk of this valuable condiment.

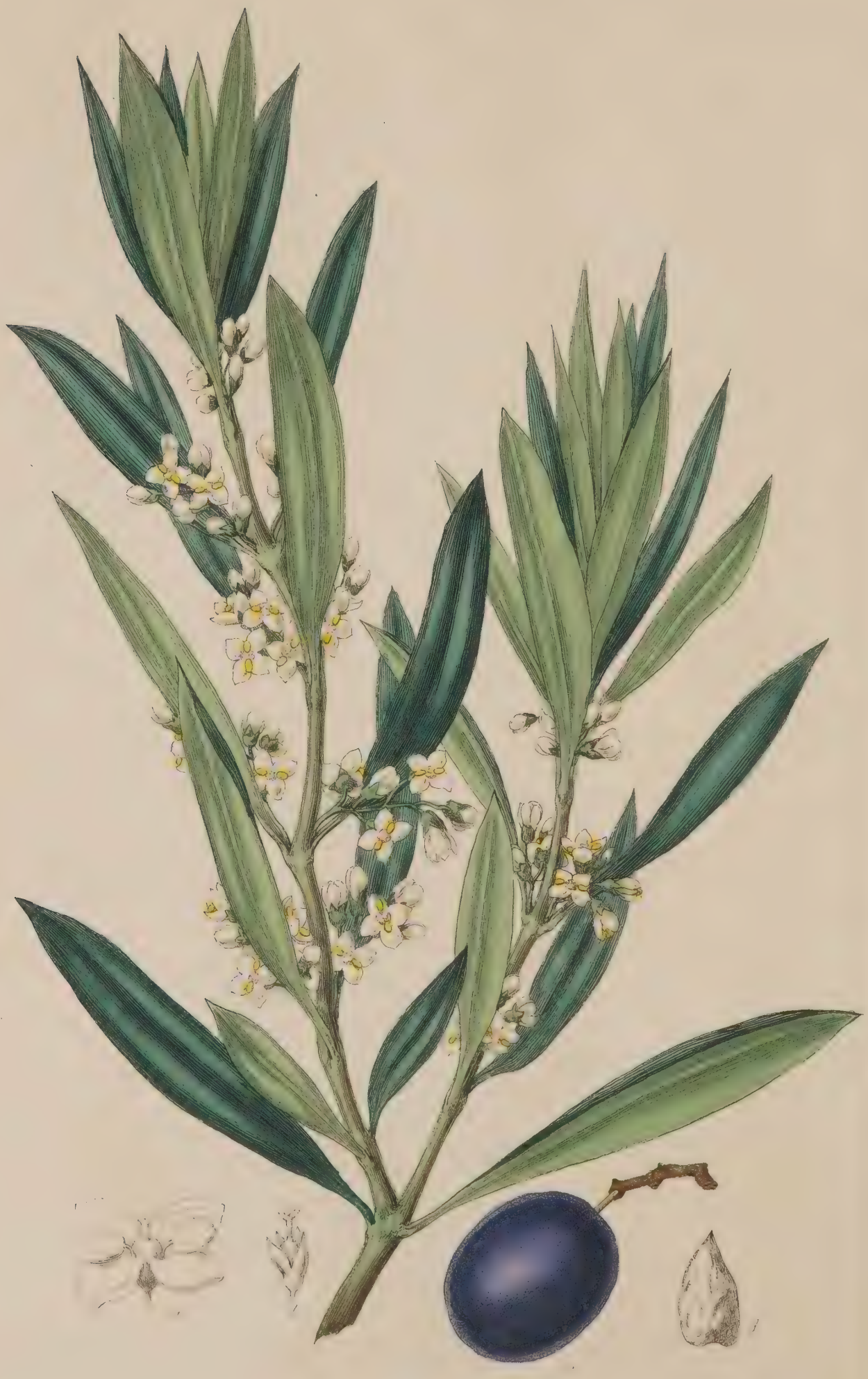
Medical Properties and Uses.—This root, which is stimulant and carminative, is principally employed as an adjunct to other remedies; to augment their efficacy, or to obviate their griping effects: and is often administered, in substance or in infusion, for flatulent colic, tympanities, and some forms of dyspepsia. It also acts as a sialogue, when chewed: toothache is therefore sometimes relieved by it, and by some it is recommended in relaxations of the uvula, and tonsils, and in paralysis of the muscles of the tongue and fauces.

We are informed by Dr. Ainslie, that Europeans in India, of delicate constitutions, frequently use an infusion of ginger in place of common tea, and the natives eat it freely in salads.

Dose.—From ten grains, to a scruple, in powder.

Off. Prep.—Acidum Sulphuricum aromaticum. *E.*
Confectio Opii. *L.*
——— Scammonii. *L. D.*
Infusum Sennæ. *L.*
Pilula Aloes. *D.*
Pilula Scillæ comp. *L.*
Pulvis Cinnamomi comp. *L. E. D.*
——— Scammonii comp. *L. D.*
——— Sennæ comp. *L.*
Spiritus Ætheris aromaticus. *L.*
Syrupus Rhammi. *L.*
——— Zingiberis. *L. E. D.*
Tinctura Cinnamomi comp. *L.*
——— Rhei comp. *L.*
——— Zingiberis. *L. D.*
Vinum Aloes. *L. E. D.*

* Sinclair's *Code of Health*, vol. i. p. 233.



Olea europæa.

W. Clark, del. et

OLEA EUROPÆA.

European Olive.

Class II. DIANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. SEPIARIÆ, *Lin.* JASMINEÆ, *Juss.*

GEN. CHAR. *Corolla* 4-cleft; segments subovate. *Drupe* one-seeded.

SPEC. CHAR. *Leaves* lanceolate, entire, hoary beneath. *Clusters* axillary, dense. *Branches* angular, not spiny.

Syn.—Olea sativa, *Raii. Hist.* 1541; *Park. Theatr.* 1439.
Olea europœa, *Lin. Sp. Pl.* 11; *Ait. Kew. v.* i. *p.* 12; *Fl. Græca Sibth.* t. 3.
FOREIGN.—*L'Olivier*, Fr.; *Ulivo*, It.; *Oelbaum*, Ger.

THE Olive is an evergreen tree growing spontaneously upon a rocky soil, in Syria, Greece, and the north of Africa; and has been cultivated from time immemorial, and constitutes much of the riches of France, Spain, and Italy. It is only in favourable seasons, when protected in the same way as the myrtle, by a slight temporary screen of straw, or other materials, that it produces its flowers in this country; but its fruit never ripens. It has been conjectured by some, that the Olive-tree came originally from Asia, as it is found in most parts of Palestine, and actually gave name to the celebrated mount near Jerusalem.

The Olive is a low tree, rising from twenty to thirty feet, and frequently sending forth two or three upright, much branched stems, from the same root, which are covered with a greyish bark. The wood is hard and compact; its colour reddish, and it takes

a good polish. The leaves are opposite, two or three inches long, and about half an inch broad in the middle, nearly sessile, lanceolate, of a bright green colour, smooth on the upper surface, pale and hoary beneath. The flowers are produced in small clusters at the axillæ of the leaves, on short foot-stalks, and furnished with small, hoary, obtuse bracteas; the calyx is obtuse and four-cleft; the corolla is white, monopetallous, spreading, and divided into four ovate, obtuse segments. Each flower contains two stamens, which are shorter than the corolla, supporting large pale elliptical anthers, and a single slender, erect, style, rising from a roundish germen, and crowned with a bipartite stigma. The fruit is a smooth oval plum or *drupe*, of a violet colour, when ripe, having a nauseous bitter taste, but abounding in a bland oil, and enclosing an ovate, oblong, rugose nut or stone.—Fig. (*a*) is a perfect flower, magnified; (*b*) the calyx, germen, and bipartite stigma; (*c*) the fruit; (*d*) the nut.

Varieties.—Of the Olive, there are several varieties, distinguished chiefly by the shape of the leaves, or by the size, colour, and form of the fruit. Several of these appear to have been known to the ancients; thus Virgil enumerates three varieties, Cato mentions eight, and Columella ten. The long leaved variety is chiefly cultivated in the south of France, and in Italy, on account of the fine oil which it affords; and the unripe fruit is also highly esteemed, when pickled. The broad-leaved is chiefly cultivated in Spain, where the trees grow to a much larger size than the Provence Olive, and yield a larger fruit; but the oil is said to be rank and disagreeable. Besides these, there are several other varieties of the Olive tree; as the Warted or Cape Olive, the narrow-leaved, shining-leaved, box-leaved, African, Lucca, &c.

Culture.—In Gibbon's "*Decline and Fall*," chap. i. he quotes Pliny for the following fact: "The Olive in the western world followed the progress of peace, of which it was considered as the symbol. Two centuries after the formation of Rome, both Italy and Africa were strangers to that useful plant: it was naturalized in those countries, and at length carried into the heart of Spain and Gaul." "Its usefulness, the little culture

it requires, and the otherwise barren situations which it renders productive, quickly spread it over the western face of the Appenine. The suckers are removed from the parent tree at all seasons; but the best is in spring and autumn, when the grounds are plowed, and sometimes, if the trees are thinly scattered, sown with corn and lupines. Otherwise, the earth is merely loosened round the roots, and, in some cases, manure is then laid round them.* The young olive plant bears at two years old; in six years it begins to repay the expense of cultivation, even if the ground is not otherwise cropped. After that period, in good years, the produce is the surest source of wealth to the farmer, and the tree rivals the oak in longevity; so that the common proverb here is, 'if you want to leave a lasting inheritance to your children's children, plant an olive.' There is an old olive tree near Gerecomio, which last year yielded 240 English quarts of oil: yet its trunk is quite hollow, and its empty shell seems to have barely enough hold in the ground to secure it against mountain storms."—Maria Graham's *Three Months near Rome*, p. 49.

The proper time for gathering olives for the press, is the eve of maturity. If delayed too long, the next crop is prevented, and the tree is productive only in the alternate years. At Aix, where the olive harvest takes place early in November, it is annual; in Languedoc, Spain, and Italy, where it is delayed till December or January, it is in alternate years. The quality of the oil also depends upon the gathering of the fruit in the first stage of its maturity. It should be carefully plucked by the hand; and the whole harvest completed, if possible, in a day.†

In Provence and Italy, the oil is drawn from the olives by presses or mills. The fruit is gathered when at its utmost maturity in November, when it begins to redden: being put under the mill, as soon as gathered, care is taken that the mill-stones are set at such a distance, that they do not crush the nut of the olive. The pulp covering the nut or stone, and containing the

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* This does not agree with Virgil, who says, *Georg.* i. l. 507.

"No dressing they require, and dread no wound."

† See Hillhouse *on the Olive Tree.*

oil in its cells, being thus prepared, is put into bags made of rushes, and moderately pressed: and thus is obtained a considerable quantity of a greenish semi-transparent oil, which, from its superior excellence, is called virgin oil. The *marc* remaining after the first pressure is broken to pieces, is moistened with water and returned to the press, upon which there flows out a mixture of oil and water, which spontaneously separate by rest. This oil, though inferior to the former, is of good quality, and fit for the table. The marc, being again broken to pieces, well soaked in water, and fermented in large cisterns, is again submitted to the press, by which is obtained a third oil, that is valuable to the soap boiler, and other manufacturers. In Spain, the olives, instead of being gathered, are beaten down, so that the ripe and unripe ones are mixed; and to these are added such as have fallen of themselves, and are therefore more or less decayed. All these are thrown together in a heap, and soon ferment: the olives in this state are ground and pressed, and thus is produced, with little trouble, a large quantity of oil, of a rank disagreeable flavour. It is probable that the Spaniards derive their process from the Moors; for we find the same method described in Jackson's History of Morocco.

The fruit, in a pickled state, is sent in great quantities from Leghorn, Naples, Genoa, and Marseilles, to England. *Pickled olives* are prepared from the unripe fruit, by repeatedly steeping them in water, to which quick lime or soda is added to shorten the process. Afterwards, they are soaked in pure water, and then taken out and bottled in a solution of common table salt, with or without an aromatic. They are eaten abroad as a whet before and during the principal meals, and in this country chiefly at the dessert. The finest kind of the prepared fruit is called by the merchants *Picholine*, after one Picholini, who first discovered the art of pickling olives.

Qualities and Chemical Properties.—The best oil comes from Provence; but that which we have in this country is generally from Lucca and Florence. Samos has lately furnished us also. When recently drawn, virgin oil has a bland, almost mucilaginous taste, with a slight but agreeable flavour.

It is unctuous to the touch; will not combine with water; is inflammable; and insoluble in alcohol. Its specific gravity is 9153: it boils at about 500°, Farh., and congeals at 36° or 38°. When exposed to the air, in an open vessel, a white fibrous albuminous substance is deposited, and the supernatant oil becomes clear, and of a dilute yellow colour: and when this oil is poured off into another vessel, a second deposition occurs, and the oil thus obtained, being put into clear glass bottles, may be kept for a convenient time, without undergoing any change. But if the oil be allowed to stand on the white matter, it becomes in a few weeks very rancid: nor can the common oil, even under proper management, be preserved in casks longer than a year or two. The disposition to freeze, renders it improper for lamps, especially in cold countries: but by previously exposing it in an open clear glass to the sun, it may be so far amended in this respect, as to continue fluid at 21°. According to the recent observations of the late Dr. Clarke, of Cambridge, this oil crystallizes in rectangular four-sided prisms with square bases.

Adulterations.—It is frequently mixed with the oil of poppy seeds, and as the latter freezes less freely, *rancidity* is more easily produced. To discover the fraud, it is necessary to expose a sample to the freezing temperature, when the oil of olives will congeal, and that of the poppies remain fluid. Or if the *pernitrate of mercury* (made by dissolving six parts of the metal in 7.5 of nitric acid, of sp. grav. 1.36, at a common temperature) be mixed with olive oil, the mixture, if kept cold, will in the course of a few hours become solid, whereas, if it has any admixture of the poppy oil, it will not undergo such a change. If olive oil be contaminated with lead, which is sometimes employed to remove its rancidity, it may be detected by shaking one part of the suspected sample with three parts of water, impregnated with sulphuretted hydrogen, in a well stopped phial.

Medical Properties and Uses.—The medical properties of olive oil are those of a demulcent, emollient, and laxative. In catarrh and other pulmonary affections, it has been used as a demulcent, in the form of emulsion: but the oil of almonds is more generally employed. It is occasionally recommended to

be internally administered for worms; and to lubricate, and sheath, the mucous membrane of the stomach, from the action of acrid poisons, particularly of cantharides. From the experiments, however, of Dr. Pallas, repeated by Orfila, it appears that oil possesses the property of dissolving the active principle of *cantharides,* and augments the danger instead of preventing it.*

Olive oil enters into the composition of plasters, liniments, cerates, ointments, and enemas; and warmed, has been lately injected with success, in a case of constipated bowels, which had resisted the action of other medicines. It is applied externally to prevent the contagious influence of the plague. Mr. Jackson, in his History of Morocco, narrates many individual cases of its success, even after infectious symptoms had manifested themselves: and as his veracity cannot be impeached, his advice, in the absence of better treatment, is entitled to attention, although the French physicians do not appear to rely much upon its virtue. The application should be, by long continued friction; and when successful, it is followed by profuse and general perspirations, that are said to afford immediate relief. In Malta the frictions with oil were found beneficial only in the first and last stages of the disease; but were of no advantage when it was at its height. The internal and external use of olive oil was formerly celebrated for the bite of the viper,† rattlesnake, and other venomous serpents; though little reliance is now placed in it. The use of it, as a condiment, and in the arts, is too well known to require any comment.

Dose.—From ʒj to ℥j or more.

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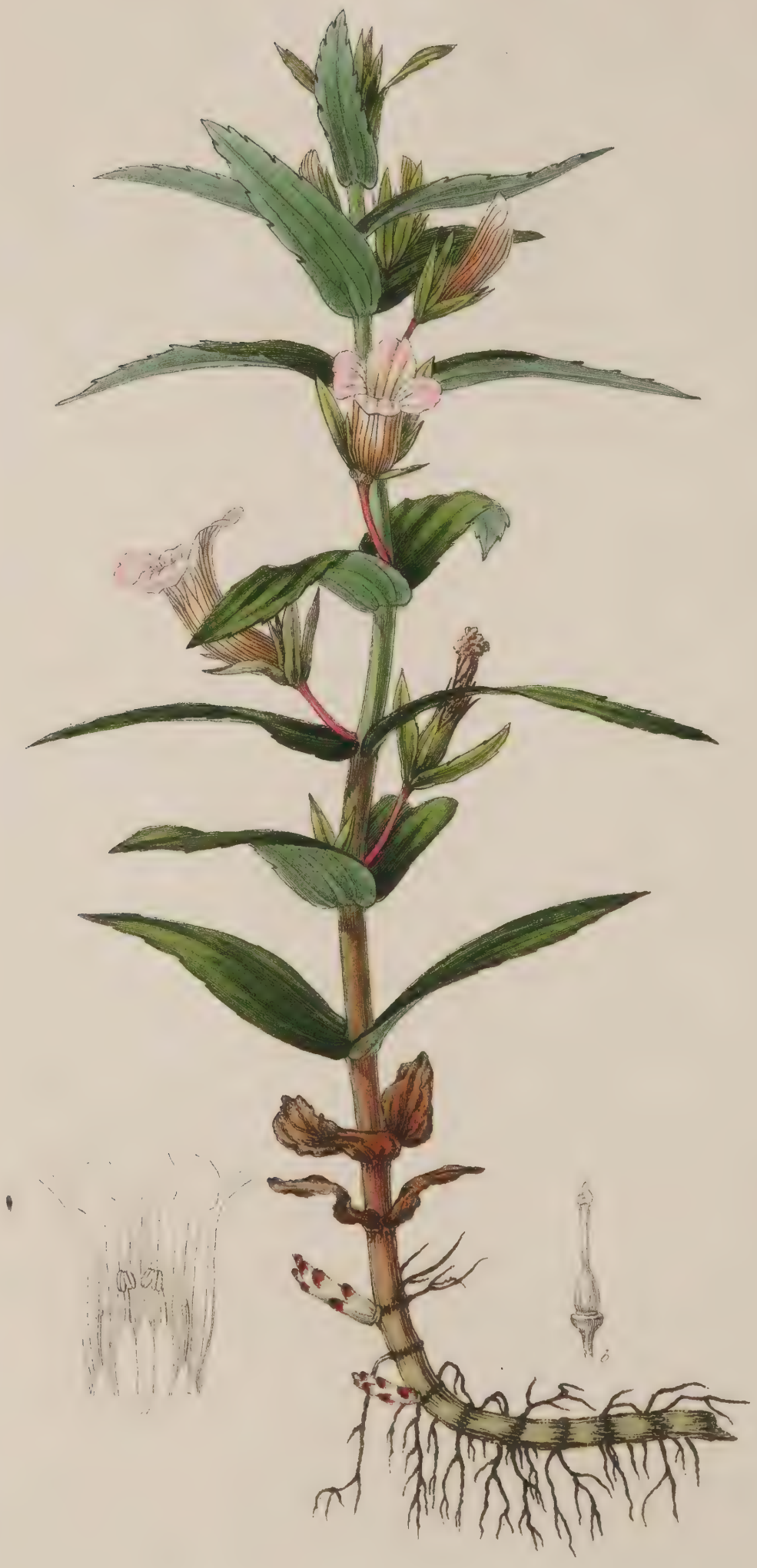
* *Journal de Pharmacie,* Nov. 1822.

† See *Medical Zoology,* art. *Vipera berus.*



Gratiola officinalis.

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

XXXIII

GRATIOLA OFFICINALIS.

Hedge Hyssop.

Class II. DIANDRIA.—*Order* I. MONOGYNIA.

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

GEN. CHAR. *Corolla* irregular, reversed. *Stamens* two, sterile. *Capsule* 2-celled. *Calyx* 7-leaved; the two exterior leaves spreading.

SPEC. CHAR. *Leaves* ovato-lanceolate, serrated, 5-ribbed, smooth, somewhat longer than the flower-stalks.

Syn.—Gratiola *Camer. Epit.* 464; *Ger. Em.* 581; *Rivin. mon. t.* 157.
Gratiola vulgaris, *Park. Theatr.* 220. 1; *Mor. Hist.* 2. 479. *n.* 7. *g.* 5. *t.* 8. *f.* 7.
Gratiola centauroides. *Vail. Paris.* 95; *Bauh. Pin.* 279.
Gratiola alpina, *Bauh. Hist.* 3. 435; *Raii. Hist.* 1885.
Digitalis minima, gratiola dicta, *Tourn. Paris.* 266. *Park.* 1. 229.
Gratiola officinalis, *Lin. Sp. Pl.* 24.; *Willd.* 1. 102; *Scop. Carn. n.* 27; *Fl. Dan. t.* 363; *Woodv.* 132. *t.* 47. *Stokes* 1. 34.
FOREIGN.—*Gratiole,* Fr.; *Graziola,* Ital.; *Gradenkraut,* Ger.

THIS species, the *Gratiola* of the Dispensatories, derives its generic appellation from the diminutive of *gratia,* grace or favour; and the epithet *gratia Dei,* by which it was formerly distinguished, is sufficiently expressive of the high estimation in which it was held by the ancients for its salutary qualities. It is a low perennial, a native of the south of Europe, growing in moist pastures, and flowering in June and July.

From a cylindrical, white, creeping, jointed root, rise several slender, smooth, round, erect stems, to the height of a foot or eighteen inches. The leaves are numerous, lanceolate, opposite, sessile, pointed, serrated towards the ends, of a bright green colour, two inches long, nearly half an inch broad, and obscurely punctured. The flowers are inodorous, about an inch long,

axillary and solitary; the calyx consists of five elliptical pointed segments, with a pair of lanceolate spreading bracteas: the corolla is tubular, divided at the lip into four obtuse segments, the uppermost of which is broadest, emarginate and reflexed, the others straight and equal; the tube is yellowish, with reddish streaks; the limb pale lilac, or purple. The filaments are four, awl-shaped, shorter than the corolla, only two of which are furnished with anthers; the two perfect ones are shorter than the others, and are inserted at the base of the uppermost segment, about the middle of the tube of the corolla: the germen is ovate, superior, supporting a slender erect style, with a divided stigma. The capsule is ovate, bilocular, and contains numerous small seeds.—Fig. *(a)* represents a flower, spread to show the two fertile, and two abortive stamens; *(b)* the pistil.

Qualities and Chemical Properties.—It is inodorous, but impregnated with a bitter nauseous taste, which it is said sometimes produces a sense of constriction in the tongue. Marcgraaf states that its watery extract is bitter, but that the bitter principle exists most abundantly in the resinous extract. Vauquelin has analyzed it, and obtained a bitter, active, uncrystallizable, resinous principle, which is soluble in alcohol, and requires a very large quantity of boiling water to dissolve it. "When sulphuric acid is added to the unstrained infusion, it emits the odour of tamarinds; and when the infusion is filtered and slowly evaporated, spicular crystals are formed, which appear to be tartaric acid."

Poisonous Effects.—Given in over doses, it produces violent vomiting, and hypercatharsis; and M. Bouvin asserts that an injection of the decoction being administered to a female, produced great irritation of the sexual organs, and all the symptoms of the most violent nymphomania.

"At a quarter past ten, three drachms and a half of watery extract of Hedge-Hyssop, were introduced into the stomach of a small strong dog, and the œsophagus was tied. At eight in the evening, the animal had not exhibited any remarkable phenomenon. The next day, at ten in the morning, he uttered plaintive cries; he was lying down on the side, and expired an hour after: his breathing had not been impeded. The mucous membrane of the stomach exhibited, through-

out its whole extent, a cherry-red colour: it was black wherever it forms the folds observed in the interior of this viscus; it was easy to be assured that this last alteration was the consequence of a certain quantity of black extravasated blood, within the space, which separates it from the subjacent muscular coat. This last was nearly in its natural state; the interior of the rectum was evidently inflamed: all the remaining portion of the alimentary canal was a little red. The lungs did not appear affected; there was no serosity in the ventricles of the brain: the exterior cerebral veins were distended with black blood. The pia mater was injected, and of a vermillion red colour.

"Twenty-eight grains of the same poisonous substance, dissolved in four drachms of water, were injected into the jugular vein of another robust dog of middle size. An hour after, the animal had a motion; he experienced some giddiness, and became as it were insensible, lay down, and expired two hours after the injection. It was impossible to discover the least trace of alteration in the texture of the digestive canal."

M. Orfila concludes from numerous experiments:—

"1st. That an extract of Hedge-Hyssop produces a local irritation extremely violent.

"2nd. That it appears not to be absorbed, and that its effects depend on the sympathetic lesion of the nervous system.

"3rd. That it is much more active when injected into the veins."

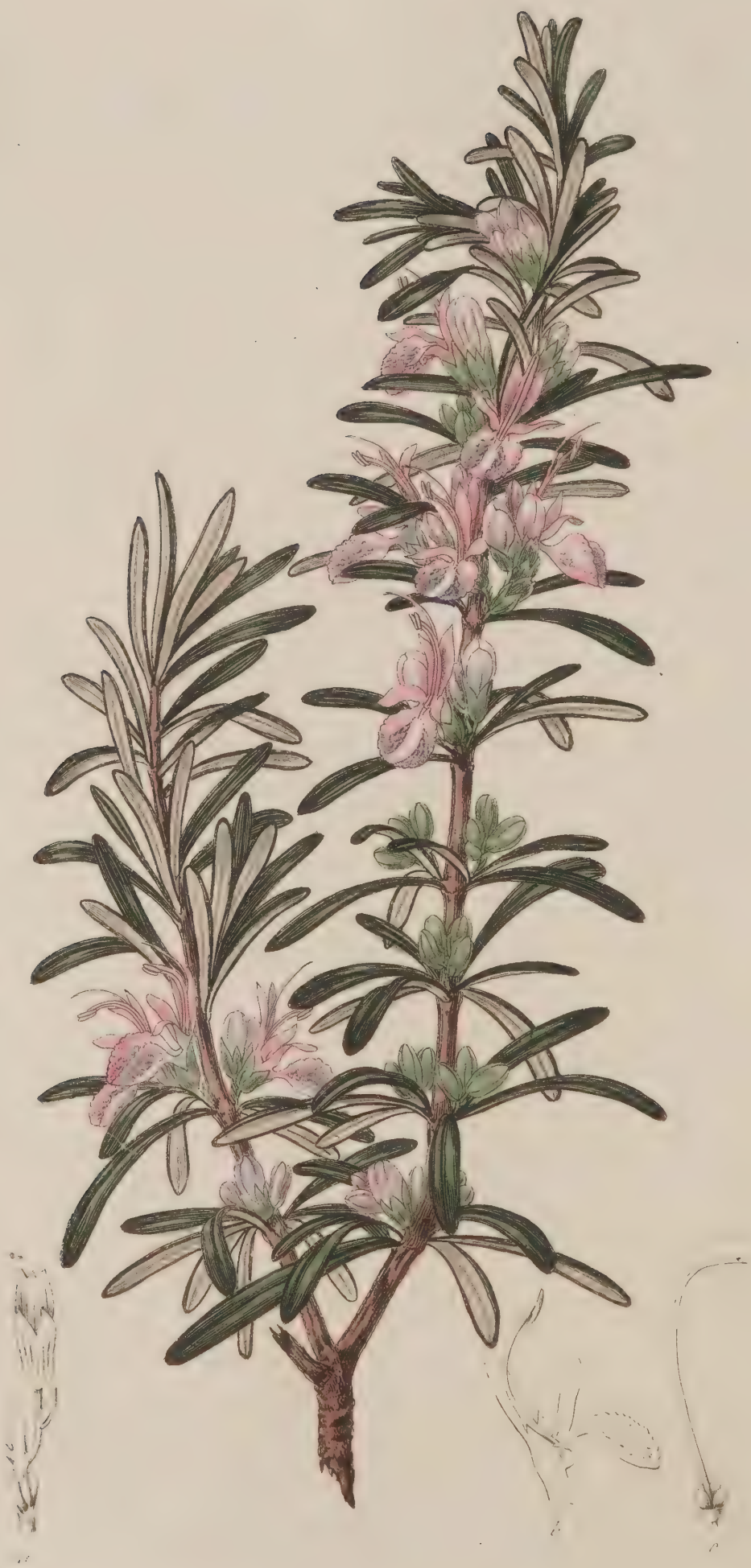
Medical Properties and Uses.—This medicine was formerly prescribed on the continent, as a hydragogue purgative, and diuretic; and Heurnius, Ettmuller, Hartmann, Joel, and others have administered it successfully for dropsy of the cellular tissue; likewise of the peritoneum when unaccompanied by inflammatory action, and unallied with flaccidity of the muscular fibre, or with paleness. It has likewise been given in some affections, as hypochondriasis, atonic gout, rheumatism, &c. which were accompanied, or appeared to be produced by inactivity or torpor of the intestinal canal; while others have administered its resinous part, in small doses, to promote vomiting, or as a substitute for ipecacuanha in dysentery. Dr. Kostrzewki, of Warsaw, has offered some remarkable instances of its powerful influence in soothing and suspending irritation; and asserts that three maniacs, in the hospital at Vienna, were recovered by its use; that the most confirmed cases of lues venerea were completely cured by it; and that it usually acted by increasing the urinary, cutaneous, and salivary secretions.* Dr. Perkins, of Coventry, states that it forms the basis of the

* Vide Dissert. de Gratiola. *Vienna*, 1775.

Eau Medicinale, and that the recipe was given to him by the Count of Leiningen, who paid five hundred ducats for it. This nobleman was a person of extensive reading, and a munificent patron of the arts, and had been in early life a martyr to the gout; an exemption from which, for several years, he attributed to the use of this medicine. The following is the form:

" ℞ Herbæ gratiolæ officinalis siccatæ unciam
Radicis ejusdem Herbæ semunciam incisæ; et contusæ adde.
Vini Hispanici uncias sedecim.
Digere leni calore per dies octo, et cola."

" Of this vinous tincture, a tea-spoonful is taken at bed-time, drinking after it half-a-pint of beef tea; and if after lapse of twenty-four hours, all pain has not vanished, half a tea-spoonful more of the Gratiola wine is to be taken in a similar manner. Dr. Reece, who has paid particular attention to the preparation of this drug, and to its administration, very properly observes, that " a tea-spoonful is at all times a very indefinite measure, and liable to variation with fashion," and therefore recommends forty-five drops as the dose to begin with. This gentleman also remarks, " that in producing its effect of allaying irritation in gout and rheumatism, it was done without disturbing the system, or producing those effects on the general health, which attend the use of opium;" he has, therefore, with a laudable zeal, extended its use to allay morbid irritation of the intestines, and of the lungs; and has found that an oxymel made with the herb, is very efficacious in asthma, constitutional or winter cough, &c. He observes, that " in the use of the Gratiola, it must always be exhibited in the first instance so as to nauseate the stomach, or to produce an aperient effect on the bowels, and then kept as near to this dose, without producing any further unpleasant effect." According to Bergius, the dose of the herb in substance is from fifteen to thirty grains, but he states that a scruple often acts on the bowels, and produces nausea and vomiting. He also affirms that ten grains united with five of powdered gentian, administered twice a day, has been useful in autumnal quartan agues. Of an infusion, made with ʒij of the dried herb, to half-a-pint of boiling water, from f ʒiv to f ℥i may be given three times a day.



Rosmarinus officinalis.

Published by John Churchill, Leicester Square, June 1827.

XXIV

ROSMARINUS OFFICINALIS.

Officinal Rosemary.

Class II. DIANDRIA.—*Ord.* I. MONOGYNIA.

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

GEN. CHAR. *Carolla* unequal, with the upper lip 2-parted. *Filaments* long, curved, simple with a tooth.

SPEC. CHAR. *Leaves* sessile.

Syn.—Rosmarinus coronarius fructicosus, *Raii.* Hist. 515; *Bauh. Hist.* ii. 25.
Libanotis coronaria sive Rosmarinum vulgare. *Park. Theatr.* 74.
Rosmarinus, *Hall. Helv.* n. 250.
Rosmarinus officinalis, *Lin. Sp. Pl.* 33; *Willd.* v. i. 126; *Sibthorp, Fl. Græc.* t. 14.
FOREIGN.—*Rosmarin*, Fr.; *Rosmarino*, Ital.; *Romero*, Span.; *Rosmaninho*, Hort.: *Rosmaria*, Ger.; *Yong tsao*, Chin.

ROSEMARY is a native of the south of Europe; but if planted in a dry soil in a sheltered situation, it survives our ordinary winters; flowering in April and May. When the roots enter the crevices of an old wall, says Mr. Neill, the plant is not injured by the severest frosts. It is an evergreen, shrubby plant, rising four or five feet high, much branched, downy, and thickly covered with leaves. The leaves are opposite, sessile, linear, about an inch in length, and one-sixth of an inch broad, dark green, smooth, and shining above, with the margin reflected, and woolly, or whitish underneath. The blossoms, which stand on little opposite leafy branches, on short footstalks, are of a pale blue colour, variegated with purple and white, and exhaling, like the leaves, a strong fragrant odour resembling camphor.

The calyx is bell-shaped, and villous; the corolla is ringent, with the tube longer than the calyx, the upper lip erect and bifid; the lower divided into three segments; the middle larger, concave, and notched. The staments are two, longer than the corolla, curved, and furnished with a minute lateral tooth. The anthers are oblong, and blue; the style the length of the stamens, arched, and furnished with a simple pointed stigma. The seeds are four, naked, and situated at the base of the calyx. —Fig. (*a*) represents the calyx, &c.; (*b*) a section of the corolla, showing the insertion of one of the filaments, with its anther; (*c*) the pistil and germens.

The generic name, Rosmarinus, is evidently derived from the Latin, *ros*, dew, and *marinus*, in allusion to its inhabiting the sea-coast. "Those," says a distinguished modern author, "who have observed it mantling the rocks on the Mediterranean, with its grey flowers glittering with dew, cannot but be struck with the elegant propriety of the name."

The leaves of the wild rosemary are larger than those of the cultivated sort; the flowers are also much larger, and of a deeper colour. There are also two distinct varieties of this plant; one with white-striped leaves, called the *Silver Rosemary;* the other with yellow-striped leaves, and hence denominated *Golden Rosemary*. The former variety is very tender.

Rosemary is the Διβανωτις of Dioscorides, and other ancient authors, and is supposed to be referred to by Virgil in the following lines:

> "Nam jejuna quidem clivosi glarea ruris,
> Vix humiles apibus casias roremque ministrat."
>
> GEORG. ii. v. 212.

It was supposed by the ancients that it comforted the brain, and imparted strength to the memory; and these properties are referred to by our old poets: "There's rosemary, that's for remembrance," says the distracted Ophelia, in Shakespeare's play of Hamlet; and Perdita says to Polixines and Camillo,

> ——————— Reverend Sirs,
> For you there's rosemary and rue; these keep
> Seeming and favour all the winter long;
> Grace and remembrance be to you both.

Rue signifying grace, and *rosemary* remembrance. Its supposed quality of strengthening the memory, made it also an emblem of fidelity to lovers: thus, in a Sonnet of 1584, we have:

> "Rosemary is for remembrance
> Betweene us daie and night;
> Wishing that I might alwaies have
> You present in my sight."

It was accordingly worn at weddings: and it is probable that the same principle caused it to be used at funerals, for in some parts of England it is still distributed amongst the company, who throw sprigs of it into the grave. Abercrombie, in his *Practical Gardener*, alludes to this practice, but supposes the motive to be "a precaution against contagion." From its smelling like incense, it was termed *Libanotis* by the ancients; and *Coronarius*, on account of its being used in garlands.

Qualities and Chemical Properties.—Rosemary has a fragrant smell, and a bitter pungent taste. The leaves and tops are strongest, and the flowers ought not to be separated from the calyxes, as the active matter resides principally, if not wholly, in the latter. The leaves and tops distilled with water, yield a thin light pale essential oil of great fragrancy, though not quite so agreeable as the plant itself.* Twenty-four pounds of

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* "Distilled oils are frequently called *volatile*, *essential*, or *ætherial* oils. Their chemical characters are nearly the same, from whatever vegetables they are procured, but in their sensible qualities they vary considerably, possessing different colours, consistence, smell, and taste. The two latter properties are, of course, derived from that of the plant from which they are obtained; their colours, like those of the fluid fixed oils, are various shades of yellow, green, and brown; they are generally fluid; but some of them, as especially oil of aniseed, congeal by a very moderate reduction of temperature. They are very sparingly soluble in water, but sufficiently so to impart their smell and flavour to it. They are very readily dissolved by spirit of wine, and they boil at different temperatures. Their volatility is much increased by the presence of water, with the vapour of which they rise in distillation at a temperature considerably below their boiling point. They are extremely combustible, and much more so than the expressed oils. Most of them are lighter than water, but some sink in that fluid; among the former are the oils of lavender, rosemary, and mint; and of the latter, the oils of cassia, cinnamon, and cloves, are examples. They are easily decomposed by sulphuric and by nitric acid, and when suddenly mixed with the latter, some of them inflame.

"Like the expressed oils, they are composed of different proportions of oxygen, hydrogen, and carbon.

"The volatile oilsare capable of dissolving the fixed oils, and hence the latter are sometimes employed in adulterating them. This fraud may be easily detected by dropping some of the suspected oil on paper; if there be any fixed oil mixed

the plant yield one ounce of fluid oil, which when kept, deposits crystals of camphor. Its specific gravity is 0,9057, *Haüy.* Rectified spirit likewise, distilled from rosemary leaves, becomes considerably impregnated with their fragrance; and the active matter of the flowers is somewhat more volatile than that of the leaves, the greatest part of it rising with spirit.

Medical Properties and Uses.—Rosemary was formerly highly esteemed for its virtues in nervous head-aches, hysterical complaints, and uterine obstructions; and although it is very commonly used by the vulgar for its emmenagogue virtues, we worship not at the shrine of popular superstition, and depend upon medicines much more worthy of regard.

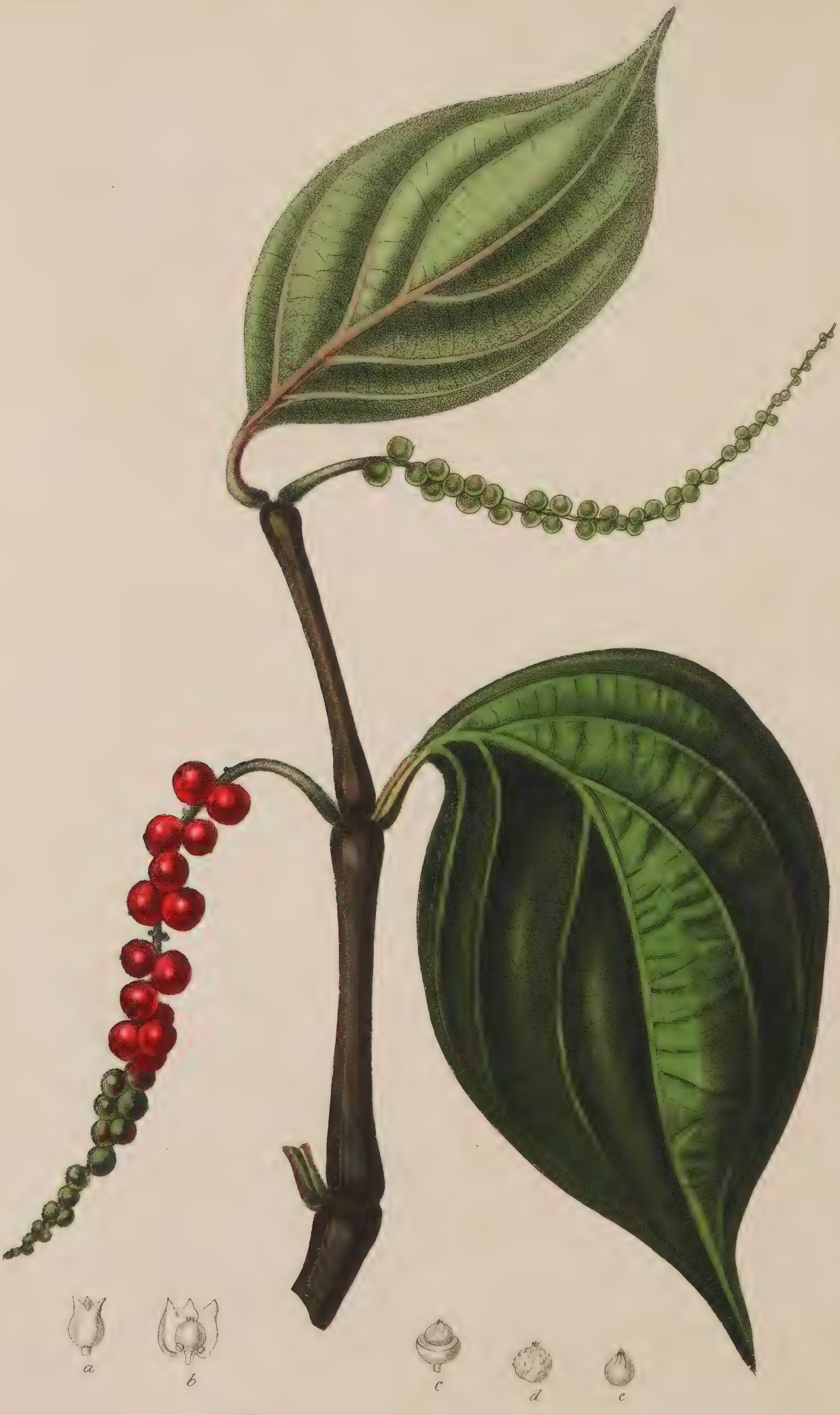
A weak infusion of fresh rosemary leaves furnishes a pleasant substitute for tea, and is particularly agreeable to some dyspeptic stomachs. On account of its odour, it is sometimes added to sternutatory powders; and the spirit of rosemary is used as a cosmetic and anti-nervous cordial, under the name of Hungary water; which enters largely into the composition of the compound spirit of lavender, and the compound soap liniment. The essential oil is stimulant, in doses of two, to five or six drops; but it is very rarely employed internally. The dose, in substance, is from a scruple to half a drachm.

A most pernicious nostrum, sold under the name of "*Balsam of Rakasiri,*" consists merely of highly rectified spirits of wine, flavoured with oil of rosemary, and is recommended by its *Jewish* proprietors, as a remedy for consumption! Henry's Aromatic vinegar is said to be an acetic solution of camphor and of the oils cloves, lavender, and rosemary.

Off. Prep.—Oleum Rosmarini, *L. E. D.*

Spiritus Rosmarini, *L. E. D.*

with it, it will remain on the paper after exposure to a moderate heat. Where a cheaper volatile oil has been employed to adulterate a more costly one, the detection can scarcely be made by any other means than by the difference of odour. If spirit of wine be mixed with the oil, when it is dropped upon water, a milky fluid is formed, instead of there remaining a transparent film of oil on the surface of the water."



Piper nigrum.

G. Reid. del.

Weddell. sc.

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

CLXXIV

PIPER NIGRUM.

Black Pepper.

Class II. Diandria.—*Order* III. Trigynia.

Nat. Ord. Piperitæ, *Lin.* Urticæ, *Juss.*

Gen. Char. *Calyx* 0. *Corolla* 0. *Berry* 1-seeded. *Spadix* simple.

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

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

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

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

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

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

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

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

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

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

According to Mr. Milburn, the pepper countries extend from about the longitude of 96° to that of 115° E., beyond which none is to be found; and they reach from 5° lat. to about 12° N., where it again ceases. Within these limits are Sumatra, Borneo, the Malay peninsula, and certain countries lying on the east coast of the Gulph of Siam. The whole produce of Sumatra is estimated at 168,000 peculs. At Palembang, which is the principal depôt for the pepper from the north coast of Sumatra, there is now produced upwards of 15,000 peculs. The islands at the mouth of the straits of Malacca and Singapore, produce 10,000 peculs, and Lingga, about 2,000, most of which goes to the emporium of Singapore. The west coast of the Malay peninsula produces only 4,000 peculs, in the territory of Malacca; the east coast yields a considerable quantity; the ports of Patmi and Calantan about 16,000 peculs, and Tringana about 8,000. The east coast of the Gulph of Siam, from lat. 10½° to 12½° N., afford not less than 60,000 peculs, 40,000 of which go at once to the capital of Siam as tribute, and the whole finds its way to China in junks. The whole produce of Borneo is reckoned at about 20,000 peculs: adding this to the foregoing estimates, we find the aggregate production of pepper throughout the East to be 338,000 peculs, or 45,066,666 lbs. The average price of pepper lately has been about nine Spanish dollars the pecul, which gives the value of this spice, 3,142,000 dollars.

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

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

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

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

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

* *Jour. Pharm.* vii. 273.

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

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

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

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

Off. Prep.—Confectio Piperis Nigri, L.
Unguentum Piperis Nigri, D.
Emplastrum Cantharidis vesicat. comp. E.

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* See Clinical Lecture, reported in the "Lancet," page 409, No. 354.

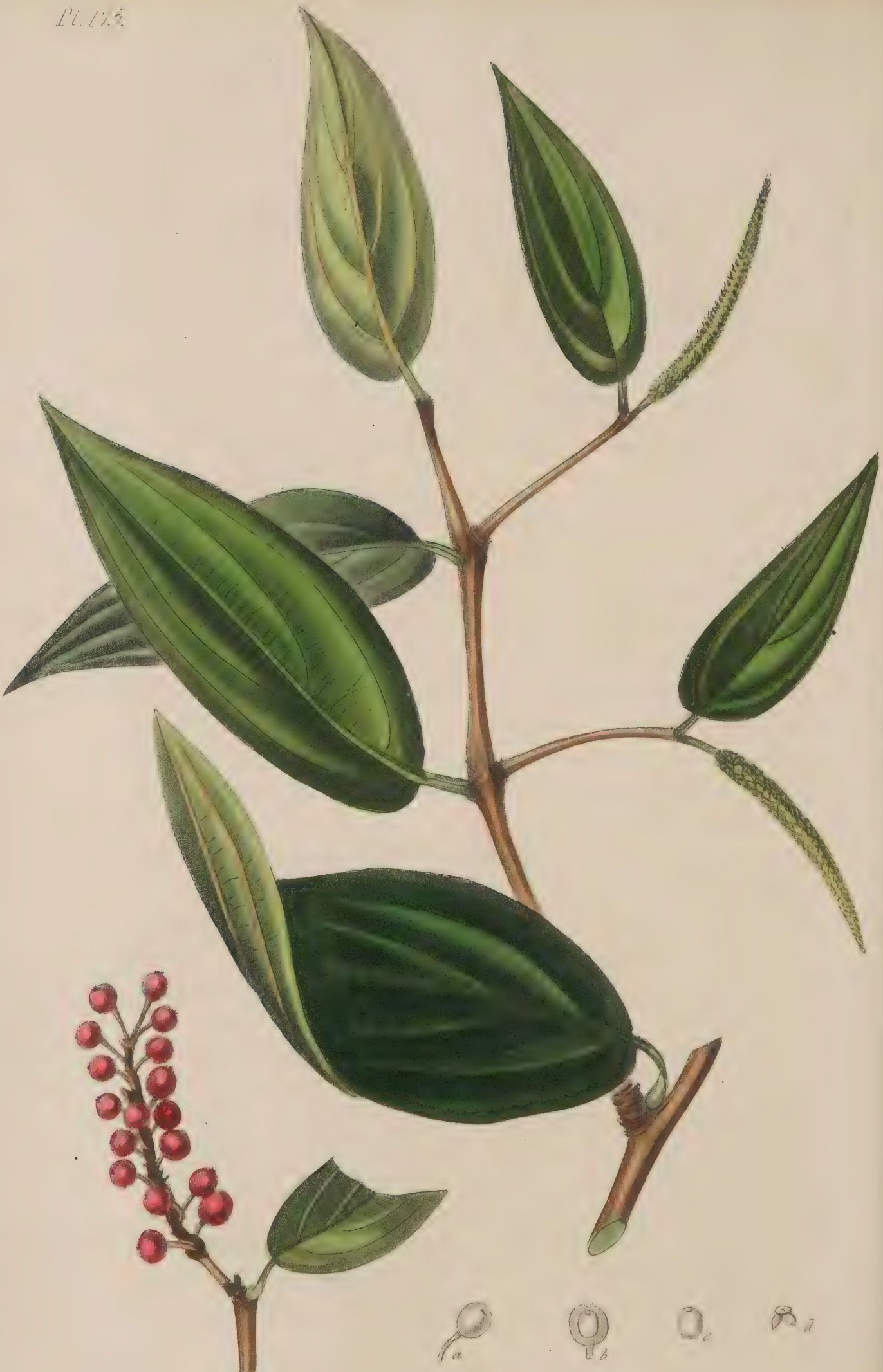
PIPER LONGUM.—*Long Pepper.*

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

Syn.—Piper longum orientale. *Bauh. Pin.* 412.
Cattu-tirpali. *Rheed. Hort. Malab. v.* 7. *p.* 27. *t.* 14.
Piper longum. *Ger. Em.* 1539; *Raii. Hist.* 1343; *Clus. Exot.* 183; *Blackw. t.* 356; *Rumph. Amb. v.* 5. *p.* 335. *t.* 116. *f.* 2; *Willd. Sp. Pl.* 1. *p.* 161; *Woodv. t.* 188.
FOREIGN.—*Poivre longue*, Fr.; *Pepe lungo*, It.; *Pimienta larga*, Sp.; *Langer pffer*, Ger.; *Pipel*, Hind.; *Täbee*, Malab.; *Chabi-jawa*. Jav.

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

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



Piper cubeba L.

London. Published for the Author, Sept. 1830.

PIPER CUBEBA.

Cubeb, or Java Pepper.

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

Syn.—Cubebæ, *Raii Hist.* 1813; *Park. Theatr.* 1583; *Clus. Exot.* 184.
Piper caudatum. *Ger. Em.* 1540; *Bauh. Hist.* 2. 185.
Piper Cubeba. *Willd. Sp. Pl.* 1. *p.* 159; *Vahl. Enn. n.* 61; *Gærtn. de Fruct.* 2. *p.* 67. *t.* 92.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Tinctura Piperis Cubebæ, Ph. D.

℞ Fructus Piperis Cubebæ ℥iv.
Spiritus Vini tenuioris ℔ij. Macerate for fourteen days, and strain.—Dose gtt. x. to ʒj.

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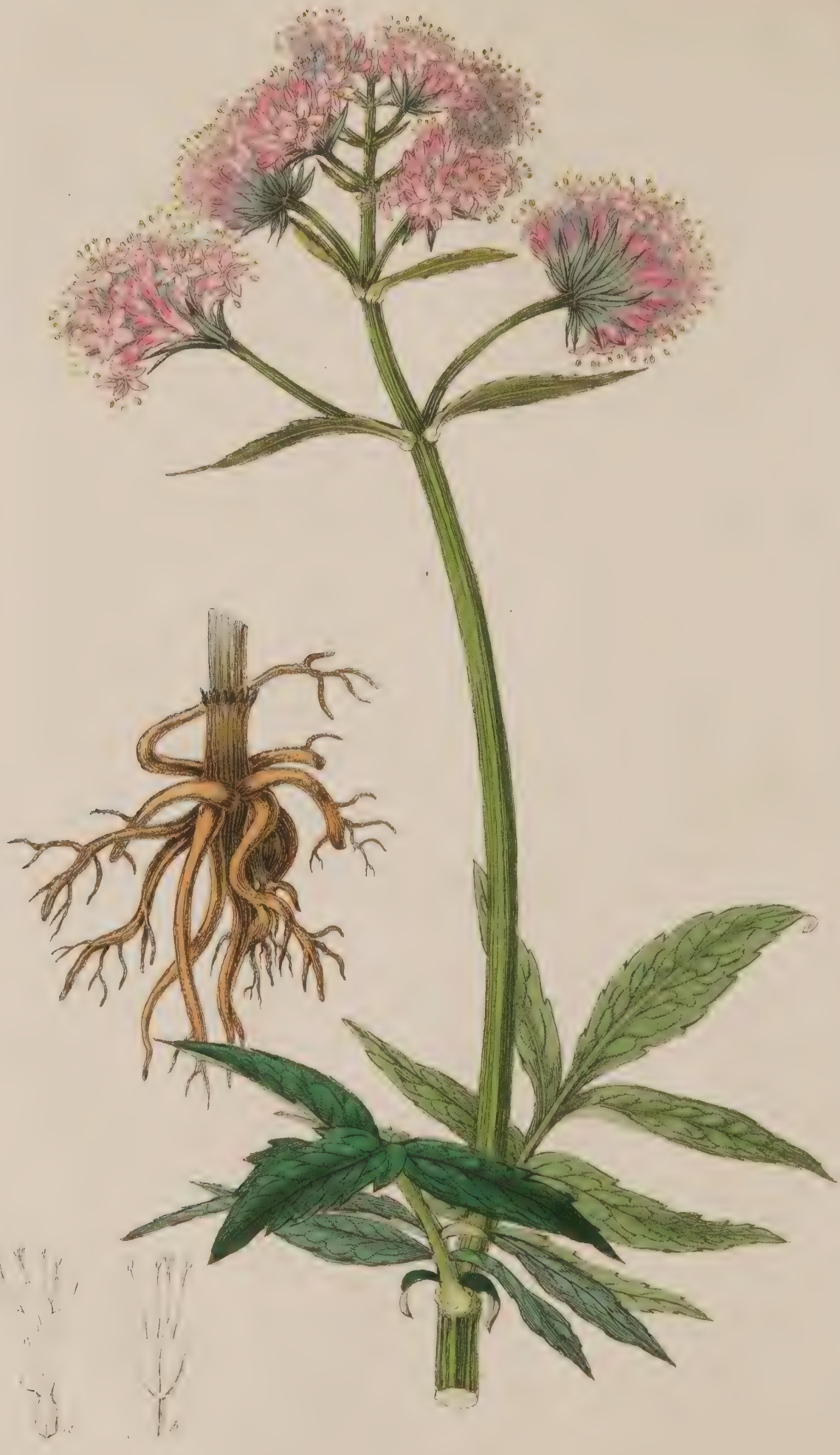
* See "*Observations on the Diverse Treatment of Gonorrhœa Virulenta*," &c. by J. M. Churchill.

† *Medical Repository*, p. 102.



Valeriana officinalis.

W. Clark, del. et lith.

London, Published by John Churchill, Leicester Square, Feb.y 1826.

VALERIANA OFFICINALIS.

Great Wild Valerian.

Class III. TRIANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. AGGREGATÆ, *Lin.* DIPSACEÆ, *Juss.* VALERIANEÆ DE CAND.

GEN. CHAR. *Corolla* monopetalous 5-cleft, gibbous at the base. *Seed* 1, crowned with a feathery radiating pappus.

SPEC. CHAR. *Stamens* three. *Leaves* all pinnate; leaflets lanceolate, serrate, nearly equal.

Syn.—Valeriana sylvestris major, *Raii Syn.* 200; *Ger. Em.* 1075. *f.*; *Park.* 122.
Phu, *Column. Phytob.* 113. *t.* 114.
Phu parvum, *Matth. Valgr. v.* 1. 37. *f.*
Phu germanicum, *Fuchs. Hist.* 857. *f.*
Valeriana *n.* 210. *Hall. Hist. v.* 1. 91.
Valeriana officinalis, *Lin. Sp. Pl.* 45; *Willd. v.* 1. 177; *Fl. Brit.* 38. *Eng. Bot. v.* 10. *t.* 698; *Curt. Lond. fasc.* 6. *t.* 3; *Hook. Scot.* 15; *Woodv. t.* 96. *Stokes v.* 1. 96. *Fl. Dan. t.* 570.
PROVINCIALLY.—*Great Wild Valerian; Capon's-tail; Setwalle.*
FOREIGN.—*Valeriane; Valeriane Sauvage*, Fr.; *Valeriana Silvestre*, It.; *Valerian Officinal*, Sp.; *Wilde Baldrianwurzel*, Ger.; *Balder an*, Russ.

THE great wild Valerian, Valeriana *officinalis*, of Linnæus, or Valeriana *sylvestris major montana* of Bauhin, is a perennial indigenous plant, growing on the banks of rivers and ditches, and in dry mountainous woods and pastures; flowering from June, to August.

The root of this species of Valerian is composed of several long, slender fibres, of a dusky brown colour, approaching to olive, that issue from one head. The stem is erect, furrowed, hollow, smooth, branched, and rises to the height of three or four feet. The leaves are of a deep glossy green, serrated, a little hairy on the under surface, grow opposite, in pairs on foot-

stalks, and are all pinnated, but differ in different parts of the plant, in the number of leaflets. In the lower leaves there are generally ten pair; in those on the stem nine; and towards the top five or seven only; hence the leaf, except towards the bottom of the plant, is always terminated by an odd leaflet. The radical leaves are larger, stand upon long footstalks; the *pinnæ* are elliptical, and deeply serrated; the bracteas, or floral leaves, are lanceolate and pointed. The flowers, which are small, and of a reddish white colour, are disposed in large dense aggregates, or corymbs, not unlike an umbel, at the extremities of the stem and branches, and containing both stamens and pistils, whereby the present species may at once be distinguished from the V. *dioica*, which it very much resembles. The calyx is a slight border, subsequently expanding into a crown for the seed. The corolla is tubular, with a protuberance at the base, and divided at the limb into five obtuse, somewhat unequal segments. The stamens are three, awl-shaped, and support oblong yellow anthers. The germen is inferior, oblong, having a thread-shaped style the length of the stamens, and terminated by a trifid stigma. The seeds are ovate-oblong, compressed, and crowned with a feathery pappus of ten rays.—Figs. (*a.*) and (*b.*) are two views of the corolla magnified.

The V. *locusta*, corn salad, or lamb's lettuce is sometimes cultivated in gardens for salad, and of the Officinal Valerian there are two varieties; one growing in woods and moist places, the other on dry heaths, and high pastures. Both sorts have been used indiscriminately, but the latter variety is esteemed of far greater efficacy than the marshy sort. It is principally distinguished by the leaves being narrower, and of a duller green; and by its stronger smell, and more humble growth.

This plant having till lately been generally regarded as the celebrated φου, or Valerian of Dioscorides, has been extensively employed as an article of the Materia Medica. Dr. Sibthorp, in his Greek tour, however, has ascertained that the real plant of the ancients is a distinct species, which he has figured and described under the name of Valeriana *Dioscoridis*.* It was

* See Sibthorp's Flora Græca, Edited by Sir J. E. Smith, vol. i. t. 33.

gathered by the learned author near the river Linyrus in Lycia; and has a much more pungent and more durable, and yet less nauseous odour, than the plant here represented.*

Culture.—In Derbyshire, Valerian is planted in rows twelve inches apart, and the plants six inches asunder. Soon after it comes up in the spring, the tops are cut off to prevent its running to seed, which spoils it. At Michaelmas the leaves are pulled off and given to cattle, and the roots dug up, and clean washed, and the remaining top is then cut close off, and the thickest part slit down to facilitate their drying, which is effected on a kiln, after which they must be packed tight and kept very dry, or they will spoil. The usual produce is about 18 cwt. per acre.†

Qualities, and Chemical Properties.—The leaves have a saltish taste, but little or no smell. The roots, particularly the mountain sort, are bitter, subacrid, and of an aromatic and penetrating odour. The smell of the roots is very alluring to cats, and rat-catchers employ it to entice rats, who are also fond of it. Trommsdorff has examined the root of the Valeriana *Officinalis*. It loses three-fourths of its weight by drying. Distilled with water it yields a volatile oil, very liquid, and of a greenish white colour. Its odour is strong and camphoric; its specific gravity, at the temperature of 77°, is 0,9430; its taste is aromatic and camphoric, without being acrid. Nitric acid converts it into a a resinous substance, or, if it be used in a sufficient quantity, into oxalic acid. The expressed juice of the roots, has a strong odour, and is muddy. It lets fall a portion of starch. It contains a peculiar substance approaching the nature of extractive, soluble in water, insoluble in ether or in pure alcohol. It is precipitated from water by the salts of lead, silver, mercury, and antimony. The juice also contains a portion of gum. The roots, deprived of this juice yield a portion of black-coloured resin, but consist chiefly of woody fibre.—*Annales de Chimie*, t. xx. p. 384.

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* The *Greek Valerian*, also called *Jacob's Ladder*, a common ornament in rustic gardens, must not be confounded with the Valerian of Dioscorides. It belongs to a different genus, *(Polemonium,)* deriving its name from the resemblance its leaves bear to the Officinal Valerian, and has not been discovered in Greece.

† Loudon's Encyclopædia of Agriculture, p. 875.

Medical Properties and Uses, &c.—Valerian has long been esteemed an excellent remedy in various affections of the nervous system, especially in hysteria, chorea, and epilepsy; and when those diseases seem to depend rather on increased susceptibility than on organic derangement, it is frequently useful. Fabricius Columna first discovered its antispasmodic powers, having cured himself of epilepsy by the powdered root, when many other powerful medicines had failed.

Dr. Scopoli* relates the case of a young man who had contracted epilepsy from fright, who was shortly cured by the use of the powder. M. Marchant† has also related many cases of its success in the same disease; and what is remarkable and well worthy of our attention is, that his patients voided large quantities of worms; a fact supported by the testimony of others. It has been found extremely beneficial in many cases of hysteria, and hemicrania, especially when combined with bark, or the volatile alkali; and conjoined with guiacum, it is beneficially employed for strumous enlargement of glandular structures. Dr. Cullen strongly recommends the root of that which has grown in a dry calcareous soil for hysterical affections. Dr. Withering speaks of it as a useful remedy for habitual costiveness; and, although its aperient qualities can no more be relied on than its diuretic, or anthelmintic ones, we consider it to be among the most powerful of the vegetable antispasmodics. The powder is the best mode of administration; and Lewis justly remarks, that its taste is best covered by a suitable addition of *mace*.

Dose.—When given in substance the dose may be from ℈j to ʒj twice or thrice in twenty-four hours: of the ammoniated tincture, which is a better preparation than the simple tincture made with proof spirit, the dose is from ʒj to ʒij.

Off. Prep.—Tinctura Valerianæ. *L. D.*
Tinctura Valerianæ Ammoniata. *L. E. D.*
Extractum Valerianæ. *D.*
Infusum Valerianæ. *D.*

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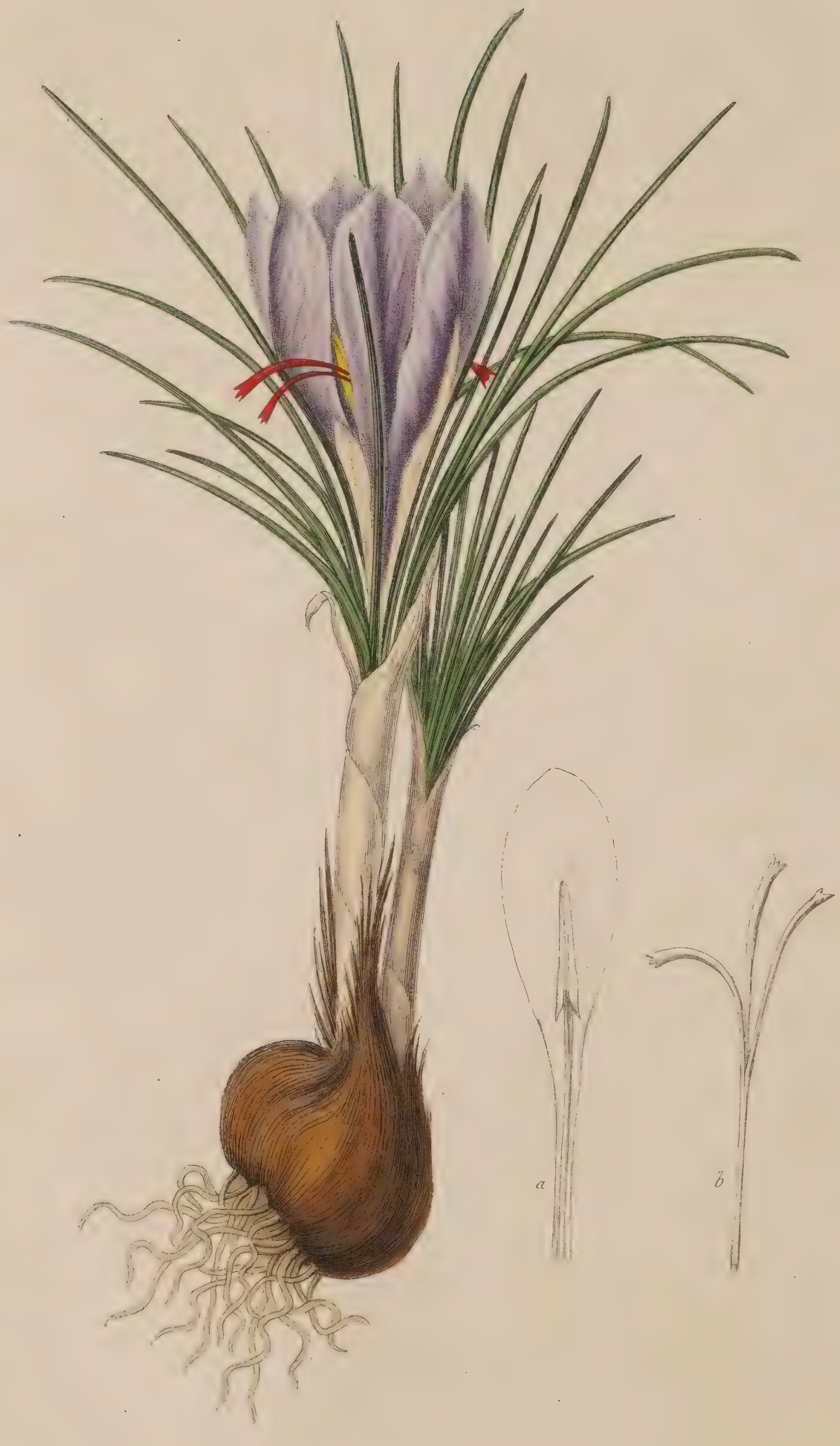
* See Scopoli Flora Carniolica.
† Histoire de l'Acad. Roy. des Sciences, an. 1706.

Pl. 707



Crocus salinus.

Weddell sc.

Pub.d Jan.y 1.st 1829. by J. Churchill Leicester Square.

CROCUS SATIVUS.

Saffron Crocus.

Class III. TRIANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. ENSATÆ, *Lin.* IRIDES, *Juss.*

GEN. CHAR. *Corolla* in six deep equal segments; tube longer than the limb. *Stigmas* convoluted.

SPEC. CHAR. *Leaves* setaceous. *Stigma* reflexed laterally, in three deep, linear, notched segments.

Syn.—Crocus, *Raii Syn.* 374; *Ger. Em.* 151. *f. Fuch. Hist.* 441. *f; Plin.* xxi. 6.
Crocum, *Matth. Valgr. v.* 1. 62. 63. *f; Camer. Epit.* 33. *f.*
Crocus autumnalis, *Eng. Bot. v.* 5. *t.* 343.
Crocus setifolius, *Stokes, Bot. Mat. Med. v.* 1. *p.* 104.
Crocus officinalis, *Huds. Fl. Angl.* 13, *a*; *Mart. Rust. v.* 2. *t.* 35.
Κροκος et Κρόκον, *Hom. Illiad,* Ξ, 348; *Theophr.* vi. 6; *Diosc.* i. 25.
Crocus sativus, *Lin. Sp. Pl.* 54, *a. Willd. v.* 1. 194; *Fl. Brit.* 39; *Redoutè Liliac. v.* 3. *t.* 173; *Woodv. t.* 176.

FOREIGN.—*Saffran,* Fr.; *Safferano,* It.; *Azafran,* Sp.; *Acafrao,* Port.; *Safranplanze,* Ger.; *Schafran,* Rus.

OUR drawing of this beautiful and interesting Crocus, which affords the well known Saffron of the shops, was taken from specimens obligingly communicated to us by Mr. Fiske of Walden in Essex, where it was formerly much cultivated for medical use. It is a perennial, bulbous plant, and is supposed to have been originally brought from the East, where it first acquired that high reputation in medicine, which it has now almost lost in Europe. It is said that the saffron crocus was brought into England in the reign of Edward III., and that a Sir Thomas Smith introduced it into the neighbourhood of Walden, where it was probably first cultivated. It was, however, grown at an early period in Herefordshire; but it is now confined to a very small district in Cambridgeshire, at the foot of the Gogmagog hills. It appears to have been planted abundantly near Walden, at the end of the sixteenth and at the beginning of the seventeenth century. It

migrated gradually into Cambridgeshire between the years 1675 and 1723, where the place of its growth was the large tract of ground between Saffron Walden and Cambridge, in a circuit of about ten miles. At present, however, it is, we believe, but little attended to by the farmer, and is now confined to two or three parishes only, of which Stapleford is one. Saffron has long been extensively cultivated in many countries on the continent, particularly in France and Spain; but English Saffron is generally preferred here to that which is imported, and may be distinguished by its parts being larger and broader. The bulbs may be planted in dry, light soil; but they succeed best in sand. About the first week in October the flowers begin to appear; but it never produces seeds in this climate.

The saffron crocus has a roundish bulbous root, as large as a small nutmeg, which is solid, somewhat compressed, and covered with a coarse brown reticulated skin. From the bottom of this bulb are sent out many long slender fibres, which strike pretty deep into the ground, and are, properly speaking, the true roots. Immediately from the upper part of the bulb proceed the flowers on a long slender white tube, which together with the leaves are inclosed in a thin membranous sheath, opening on one side. The leaves are numerous, curved, linear, smooth, longer than the corolla, of a deep green colour, with a white central stripe, and are accompanied by the flowers. The corolla is large, and divided into six nearly elliptical segments, equal, and of a rich violet or lilac colour. The stamens are shorter than the corolla, and surmounted by arrow-shaped, erect, pale yellow anthers. At the bottom of the tube is situated a roundish germen, crowned with the style, which is thread-shaped, the length of the corolla, and hangs out at one side between the segments. The stigma is deeply 3-parted, of a deep orange colour, fragrant, narrow, a little dilated upwards, and notched at the summit.—Fig. (*a*) represents one of the segments of the corolla with a stamen and anther; (*b*) the 3-parted stigma, which is the officinal saffron.

Distinctive Characters.—Saffron differs from the spring crocus (C. *vernus*) in having the stigma divided into three very long narrow segments, which are notched at the summit, of a

deep orange colour, and fragrant. In the spring crocus the stigma is within the flower, divided into three wedge-shaped jagged lobes, which are inodorous, and the tube of the corolla is hairy at the mouth: while in the *officinalis* the throat of the corolla is smooth. The naked-flowering crocus (C. *nudiflorus*) is readily distinguished from the other two by the deeply-laciniated tufted segments of the stigma, and by the flowers, which are of a deep purple, appearing in autumn unaccompanied by leaves; the latter not being produced till December.

Saffron is unquestionably a native of Greece and Asia Minor, having been introduced into the south of Europe for cultivation as a medicinal plant; but it has naturalized itself in some parts of England, and is retained by Smith in the English Flora, on the authority of the Rev. Mr. Wood, who found it about Halifax, and of Mr. Whatly, who observed it near Derby. Of this genus Miller admits only two species, the autumnal saffron, C. *sativus*, and the spring crocus, C. *vernus*. Sir J. E. Smith describes three species as natives of Britain, C. *vernus*, *nudiflorus*, and *sativus*: of the former there are several varieties, blue and purple, yellow, white, and striped. Linneus reduces all the species to one, and supposes the vernal, and the autumnal, or officinal crocus to be only varieties, notwithstanding the difference in the form of their stigmas, leaves, and bulbs, as well as in the time of their flowering. Besides these, the following species are cultivated in crocus beds:—C. *versicolor*, or party-coloured crocus, a kind which requires a light loam, while most of the others grow best in sand; C. *biflorus*, or yellow bottomed; C. *mœsiacus*, or great yellow; C. *susianus*, or cloth of gold; C. *sulphureus*, or sulphur-coloured; and C. *serotinus*, or late-flowered, blossoming in autumn, the leaves appearing at the same time with the flower. The Scotch crocus is said by Mr. Neill to be a beautiful striped variety.

The unpolluted organs of which this flower is robbed to form saffron, were early known to the Romans; as we find that the Cilician physicians who attended Anthony and Cleopatra in Egypt, recommended saffron as a medicine that cleared the complexion, by relieving the jaundice or the bile: which is an early indication of the prevalence of the "doctrine of signatures," for

which the sect termed "*Rosycrusians*," or "*Theosophists*" became so notorious in the beginning of the 14th century. Dioscorides says that it is good for a surfeit. Pliny informs us that the best saffron grew in Cilicia, or a mountain called Corycus, and that the next in quality on Mount Olympus. The Sicilian saffron was also esteemed by the Romans, who used it as a perfume. According to Pliny, it was steeped in wine, and then sprinkled over the theatres, filling every part with a sweet odour. The same author says, the wild crocus produces the best saffron, therefore the planting of it in gardens was deemed bad husbandry, for the plants became strong and large; while the flowers yielded but few chives, and would not pay the expence of planting. In a work, comparatively modern, (Townsend's Travels in Spain,) the plant is mentioned as growing in abundance in the neighbourhood of Salamanca, where, without cultivation, it affords excellent saffron. Saffron is the κροκος of the Greeks; and is mentioned by Homer as one of the flowers that formed the genial couch of Jove and Juno:—

Ἦ ῥα, καὶ ἀγκὰς ἕμαρπτε Κρόνου παῖς ἦν παράκοιτιν·
Τοῖσι δ' ὑπὸ Χθὼν δῖα φύεν νεοθηλέα ποίην,
Λωτόν θ' ἑρσήεντα, ἰδὲ κρόκον, ἠδ' ὑάκινθον
Πυκνὸν καὶ μαλακόν· ὃς ἀπὸ χθονὸς ὑψόσ' ἔεργε·
Τῷ ἕνι λεξάσθην, ἐπὶ δὲ νεφέλην ἔσσαντο
Καλὴν, χρυσείην· ςιλπναὶ δ' ἀπέπιπτον ἔερσαι.

Iliad, Lib. xiv. 346.

from whence it has been inferred, that exhilarating properties were ascribed to it even in his days. Lindestolpe suspects that it was the νεπενθης, nepenthes, of Homer; while other writers have affixed this appellation to the Inula *Helenium* and Borago.

Our plant is the *zaffaran* or *zahafaran* of the Arabians, and was highly esteemed by the Hebrews, who called it *carcom*. It is the Crocus of the Latins, who named it after a beautiful youth, who was said to have been consumed by the impatience of his love for Smilax, but was, by Hercules his father, changed into this flower, while Smilax was metamorphosed into the plant called by his name, Smilax, or Bindweed. Ovid commemorates this fable:—

"Et crocum in parvos versum cum Smilax flores."

Virgil also speaks of the crocus as one of the flowers upon which bees love to feed :—

———"pascuntur et arbuta pastim,
Et glaucas salices, casiamque, crocumque rubentem,
Et pinguem tilium, et ferrugineos hyacinthos."—GEORG. 4.

By the old Chemists saffron was called, from its golden colour, *Aurum Philosophorum;* by others, *Sanguis Herculis, Aurum Vegetabile, Rex Vegetabilium,* and *Panacea Vegetabilis.* Its English name is evidently derived from its Arabian; which is nearly the same in French, Dutch, and German.

CULTURE.—As several botanists with whom we conversed were ignorant of the habits of this plant, and as it is imperfectly described in a work, which passes for an authority, we took the pains to obtain specimens from Samuel Fiske, Esq. of Saffron Walden, a gentleman who once cultivated it, and who is an accomplished botanist. In his communication, for which we are greatly indebted, he says, "The bulbs of the Crocus *sativus* are planted in July, in a rich light mould, with some well rotted manure, in rows six inches apart, and three inches distant from each other in the rows.

"About the 18th of September, the leaves, or grass as it is called, begin to appear in small pencil-like tufts, and during, and after the period of flowering, keep growing, and gradually cover the whole bed, continuing green all the winter, until May, when they die away, and the bed is bare all the next summer.

"The flowers begin to spring up about the 3rd of October, with a stem about an inch above the ground; they continue daily coming up for three or four weeks, six, eight, or more rising in succession from one plant. They are gathered every morning during the time of flowering, and the stigmata or chives, with part of the style plucked out for use, the rest of the flower being thrown away.

"The saffron, thus procured, is either dried in a room, in the sun, on papers, or made into cakes by a moderate heat and pressure,

"At the end of three years, when the leaf is entirely dead, the

drachms it proves fatal; and by several authors we are informed, that in large doses it produced cephalalgia, intoxication, and mania. It is also said to be plentifully absorbed and to tinge the various textures of the body. From direct experiments, however, made by Dr. Alexander, saffron evidently possesses but little active power over the great majority of mankind, when given even in very large doses; and Dr. H. Cullen administered it in the quantity of half an ounce a day, in several hysterical cases, without any sensible effect. It has often been accused of producing great hilarity, which is again contradicted by Bergius, whose words are, "Nobilis matrona semper in tristitiam illapsa est ingentem, postquam pulveres crocatos ei proprinaveram."

Saffron is now discarded from practice as a medical agent; but still enters into the composition of several officinal preparations, to impart an odorous flavour and its rich colouring matter.*

OFF. PREP.—Confectio aromatica. L. D.
Decoctum Aloes comp. L.
Pilula Aloes c. myrrha. L.
Syrupus Croci. L.
Tinctura Aloes comp. L.
——— Aloes. D.
——— Cinchonæ comp. L
——— Croci-sativi. E.
——— Rhæi. L.
——— Rhæi comp. L.

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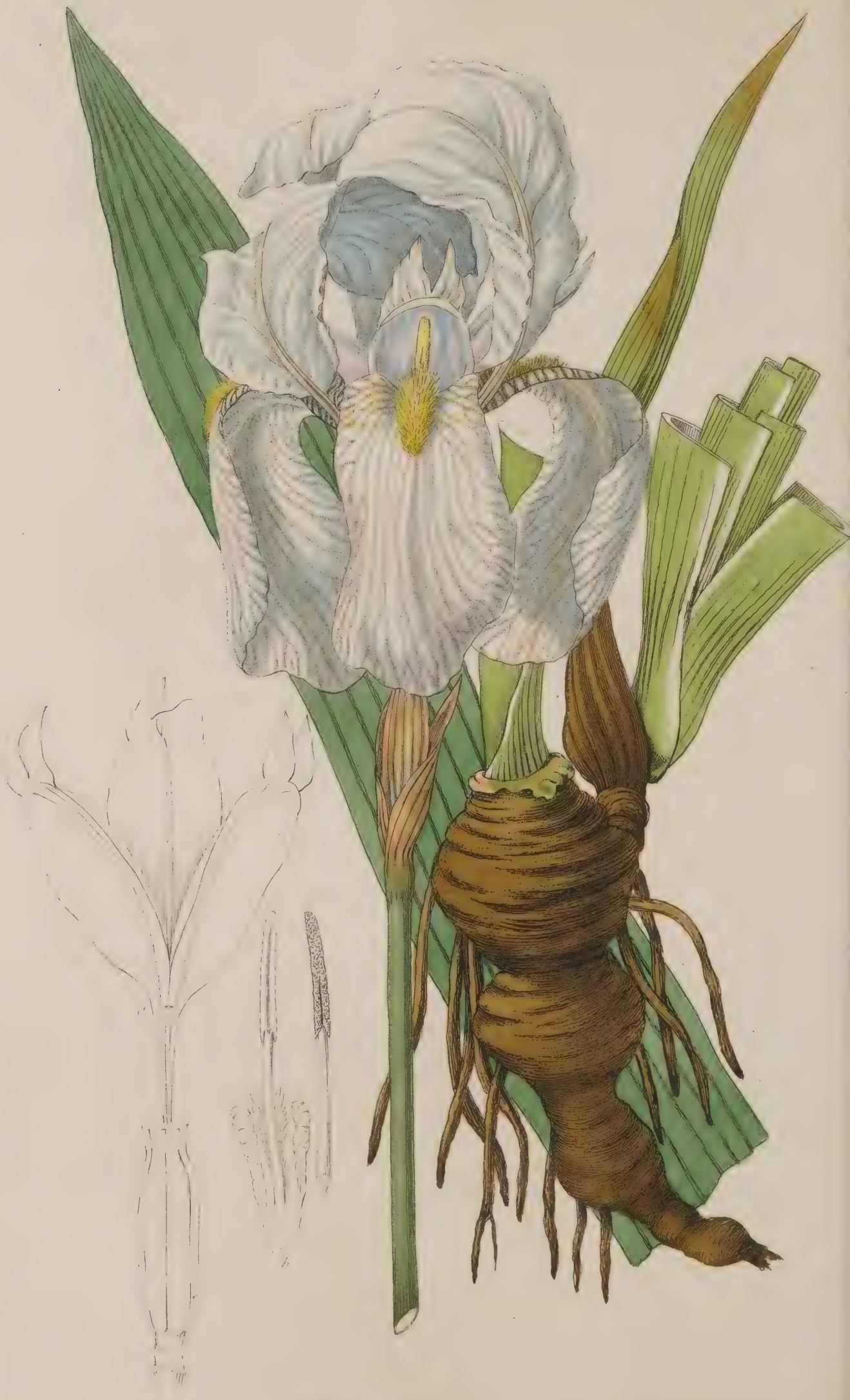
* AMERICAN SOOTHING SYRUP.—This vile nostrum, which is puffed off in the newspapers "as a real blessing to mothers," is nothing more than syrup of saffron, with a portion of nitrate of potass or saltpetre, and laudanum!



Iris Morentana.

XXVII

IRIS FLORENTINA.

Florentine Iris.

Class III. TRIANDRIA.—*Order* I. MONOGYNIA.
Nat. Ord. ENSATÆ, *Lin.* IRIDES, *Juss.*

GEN. CHAR. *Corolla* 6-parted; the alternate segments reflected. *Stigmas* petal-like.

SPEC. CHAR. *Corolla* bearded. *Leaves* sword-shaped, smooth, shorter than the subbiflorous scape.

Syn.—Iris flore albo, *Raii. Hist.* 1180.; *Bauh. Hist.* II. 719.
Iris alba florentina, *Ger. Em.* 52.; *Park.* 180. *t.* 183. *f.* 2.;
Iris florentina, *Lin. Sp. Pl.* 55. *Willd. v.* 1. 224. *Sibth. Fl. Græc.* 28. *t.* 39.
FOREIGN.—*Iris de Florence*, Fr.; *Ireos*, Ital.; *Iris*, Span.; *Violenwurzel*, Ger.

THIS species of iris is a perennial plant, a native of Carniola, and some parts of the south of Europe; but it is common in our gardens, and was cultivated by Gerarde, in the end of the sixteenth century. The flowers are very handsome, and appear early in May.

The Florentine Iris has a thick tuberous knobbed root, externally brown, yellowish-white within, and sending out numerous fibres from the under part, which, when they are pared off, makes it appear full of round spots. The leaves are radical, sword-shaped, sheathing, of a glaucous green colour, pointed, and somewhat curved inwards at the apex. The stems are erect, simple, cylindrical, about two feet high, and bearing each two or three flowers. The flowers, which terminate the stalks, are large, white, erect, and spring from a ventricose sheath, or calyx, of two leafy valves. The corolla is divided into six segments or petals, the three outer ones being the largest; the outer petals are thick and fleshy near the base, and bearded within, with white hairs, yellow at the tip; the border is rounded, emarginate, and an inch wide, reflexed, white and striated near the flexure; the inner erect petals are narrow, bluish white, bent inwards, and have thick greenish claws. The stamens are three, lying on the larger petals, and crowned with long pale yellow anthers; the germen is oblong, obtusely triangular, and

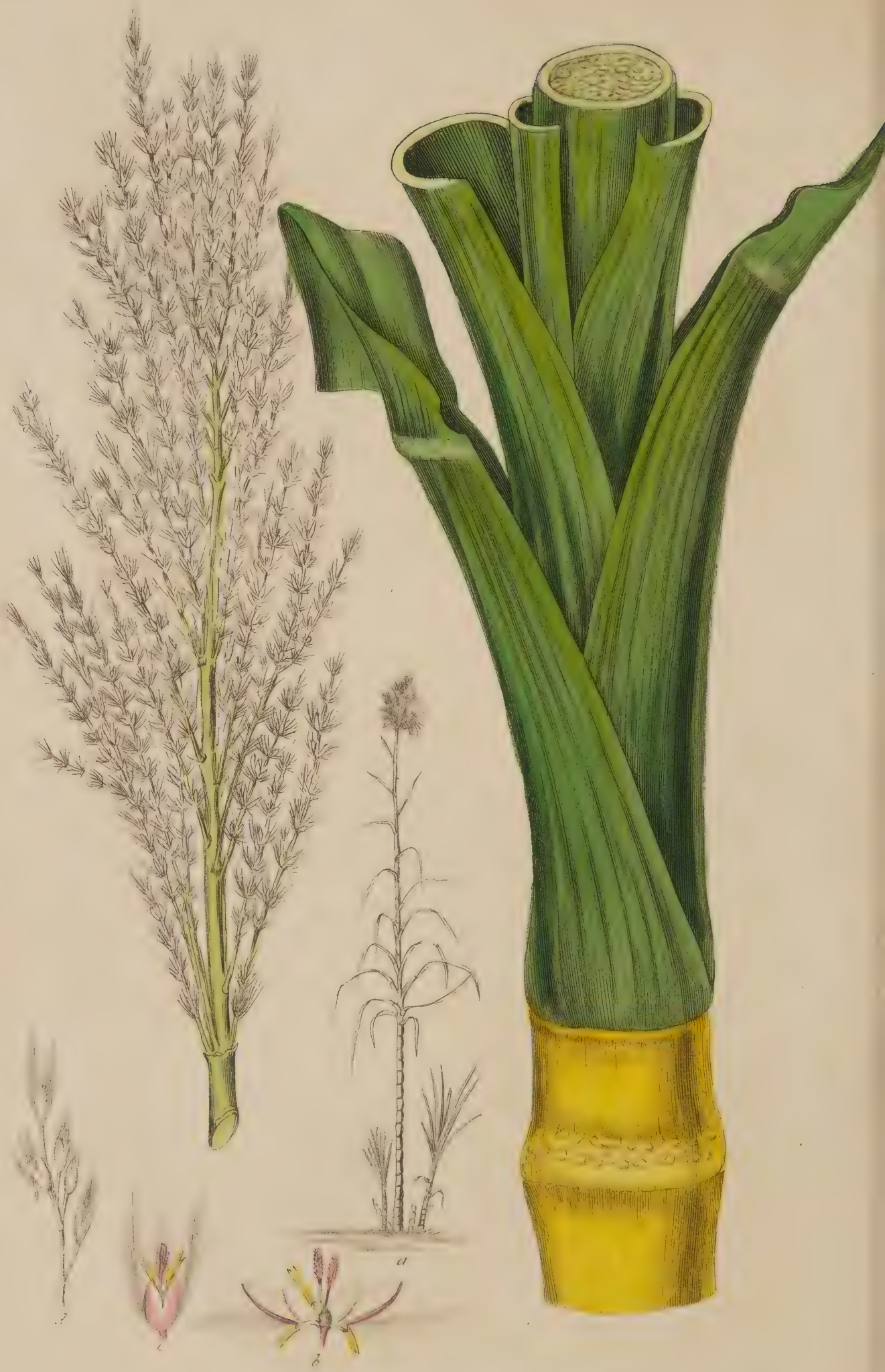
placed below the corolla; the style is short and thread-shaped: the stigma separates into three equal dilated segments, of the texture of the petals, which arch over the stamens. The capsule is three-celled, and contains many flat brown seeds. Fig. (*a*) represents a front, and (*b*) the posterior view of a stamen; (*b*) the pistil.

Qualities.—The recent root is acrid, and excites when chewed, a pungent heat in the mouth, which continues several hours; but on being dried, this acrimony is lost, and the taste becomes somewhat bitter. That which grows in England has but little odour; but the foreign roots, which are brought from Italy, possess a most agreeable fragrance, resembling violets.

Medical Properties and Uses.—Several species of Iris, amongst which is the I. *florentina*, possess hydragogue purgative properties, and the expressed juice of the latter, in drachm doses, was formerly administered for the cure of dropsy. In its dried state, it also entered into the composition of the *Trochisci Amyli*, in consequence of expectorant virtues being attributed to it; and on the Continent it is still used as an errhine, combined with other substances. Orris powder is frequently used by females and others, in large quantities, as a perfume, and serious consequences are said to have been produced by this practice. Dr. Aumont, in a paper lately read to the Royal Academy of Sciences in France, relates a case in which two young girls became paralytic and insensible from having put a considerable quantity of Orris root into their hair on going to bed. When they awoke in the morning, they were seized with violent head-ache and giddiness, with pain and heat in the throat, similar to what is produced by cantharides, and the younger, of the two, was completely paralytic, on the right side for more than five hours. With us, it is now merely employed to cover odours in the mouth, or to form a pleasant basis for tooth powder. For the sake of those ladies who patronize our undertaking, we subjoin the following elegant "*Receipt for Tooth Powder.*"

Take of, Powder of Orris root, two drachms,
Powder of burnt hartshorn, one ounce,
Dragon's blood, powdered, half a drachm,
Attar of roses, two drops. Mix.

Pl 148.



Saccharum officinarum

G.Reid. del.

Weddell. sc

London. Published. for. the. Authors. January. 1st. 1830.

CXLVIII

SACCHARUM OFFICINARUM.

Common Sugar-cane.

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

Nat. Ord. GRAMINA.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

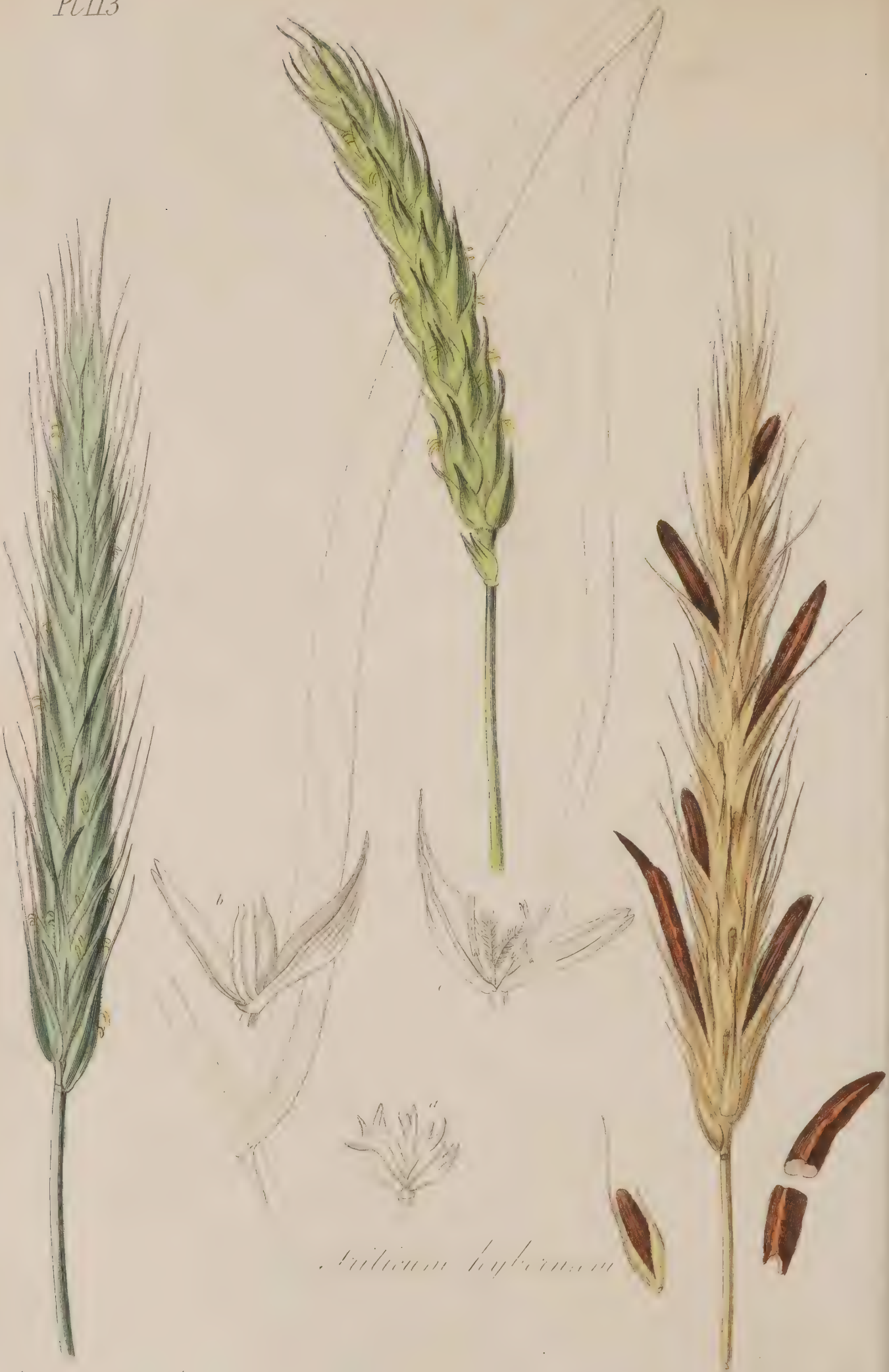
	Gay Lussac and Thenard.	Berzelius.		
Oxygen	50.63	51.47	49.015	49.083
Carbon	42.47	41.48	44.200	44.115
Hydrogen	6.90	7.05	6.785	6.802
	100	100	100	100

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

"Qui bibunt tenerâ dulces ab arundine succos."

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

Off. Prep.—Syrupi omnes, L. E. D. Trochisci omnes, E. Confectiones omnes, L.



Secale cereale

Triticum hybernum

Ergot or Spurred Rye

TRITICUM HYBERNUM.

Winter, or Lammas Wheat.

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

Nat. Ord. GRAMINA.

GEN. CHAR. *Calyx* of 2 transverse, opposite valves, solitary, many-flowered.

SPEC. CHAR. *Calyx* four-flowered, tumid, smooth, imbricated, with little or no awns.

Syn.—Triticum spicâ muticâ, *Ger. Em.* 65. *f.* 1; *Park. Theatr.* 1120. *f.* 1.
Siligo spicâ muticâ, *Lob. Ic.* 25.
Triticum hybernum aristis carens, *Bauh. Pin.* 21; *Mor. Hist.* 3. *t.* 11. *f.* 1. *Tourn. Inst. t.* 29.
Triticum vulgare, *Host. Gram. Austr. v.* 3. 18. *t.* 26.
Triticum hybernum, *Lin. Sp. Pl.* 126; *Willd. v.* 1. 477; *Errh. Pl. Offic. n.* 151; *Ait. Kew. v.* 2. *ed.* 2. *p.* 180.

THE native country of this valuable grain, which now constitutes the chief food of the inhabitants of this and other European nations, is entirely unknown. It has, however, been conjectured from the nature and habits of wheat, that it may have come originally from the hilly parts of Asia, and has been rendered hardy by time and cultivation, in this, and most parts of the world. Under the equator, wheat will seldom form an ear below the elevation of 4,500 feet, or ripen above that of 10,800; and it will not vegetate beyond the 62° of northern latitude. The English counties most distinguished for the quantity, as well as the quality, of their wheat, are Kent, Essex, Suffolk, Rutland, Herefordshire, Berkshire, Hampshire, and Hertfordshire. In the more northern parts of the island, this grain is of inferior quality, being cold to the feel, dark coloured, and yielding comparatively little flour. In the best wheat counties, and in good years, the weight of a bushel of wheat, eight gallons to the bushel, is said to be from sixty to sixty-two pounds. In the isle of Sheppy, in Kent (where, perhaps, the best samples of

wheat sent to the London market are produced,) this grain, in some favourable seasons, weighs sixty-four pounds the bushel. Where the climate is naturally colder, wetter, and more backward, or in bad seasons, the weight of the bushel of wheat is not more than fifty-six or fifty-seven pounds. The kinds of wheat cultivated by the farmer are numerous; but the species here figured, is sown in autumn, stands the winter, and ripens its seed in the following summer. Of all the varieties this is the most generally cultivated in this country, as being the most suited to the nature and quality of the soil, and as affording the finest kind of flour. The soils best adapted to the growth of this grain are rich clays and heavy loams.

The root consists of many downy fibres. The stems are jointed, from three to four feet high, straight, smooth, and terminated by a longish ear or spike. The leaves are linear, smooth, pale green, sheathing, and jointed. The spike is three or four inches long, inclining, and composed of numerous imbricate, oblong, ovate, 2-ranked spikelets; the calyx consists of two concave, oblong, keeled, smooth, nearly equal valves; the outer ones near the top generally terminated by very short awns, which distinguishes it from spring wheat (Triticum *æstivum*,) which has awns three inches long; they contain for the most part from three to four florets, three of which are usually productive; the outer valve of the corolla is concave and pointed, the inner one flat, 2-toothed, and blunt; the filaments are capillary, bearing linear, forked anthers: the germen is turbinate, with a short style, and feathery stigmas. The seed or grain is ovate, translucent, with a narrow channel along the upper side, and enveloped in the corolla.—Fig. (*a*) represents a spicula of the T. *hybernum* of its natural size; (*b*) the germen and calyx; (*c*) a flower expanded and considerably magnified.*

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* A common indigenous perennial grass, belonging to the present genus, vulgarly denominated couch-grass, or creeping wheat-grass, (Triticum *repens*) formerly occupied a place in our Dispensatories, under the name of *Gramen caninum*. Its long creeping roots, which so greatly facilitate the propagation of this grass, to the no small inconvenience of the farmer, have a sweetish taste, and are said to be mildly aperient, deobstruent, and diuretic. The expressed juice taken in considerable quantities, and frequently repeated, is strongly recommended by Boerhaave, and also by Bergius, for its singular efficacy in removing obstructions, and scirrous affections of the liver.

Qualities and Chemical Properties.—Of all the varieties of wheat cultivated in this country, that which is known by the name of the *White Dantzic* is said to be the best, and yields a larger proportion of flour than any other. After the operation of grinding, the flour, or farinaceous matter, is separated from the bran by sifting or bolting. It is inodorous, and nearly insipid. Water, with which it has been macerated, becomes milky or turbid; according to Dr. Thomson, it affords precipitates with infusion of galls and the strong acids, and rapidly becomes sour. If wheat-flour be made into a paste, and washed in a large quantity of water, it is separated into three distinct substances; a *mucilaginous saccharine* matter, which is readily dissolved in the liquor, and may be separated from it by evaporation; *starch,* which is suspended in the fluid, and subsides to the bottom by repose; and *gluten,* which remains in the hand, and is tenacious, very ductile, somewhat elastic, and of a brown-grey colour. The first of these substances does not essentially differ from other saccharine mucilages. The second, namely, the starch, is particularly distinguished by its insolubility in cold water, but forms a transparent and gelatinous mass with that fluid when hot. M. Vauquelin found, that the flour which is used in Paris, consists of 72.8 parts of starch, 10-2 of gluten, 10 of water, 2.8 of a gummy kind of matter, and 4.2 of a sweet substance. Flour, kneaded with water, forms a tough, indigestible paste; but when a small portion of leaven or yeast, is added to the mass, it undergoes the panary fermentation, and produces bread, a small quantity of salt being added to give it sapidity. During the process, a large quantity of carbonic acid is evolved, but remains confined by the mass, in which it is expanded by the heat in baking, and thus raises the dough. This is the cause of the porosity or sponginess of well baked bread. "When flour has been long kept, it becomes musty, and undergoes the putrefactive fermentation, in which state the bread made with it is very unwholesome. Flour is fit for making bread only when all its constituents are entire; and as gluten is the most susceptible of decomposition among them, the ascertaining its presence is a proof of the goodness of the flour. M. Taddei has taught us that guiaic is a test of the presence of gluten, by striking with it a beautiful blue colour; flour, therefore, which exhibits this colour when rubbed with guiaic and a few drops of vinegar, may be pronounced good.*

Bread purchased of the common baker is often unwholesome; it is generally highly fermented for the purpose of increasing its bulk; and it is almost constantly too little baked, lest it should decrease in weight; added to this, it is not always certain that the flour is free from pernicious adulteration. Mr. Accum, in his Treatise on Culinary Poisons, informs us, that the inferior kind of flour which the London bakers generally use for making loaves, requires the addition of alum to give them the white appearance of bread made from fine flour. The baker's flour is very often made of the worst kinds of damaged foreign wheat, and other cereal grains, mixed with them in

* *London Dispensatory, p.* 540.

grinding the wheat into flour. The smallest quantity of alum that can be employed with effect to produce a white, light, and porous bread from an inferior kind of flour, he states to be from three to four ounces to a sack of flour weighing 240 lbs. "Another substance," continues Mr. Accum, "employed by fraudulent bakers, is subcarbonate of ammonia. With this salt they realise the important consideration of producing light and porous bread from spoiled, or what is technically called *sour flour*. This salt, which becomes wholly converted into a gaseous substance during the operation of baking, causes the dough to swell up into air bubbles, which carry before them the stiff dough, and thus renders the dough porous; the salt itself is at the same time totally volatilized during the operation of baking." Potatoes are likewise, and perhaps constantly used by fraudulent bakers, as a cheap ingredient, to enhance their profit; and there are instances of conviction on record, of bakers having used gypsum, chalk, and pipe-clay, in the manufacture of bread.

Although the flour of wheat is better adapted for the purpose of making bread than any other kind of flour, there are many other farinaceous vegetables, from the seeds or roots of which salutary and pleasant bread can be prepared. Oaten bread is common, not only throughout Scotland, but likewise in Lancashire, and several of the northern counties of England. In many parts of the former country bread is frequently made of barley meal, and pease meal; but the latter is dry, heavy, and difficult of digestion. In times of scarcity many attempts have been made to compensate for the want of corn, by the substitution of other vegetable substances, in the fabrication of bread. For this purpose recourse has been had to the herb *ragwort*, the thick root of which, when dried and ground, yields a fine flour, which is said to be easily digested and more nutritive than wheaten bread. The same properties and effects are attributed to radishes. From the acorn also a kind of meal is produced, which is said to make excellent bread, provided a little barley meal be mingled with it, to counteract its astringent qualities. In the wars of Westphalia, bread of this description was commonly used; and when made with milk was extremely pleasant and nutritious. The slightest preparation is sufficient to remove the harsh and disagreeable taste which the acorn has in its natural state. Roasting or boiling is all that is requisite to render it palatable. The acorns that are best calculated for this purpose are those of the white oak. A very good bread may be made of turnips boiled, and mixed with an equal quantity in weight of coarse wheat flour. Millet is sometimes used for the same purpose; and rice is converted by the Americans into a light, wholesome, and pleasant bread. Potatoes, mixed in various quantities with flour, make a wholesome, nutritive, and agreeable bread. M. Parmentier recommends the mixture of potatoes, in time of scarcity, with the flour of wheat, in preference to rye, barley, or oats; when no grain can be procured, he recommends the use of bread made from a mixture of the amylaceous powder of potatoes and their pulp, fermented with leaven and honey. Parmentier made bread very much resembling that of wheat, by mixing four ounces of amylaceous powder of potatoes, one drachm of mucilage extracted from barley, one drachm of the bran of rye, and half a drachm of glutinous matter, dried and powdered.

In the absence of any of the farinaceous vegetables which we have mentioned, various substitutes for bread have been employed in different parts of the world. By far the most valuable of these is the fruit of the Bread Tree, (Artocarpus *incisa*,) which grows abundantly in the South Sea islands. The fruit is about the size of a child's head, covered with a thick tough rind. When used instead of bread, it is roasted either whole, or cut into three or four pieces. In Iceland, Lapland, and other northern countries a kind of bread is made of dried fish, beaten first into powder, and then made up into cakes. In the lordship of Moscow, in upper Lusatia, a kind of white earth is found, of which the poor, in times of famine, have been compelled to make bread. Baron Humboldt informs us, that there are savages on the Oroonoko, who receive into the stomach large portions of potters clay; and in the western parts of Louisiana, the savage inhabitants are accustomed to eat great quantities of steatite, mixed with salt.

Starch. Wheat contains a larger portion of starch than any other substance; but it is also obtained from other vegetable substances, particularly tuberose roots, in which it exists apparently in a state of mechanical mixture. They are rasped or pounded, and diffused through a large quantity of cold water; the fibrous parts are removed after they have been well washed, while the starch is mechanically suspended by the water and falls to the bottom. The potato contains about one-third of its weight of starch, and this is the substance from which it is usually prepared; but most vegetable substances yield more or less starch, when treated in the same manner as the potato-root. *Arrow-root* is merely a variety of starch, which is obtained by an analogous process from the root of the Maranta *arundinacea*, a plant which is cultivated to a great extent in the West Indies. *Sago* is prepared in the same manner from the pith of various species of palms, and *tapioca* and *cassava*, are obtained from the Iatropha *manihot*, a South American plant. The substance commonly called *salep*, is also another variety of starch and is prepared from the bulbs of the Orchis *mascula*.

Starch is a white, insipid substance; insoluble in ether, alcohol, and cold water, but forms a jelly with hot water. Alcohol, infusion of galls, the acetate and nitrate of lead, and some other metalic salts, precipitate it from its watery solution. Both acids and alkalies combined with water dissolve it. The strong acids decompose it, especially the sulphuric and nitric acids; the latter converting it into malic and oxalic acids. If starch be digested in twice its weight of water, and 1-50th part of sulphuric acid, renewing the water gradually as it is evaporated, and stirring it occasionally, it is almost entirely converted into sugar. When exposed to a moderate heat it begins to swell, and is gradually changed into a brownish substance, which is used in calico printing, and commonly called *British gum*. According to M. M. Gay Lussac and Thenard, 100 parts of starch consist of 49.68 parts of oxygen, 6.77 of hydrogen, and 43.55 of carbon. The most delicate *test* of starch is iodine, which renders its solution in water, even when largely diluted, of a fine blue colour.

Gluten. This is obtained, as already observed, by forming wheat-flour into a paste, and washing it repeatedly with cold water. It is a tough, elastic, fibrous substance of a greyish colour, and when dried

semi-transparent, and much resembling glue. It has scarcely any taste, and bears a considerable affinity, both in its composition and properties, to the peculiar animal principle of the same name: it is dissolved by the acids and alkalies; the strong acids, decomposing it at the same time.

Signor Taddei, an Italian chemist, has lately ascertained that the gluten of wheat may be resolved into two distinct proximate principles, which he has distinguished by the names *gliadine*, (from γλια, gluten,) and *zimome* (from ξυμη, ferment.) They are obtained by kneading newly prepared gluten in successive portions of alcohol, until it is no longer rendered milky by the addition of water. The alcoholic solution being allowed to evaporate spontaneously, a small portion of gluten is at first deposited. and the gliadine remains behind of the consistence of honey, and mixed with a little yellow resinous matter, from which it may be freed by digestion in sulphuric ether. The portion of the gluten not dissolved by the alcohol is the zimome. Gluten appears to be one of the most nutritive of vegetable substances, and wheat seems to owe its superiority to all other grains from its containing it in larger quantities.

Medical Properties and Uses.—Medicinally, bread is employed to form emollient poultices; and is frequently the medium for those active medicines which are given in very minute proportions, in the form of pills. Toasted and infused in water it forms a grateful beverage for the parched mouth in fever; and is, or should be, the common drink of the dyspeptic. A solution of starch has been occasionally recommended as a demulcent for irritation of the fauces; but is now commonly used for injections when the rectum has been irritated or abraded by the passage of bile, or any of the acrid poisons.

Off. Prep.—Mucilago Amyli. L. E. D. Pulvis Tragacanthæ Comp.

SECALE CEREALE.—*Cultivated Rye.*—Plate 113.

Gen. Char. *Calyx* of 2 valves, solitary, 2-flowered, on a toothed, elongated receptacle.

Spec. Char. *Glumes* of the *calyx* bordered with minute parallel teeth.

Syn.—Secale, *Ger. Em.* 68; *Matth. Valgr.* v. 364; *Camer. Epit*, 190.
Secale cereale, *Lin. Sp. Pl.* 124; *Willd. n.* 1.; *Pursh. v.* 1. 90; *Host. Gram. Austr. v. t.* 28.

Foreign.—*Seigle*, Fr.; *Segale*, It.; *Centeno*, Sp.; *Roggen*, Ger.; *Rag*, Swed.; *Rog*, Dut.; *Rosch*, Russ.

To render our illustration of Medical Botany as complete as possible, we judge it indispensable to give an original figure

of the present species, and the diseased rye or Ergot. Rye we need scarcely observe, is a culmiferous plant, much more generally cultivated in Britain in ancient than in modern times; being only partially used in certain districts for making bread, or in the distillation of spirits. Its native country is unknown; but Mr. Pursh says, it frequently occurs, apparently wild, in North America; flowering in June. The root is fibrous and annual; the stem is jointed, slightly branched at the bottom, smooth; the leaves linear, glaucous, rough towards the apex; spike terminal, solitary, erect, three or four inches long; glume containing two flowers, and consisting of two opposite, oblong, pointed valves, smaller than the corolla; florets sessile; corolla of two valves, the outermost ending in a long straight, rough awn, four or five times the length of the glumes; filaments three, hanging out of the flower, with oblong, forked anthers; germen tarubinate; styles two, reflexed; stigmas cylindrical, feathery; seed solitary, oblong, somewhat cylindrical, naked.

Poisonous Effects of Ergot.—Most of the knowledge, says Dr. John Thomson, which we at present possess respecting *chronic* or *dry gangrene* has been obtained from watching the progress of the disease produced by eating *unsound rye*. This disease has seldom or never been observed in England, but is endemical in some districts in France, in which rye forms the principal food of the inhabitants. It occurs only, however, in those districts after very rainy or moist seasons; seasons in which that grain is liable to be affected with the particular disease, well known in France by the name of *ergot*, or the *cock-spur in rye*. Few seasons pass without the rye containing more or less vitiated grain; but in those years it is produced in such quantities as to form nearly one-fourth of the whole produce. It is in those seasons in which the ergot is most abundant that the mortification makes its appearance, and it has from this circumstance been naturally inferred, that this disease in the rye was the cause of the mortification.

The attention of the public was first called to this disease, in a particular manner, by M. Dodard, by a letter inserted in the Journal des Savans for the year 1676. In this letter he mentions, that it had been long known that those who made use of rye bread, containing much of this corrupted grain, were liable to be affected in their extremities by a gangrene, attended usually with but little fever, inflammation, or pain, but during which the use of the limb affected was destroyed, or the limb itself became dead, and separated from the body. The part affected became at first insensible and cold, and in the progress of the disorder, dry, hard, and withered. In very malignant cases M. Dodard mentions, that this mortification was attended with a greater or less degree of delirium. The account which this author gives of the symptoms and progress of this disease is evidently imperfect, and the only fact stated in his relation, which seemed decidedly to prove that the mortification was owing to the use of corrupted rye was, that the grain proves fatal to fowls that are fed with it. M. Saviard mentions having seen this distemper in the year 1694, at the Hotel Dieu of Orleans, when he had to perform some original operations. He contents himself with observing, that it is very frequent in Sologne; that it attacks those who eat rye affected with the cock-spur; and

that the upper and lower extremities of the patients, whom he saw, grew during the progress of this affection, as dry as touchwood, and as emaciated as Egyptian mummies.

In the year 1710 several accounts of this disease were transmitted to the Royal Academy of Sciences at Paris, by gentlemen practising physic and surgery in the districts in which it was known that season to have prevailed. In particular M. Noel, surgeon to the Hotel Dieu at Orleans, mentioned to the secretary, that about thirty people, men and children, affected with a dry, black, and livid gangrene had come that season into the hospital; that this affection always began in the toes, and extended itself gradually along the foot and leg, till it sometimes rose to the upper part of the thigh; and what is a singular observation, and one peculiar to himself, that he had not seen any female afflicted with this distemper, and had only in one case seen it affect the upper extremities. In some patients the gangrened part came away of its own accord; in others it became necessary to use scarifications and other topical remedies. In four or five instances death succeeded to amputation, because, notwithstanding the performance of that operation, the disease continued to extend to the trunk.

The history of one case was communicated to the Academy, in which the lower extremities were separated from the body, in the articulation of the heads of the thigh bones with the *acetabulum*. The example of this and of other cases in which these cavites were in the process of the cure filled up with new and sound flesh, is what probably suggested the operation of amputation at the hip joint.

It is particularly mentioned in this report, that this gangrene attacks only the poor and ill fed of the districts in which it occurs. The rye of Sologne, in the year 1709, contained, according to the relation of M. Noel, fully one-fourth of the cock-spur; and the poor had taken no pains to separate it from the good grain with which it was mixed. The same M. Noel, in a letter which he addressed many years afterwards to M. Quesnai, seems to be of opinion, that the diseased rye lost its malignant quality after a certain time; this period he limited to two or three months; but this opinion is not exactly confirmed by subsequent observations. During the thirty-three years in which M. Noel had been surgeon to the Hotel Dieu of Orleans, that distemper had appeared three or four times, and always in those rainy seasons in which rye contained a large proportion of the cock-spur. The disease in his patients had always existed for some time before those patients applied at the hospital for relief; so that he could not give any very accurate information from his own observation of the symptoms which manifested themselves; but he adds, that these unfortunate patients had often told him, that the disease generally began in one or both feet, with pain, redness, and a sensation of heat as burning as the fire; and that at the end of some days these symptoms ceased as quickly as they had come on, when the extreme sensation of heat which they formerly felt was changed into cold. "The part affected," adds M. Noel, "was black like a piece of charcoal, and as dry as if it had passed through the fire." After some time a line of separation was formed between the dead and living parts, like that which appears in the separation of a slough which has been produced by the application of the cautery, and the complete separation of the limb was, in many cases, effected by nature alone; in others he had recourse to amputation, which he found to prove sufficiently successful, unless in those patients who were very much worn out with the disease, or who had naturally very bad constitutions.

This disease appeared in Switzerland in the years 1709 and 1716; and a very accurate description of its symptoms and progress in that country has been given by Langius, a native of Lucern, in a Dissertation entitled, "Descriptio Morborum ex usu Clavarum Secalinorum."

M. Gassond, physician in Dauphiny, when this disease had appeared also in 1709, says, that many of the people were affected with swellings of

the feet, legs, hands, and arms, which degenerated into a gangrene that penetrated to the bone, and produced a separation of the affected limb; and which often required no assistance on the part of the surgeon, except to correct the deformity which it sometimes left behind. This gangrene was attended with different symptoms in different individuals; some suffered very violent pain, accompanied with insufferable heat, although the part affected felt cold to the touch. In other patients, redness, with much swelling supervened, attended by delirium and fever. Others were without these symptoms, though they seemed to suffer equal pain. In some patients the parts affected became withered, dry, and black like charcoal. The separation of the dead parts from the living took place with the most excruciating pain, and a sensation resembling that produced by the direct application of fire to the body. This sensation was sometimes intermittent, and in other instances it was succeeded by an equally harassing sensation of cold.

M. Bossau, surgeon to the hospital of St. Antoine in Dauphiny, has remarked some peculiarities in the history of this disease which are worthy of notice. This author says, that the gangrene which he had the opportunity of observing was not in every instance of the dry kind, but that the limb attacked with it sometimes became putrid, worms or maggots were generated, and a most insupportable stench exhaled; that these symptoms were not the same in every patient, but that they had this in common, that heat and cold were equally insupportable, that the disease was not communicable by infection, that it attacked indiscriminately men, women, and children, that there were now about four hundred parishes attacked with this disease, each of which contained six or more patients, and that between thirty and forty came to the Hospital, upon whom it was judged necessary to perform amputation of the arms or legs.

The degree of fatality attending the progress of this mortification in different districts appears to have been very various. M. Duhamel mentions, in the Memoirs of the Royal Academy for the year 1748, that of one hundred and twenty persons attacked, scarcely four or five had escaped with their lives. Langius mentions, that it was equally fatal in Switzerland. A calamity so serious, and recurring so often, would not fail to attract attention and stimulate the curiosity of medical men; and accordingly we find, that in France many attempts were made to discover the true source from which it proceeded. In attending to this subject it was soon observed, *that animals of every kind, except man, refused to eat rye affected with the cock-spur;* and that many of them would rather starve, than taste bread or food of any kind, into which a portion of it had, for sake of experiment, been introduced. Animals that were found to swallow it were observed to die of gangrene, which, in different animals, attacked different parts of their bodies. The observation of these facts, and the results of several trials made with the corrupted rye, seemed to leave no room for doubt with regard to the true origin of this disorder; but in the discussion of many of the questions relative to this disease, doubts began to be entertained by some, and experiments were made by a number of individuals to prove that the disease had its origin in other causes.

M. Model, a Russian apothecary, from some experiments, which are detailed in the thirteenth volume of Bomare's "Dictionaire d'Histoire Naturelle," was led to conclude that rye, vitiated with cock-spur, does not possess the quality of exciting gangrene in animals. He fed for some time hens, pigeons, and dogs, with food containing a portion of diseased rye, without observing any injurious effects to result; and this emboldened him to try the use of it on his own person. But the quantity of this substance which M. Model administered, or which he took himself, was greatly inferior to what the people, inhabiting the countries where the disease prevails, consume of corrupted rye in ordinary years, without being at all injured by it. His opinion, however, having been eagerly adopted by some men of great reputation in France, such as Parmentier, Schlegel, and Tillet, it became necessary to

bring its truth to the test of a fair trial, and to make such experiments upon this subject as should leave no further room for doubt or uncertainty. The Royal Society of Medicine in Paris employed M. Tessier to go into the countries where this gangrene prevailed, to collect a sufficient quantity of the cock-spur rye, and to institute such experiments as seemed best calculated to determine so important a point. The result of M. Tessier's observations and experiments are to be found in two Memoirs, inserted into the two first volumes of the Memoirs of the Society by which he was deputed. The first contains an account of all the facts which he could learn respecting the production of the cock-spur in rye; and the second an account of the results which he obtained, by feeding a number of animals with that substance. Some of those results are sufficiently curious to be deserving of particular attention. M. Tessier had learned in Sologne, and in the other districts of France, where this species of gangrene appears, that the inhabitants often eat rye with impunity for three or four months together, one fourth-part of which consists of cock-spur; and this fact served him as a guide in judging of the quantity that would be necessary to mix with the food of animals, which he had chosen for the subject of his experiments.

This first experiment was made on two wild ducks, male and female. He fed them with food containing one-seventeenth part of corrupted rye, and increased the corrupted rye till it formed one-ninth. At the end of the fifth day, drops of a very black coloured fluid were seen to ooze from the nostrils of the duck. By this time she had taken about an ounce and two drachms of cock-spur rye. The tongue had become yellow, swollen, and flabby. The beak became first brown, and then black, particularly towards the root. The skin covering it swelled and became cold, as well as the tongue, the point of which became also pale and sphacelated. The parts affected began to emit a bad smell, and the bird died between the ninth and tenth day of the experiment. During that period it had taken an ounce and seven drachms of ergot.

The drake was not sensibly affected before the eighth day, nor till it had taken eleven drachms of the poison. In this bird the tongue did not sphacelate, but the other symptoms were nearly the same as in the duck. Death took place on the fourteenth day, after two ounces and six drachms had been taken. On dissection, no marks of gangrene or inflammation could be discovered in the course of the alimentary canal.

The third experiment was on a turkey hen. She was seized with vertigo; her head assumed a violet colour, and the nostrils emitted a reddish coloured liquor. A diarrhæa came on, and she died on the twenty-second day. Marks of inflammation and gangrene were found in different parts of the alimentary canal. Gangrene had also attacked different parts of the body.

Experiments on pigs led also to results of a similar nature.

These experiments appearing to be sufficient to establish the injurious effects of the cock-spur rye, when used as an article of food, M. Tessier made a number of curious experiments to ascertain the degrees of aversion which animals show for this substance, either alone, or mixed with the substances with which they are usually fed. In all his trials he found it extremely difficult to disguise the rye so as to induce the animals to swallow, voluntarily, any portion of food into the composition of which the ergot was introduced.

These experiments of M. Tessier's in confirming the opinions of those, who believed that the use of this substance was the cause of those gangrenous diseases, which had repeatedly appeared as endemical in various districts of France, afforded also a simple explanation of the fact, that persons might live for a considerable time upon rye affected with the cock-spur, without suffering any sensible injury from its use; since, in all the animals upon which it was tried experimentally, a given quantity was required to produce the specific effect; and they suggested the only measure, that of separating the diseased from the sound rye, which could prevent so great a national calamity as that which had been so often produced by its use.

The spurred rye occasionally occurs in this country, but there are no instances recorded of its producing any such effects as those enumerated above; but in the Philosophical Transactions Dr. Woollaston has narrated several cases in which dry gangrene was produced in one family, by partaking of damaged wheat: the following was the result, at the time the paper was published:—"Mary, the mother, ætat. forty. The right foot off at the ankle: the left leg mortified, a mere bone; but not off.

Mary, ætat. fifteen. One leg off below the knee: the other perfectly sphacelated, but not yet off.

Elizabeth, ætat. thirteen. Both legs off below the knee.

Sarah, ætat. ten One foot off at the ancle.

Robert, ætat. eight. Both legs off below the knees.

Edward, ætat. four. Both feet off at the ancles.

An infant, four months old, dead.

The father, escaped by merely losing two fingers.

The wheat used, was what is called in Suffolk, where the family resided, "rivets," or "bearded" wheat.

Nearly the same effects were produced in a family in Wiltshire, by the Lolium *Temulentum*, entering largely into the composition of bread; for an account of which we refer to No. 1. of our work.

Qualities and Chemical Properties of Ergot.—The true nature of ergot has not hitherto been fully ascertained, notwithstanding the research and talent that have been brought to the investigation. Some have observed a viscid, fermenting juice in the glumes, previously to the formation of the ergot; while others have detected small larvæ, which being preserved have afterwards hatched into moths or butterflies. The Abbé Fontana planted in his garden a number of single grains of wheat and rye, and upon the top of each placed several grains of ergot. The result was, a crop in which both the wheat and rye were infected with ergot; which experiment indicates something like contagion in the disease, which may very possibly take place through the agency of insects.

In an Essay on the genus Scleroticum by De Candolle, in the "*Mémoires du Museum d'Histoire Naturelle,*" the ergot is stated to be a parisitic production belonging to this genus; but, however ingenious his investigations may be, their result is by no means satisfactory; and it is now generally concluded to be a diseased modification of the grain of the rye itself.

Spurred rye, in its native state is of a violet or brownish colour. Its size is very variable, some grains being less than healthy rye, and can scarcely be perceived in their husks, whilst others are from one inch to an inch and a half in length, and of a proportionate thickness. The spur is nearly cylindrical,

having its ends somewhat obtuse, at times a little pointed, and bent a little in the shape of a crescent. But there is a great variety in this respect, although in all the shape is more or less *monstrous*. They have generally a longitudinal depression or two running from end to end. Some grains have cracks, apparently from dryness; and others small cavities, apparently the bites of coleopterous insects. On being broken transversely, they snap like dried almonds; and internally display a greyish-white substance, closely covered by the coloured cortical part, which does not separate from it on ebullition. Viewed through a microscope, this fracture presents in its centre an appearance of white brilliant grains like starch, and towards the circumference a violet shading besprinkled with minute whitish spots. When reduced to a powder it is of an ash-grey colour, and is very dry. If quite fresh, spurred rye is of a disagreeable sickly odour. A certain quantity, after having been kept for some years in a close box, contracted the smell of putrid fish. It was also of a black colour, and almost all the grains were in a degree worm-eaten, with little of substance left except the cortical part, so that it was quite friable to the touch. However, no other traces of insects could be discovered about them. When snuffed up into the nostrils it produces a slight degree of irritation, like a small pinch of powdered tobacco, occasioning a tendency to sneeze, and a pretty abundant secretion of mucus. In the grain, and quite dry, spurred rye has scarcely any taste, and, on being chewed, leaves in the mouth a slight acrimony. But in the powder its taste is nauseous, bitter, and acrid, like that of corn when in a state of decay. On kneading, with warm water, the flour of rye affected with the spur, a fetid disagreeable smell is very perceptible. The paste is not adherent, and the bread has neither the consistence nor smell of the common rye bread.

Parmentier, who had some made with flour containing one-third of spurred rye, asserts that the bread was quite inodorous, and only slightly bitter. However it may easily be conceived, that the qualities of such bread must vary according to the greater or less quantity of the spurred rye entering into its com-

position, which in a natural way can scarcely ever equal that formed by Parmentier. According to Vauquelin spurred rye yields by analysis a yellowish-fawn coloured matter, soluble in alcohol, exhaling a smell like that of fish oil; a white oily matter of a bland taste; a violet coloured matter, insoluble in alcohol; a free acid, which appears to be of the nature of phosphoric acid; a vegeto-animal matter in considerable quantity, much disposed to putrefaction, and which on distillation furnishes a considerable quantity of thick ammoniacal oil; a minute quantity of ammonia, exhaling at the temperature of boiling water. It also appears from the result of the same analysis, that rye in its spurred state no longer contains any starch; that its gluten has become altered, and that it abounds with a thick ammoniacal oil, which is never to be met with in rye when in its sound state. The same chemist, wishing to clear up an important point, has made a comparative analysis of *scleroticum;* by means of wnich he obtained results so totally different, that he considers De Candolle's opinion to be quite erroneous.

Pettehnhoffer is said to have demonstrated in 1819 the existence of *morphine* in spurred rye ; and it is not improbable, but that future analyses of this curious production will lead to the discovery of an active principle, *sui generis,* on which its virtues as a medical agent depend.

Medical Properties and Uses.—No notice occurs of spurred rye as a uterine remedy till 1688, when Camerarius stated, that the women in certain parts of Germany were in the habit of employing it to accelerate parturition. From that period till 1774 no author had made mention of its being used; and it was only then that a very brief letter from Parmentier to the editor of the *Journal de Physique,* made known that it was frequently given as a child-bed remedy by Madame Depelle, a midwife at Chaumont, in the Vexin. But this letter, which is a mere announcement of the fact, contained no other information. It was reserved for M. Desgranges to make known more fully the singular property of ergot. Having met with several midwives in 1777 both in Lyons and its environs, who, from a tra-

ditionary knowledge, were accustomed to employ it with no little mystery, he at length made trials of it, which for the most part were crowned with success. He published at different times and in various journals the results of his practice, and specified the peculiar circumstances which admit, or contra-indicate the employment of this remedy. It is, therefore, to the zeal and knowledge of Desgranges that the world is indebted for the precise acquaintance of this valuable remedy, which he propagated with all his talents, against the strongest prejudice. When this discovery was first announced, it was only employed in the department of the Rhone and some of the frontier departments. Soon after its use began gradually to spread from various points throughout the kingdom, as may be proved by the number of cases published since in periodical works, by practitioners in the different departments. According to Dittmer, it is also used in different countries in Germany, and particularly in the environs of Ludwisbourg, in Wirtemberg, where it is principally in the hands of the midwives, who give it usually to be swallowed whole in its natural state, administering either five or nine grains for a dose, but always in odd numbers. At Florence, also, as well as in other parts of Italy; and in America this substance appears to be held in as much estimation as any article of the materia medica. And it is a singular fact, and well worthy of our notice, as tending to establish its claims, that its property of acting specifically on the uterus was first announced to the public of America by Dr. Stearns of New York State, in 1807; who, according to a statement by Dr. Bigelow, published in No. 2. Vol. 5. of the New England Journal of Medicine and Surgery, was ignorant of its ever being so employed in Europe: "The use of this article in medicine," says Dr. Bigelow, "is, to the best of our knowledge, an exclusively American practice, and if it is now introduced into any part of Europe, it must be from the publications of this country."

Like all other powerful remedies, the use of ergot might inadvertently be abused. It is therefore necessary to lay down some general rules for its administration.

(1st.) It must never be given when there is malformation of the bones of the pelvis, or of the soft parts of the mother, capable of opposing any remarkable obstacle to the passage of the fœtus. If the dimension of the pelvis be less than three inches and a half between the pubes and sacrum, the expulsion of a full grown fœtus will be very difficult; in which case the *ergot,* by exciting strong uterine contractions, without overcoming the mechanical obstacle, might produce rupture of the uterus itself; and in a case that lately occurred in the vicinity of London, it is very evident that the disproportion between the size of the child's head and the pelvis should have prevented the medical attendant from employing this powerful agent. A similar inconvenience might result too, if the passage were obstructed by any large tumour, or by any excessive rigidity of the orifice or sides of the vulva.

(2d.) The os uteri should be supple and yielding, and partly dilated; and the time of parturition should have decidedly commenced, or already existed for some time.

(3d.) It must not be used so long as the natural pains are efficient, and competent to the end; for art should never precede nature in hastening the natural act of delivery.

4th. The fœtus should be presenting in such a manner as to be expelled naturally; there being no necessity to change its position; nor should its bulk be too great for the natural passages. If it be, the ergot cannot with propriety be employed till that bulk is reduced.

(5th.) If the labour be accompanied by flooding, convulsions, syncope, &c. it may be sometimes employed with great advantage, provided the membranes are ruptured and the os uteri dilated.

(6th.) It may be used very often with much advantage in every kind of premature labour; and at full time, when the placenta is not thrown off, and the uterus is found in a state of atony.

(7th.) When flooding takes place after the rupture of the membranes; the os uteri well dilated; the pains feeble, but the child well situated.

(8th.) When the head of the child has been left in the uterus by being separated from the body.

(9th.) When the uterus is painfully distended with coagula.

The ergot powdered is the most simple of the preparations, and its properties are most apparent in proportion to its freshness and fineness. The dose usually given is from ten to sixty grains, and even more, during the labour; in a small wine-glass-full of barley water, capillaire and water, cinnamon water, or other convenient vehicle. As we must for the most part be ignorant to what extent this substance may act, and as there might arise much inconvenience in hurrying a labour too much, we ought never to exceed twenty grains for the first dose; and even this had better be given in two proportions after a short interval. But if at the end of an hour, it should produce no apparent effect on the uterus, we may give a scruple for a dose; and should it become necessary to administer it a third time, we may then give thirty grains. It may be easily imagined, that the manner of giving the spurred rye may vary infinitely; and that what we have advanced on this subject is far from constituting an invariable rule; as the ergot may be prescribed in different ways, according to the circumstances of the patient, and the particular views of the practitioner. We ought however to observe, that when given in doses too small, it only produces very weak muscular contractions of the womb, which serve to fatigue and wear out the strength of the patient instead of inciting that organ to expel its contents.

The *infusion*, or *tea of black rye* of the American practitioners, is made by infusing a drachm of the powder in a wine-glass of boiling water, till cold. To this preparation many persons give the preference, and administer half the quantity at the interval of an hour. Some persons boil the same proportions for a quarter of an hour, and this constitutes the *decoctum parturiens* of some writers.

M. Villeneuve, and many others, recommend the ergot to be administered in *lavements*, whenever there is too much susceptibility of stomach, nausea, or vomiting, and repugnance on the part of the patient to swallow it. It is of course given in this

manner in much larger doses, two or three drachms being boiled in half a pint of water; and administered at intervals as may be necessary.

The action of the ergot appears to be specifically upon the uterine fibres; urging them sooner or later to more or less violent contraction. It is not the alternate contraction alone that is increased by this substance; the tonic, which is of much more value, is also powerfully augmented; since it can, in consequence of this power, be most advantageously employed, in many cases where this effect is all-important. In this respect it appears different from other stimuli, which may exert an influence upon this organ; such as opium, volatile alkali, &c.; or the mechanical stimulus of the forceps, vectis, or the hand. Dr. Dewees states that he never witnessed any exaltation of the power of the arterial action from the exhibition of ergot, which is contrary to our own experience; as in several cases in which we have tried it it has increased the fulness and frequency of the pulse; produced a glow of skin; and it has also been known to excite nausea, vomiting, and vertigo.

Each of the stimulants just referred to has been known to rouse the ultimate contractions of the uterus into a temporary, and sometimes successful action; but after neither does the tonic contraction follow, with any degree of certainty; on the contrary, inertia of this organ is very apt to follow their employment. Thus hæmorrhage sometimes succeeds the use of either of the remedies just named; but extensive inquiry will justify the declaration that no such consequence arises from ergot. A very remarkable fact, is, that spurred rye does not appear to exert any very decided action upon the uterus, excepting when that organ has already put on the disposition to expel its contents. The experience of many years proves this important fact; and it will be found on investigation that amongst the many accidents that are said to arise from its use in bread, that no mention is made of abortion or premature birth, as its immediate effect. We therefore consider this as a settled point, strengthened as it is by the knowledge, that it is familiarly used near Lyons to aid the parturient cow; France being the country in which the most in-

genious methods are employed to accomplish this object; the desire for which, however urgent, proves a refined depravity, from the stigma of which, England is happily free.

It is a singular fact, that the Chenopodium *olidum* which has been proved by Mr. Houlton, and subsequently in our own practice, to have a *direct* action as an emmenagogue, agrees in its sensible properties with those of the ergot; and to preserve the particular odour of the latter, it is absolutely necessary that it should be kept whole in a glass bottle with a ground stopper; and only powdered when required for use; nor should it, if possible, be used when it exceeds a year in age; for, like every other vegetable substance, it is easily acted upon by heat and moisture; and its producing no effects in the practice of some can only be accounted for by its being effete; a circumstance of no uncommon occurrence, especially in this country.*

In a case of profuse hæmorrhage which lately occurred in our own practice, we found the membranes entire, the os uteri dilated to the size of a crown piece, attended by complete inertia of that organ. On examination, the placenta was not to be found within reach: we therefore discharged the liquor amnii, but without arousing the expulsive efforts. We then had recourse to scruple doses of ergot, given at an interval of ten minutes, and before a quarter of an hour had elapsed the pains came on, the hæmorrhage ceased, and the child was soon expelled; the placenta followed in due time, and no untoward symptom ensued.

Those of our readers who may be inclined to investigate the subject still further, may consult the following works, to all of which we are much indebted:—Professor Thomson's (of Edinburgh) Lectures on Inflammation; Dr. Neale on the Ergot of Rye; Mitchell's Difficult Cases of Parturition; the American Medical Journals; the Medical Repository, and the Lancet, *passim*.

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* That scientific pharmaceutical chemist, Mr. Morson, of Southampton Row, has a large quantity of ergot at this time for sale, which we pronounce to be in the highest state of perfection.

HORDEUM VULGARE.—*Common Barley.*

GEN. CHAR. *Calyx* lateral, 2-valved, single-flowered, ternate.

SPEC. CHAR. *Flowers* all perfect, awned; two of the rows more erect than the rest.

Syn.—Hordeum polistichum verum, *Ger. Em.* 70.
Hordeum vulgare, *Lin. Sp. Pl.* 125.; *Errh. Pl. Offic.* 421.; *Lob. Icon.* 28.; *Host. Gram. Anstr. v.* 3. 35.

FOREIGN.—*L'orge avancé*, Fr.; *Orzo*, It.; *Cebada romana*, Sp.; *Gemeine Gerste*, Ger.

NEXT to wheat, the most valuable grain is barley. It is an annual plant, and is said to have been found wild in Sicily and Russia. The flowers are disposed in four rows, on a common receptacle or main stalk, which is elongated into a long, flat, jointed spike or ear. The glume, or outer chaff, consists of two narrow, pointed valves, one half shorter than the corolla, each containing a single sessile flower; the corolla or inner chaff is ovate, concave, and terminates in a very long, flat, serrated awn or beard. The filaments are capillary, shorter than the corolla, with notched anthers. The seed or grain is ovate, channelled, and firmly coated with both valves of the corolla. This is the barley most generally cultivated; but Hordeum *distichon*, two-rowed barley, is the species admitted into the Dublin Pharmacopœia, from which the pearl barley of the shops is said to be principally prepared.

Barley is used in some countries for making bread; but it is chiefly cultivated for the purpose of forming malt liquors or distilled spirits. To prepare *malt* barley is the grain usually employed. It is steeped for two or three days in water until it swells, becomes tender, and imparts its colour to the liquid. The water is then withdrawn, and the grain is spread out on the floor to the depth of two feet, where its

temperature rising spontaneously, it begins to germinate, bursting and shooting out the radicle. This process is soon stopped by spreading the grains over a large surface, and turning them repeatedly, which is continued for two days; after which they are again made into a heap, and allowed to remain in this state till they turn warm, and are then dried in a kiln by a gentle heat. *Beer* is made from malt previously ground by a mill. This is put into a large vessel or tub with a false bottom, termed the mash-tub; hot water is poured upon it, and the whole stirred up at intervals. The temperature of the water in this operation, called Mashing, must not be equal to boiling; for, in that case, the malt would be converted into a paste, from which the impregnated water could not be separated. This is called Setting. After the infusion has remained for some time upon the malt, it is drawn off, and is then distinguished by the name of sweet wort. By one or more subsequent infusions in water, a quantity of weak wort is made, which is either added to the foregoing, or kept apart, according to the intention of the operator. The wort is then boiled with hops, which give it an aromatic, bitter taste, and render it less liable to be spoiled in keeping; after which it is cooled in shallow vessels, and suffered to ferment, with the addition of a proper quantity of yeast. During the fermentation, an internal commotion takes place in every part of the liquor, caused by the extrication of gas, raising to the surface a quantity of yeast, in which the air bubbles are enveloped. After this fermentation has continued a certain time, and the head does not seem likely to rise any higher, it is necessary to put a stop to it, as it would be succeeded by the acetous fermentation; this being called the vinous, producing alcohol or spirit. This is performed by drawing off the beer, and putting it into small casks, where it continues to ferment, and discharge yeast for some time, the casks being filled up as they diminish in their contents. When the working ceases, the casks are bunged up, and the beer set aside for table. The strength and quality of the liquor differs greatly according to the nature of the grain, the particular substances that have been added to flavour it, the length to which the fermentation is allowed to proceed, and the various manipulations which are adopted by different manufacturers, both in the preparation of the malt and in the subsequent processes.

Pearl barley is prepared in Holland and Germany, by first moistening and shelling the grains, and then grinding them into round granules, in a mill. Pearl barley consists principally of starch, with a small portion of gluten, mucilage, and saccharine matter.

Uses.—Barley bread is much used by some northern nations; but it is less nutritious than that prepared from wheat or rye. The decoctions of barley, barley water, and barley broth, are well known. The former is much employed as an agreeable and wholesome nourishment for the sick, and barley water, acidulated with the juice of lemons or oranges, forms one of the most salutary beverages in febrile diseases. Sweet wort was formerly

much used as an antiscorbutic in the navy; and a cataplasm of yeast, with barley meal, or ground malt, is sometimes employed as a stimulant and antiseptic, to foul spreading ulcers and gangrenous parts. When properly fermented, of a moderate strength, and used within the limits of propriety, malt liquors are refreshing, wholesome, and considerably nutritive. It is a common observation, that those who drink sound malt liquors are stronger than those who drink wine; and to those who are trained to boxing and other athletic exercises, home-brewed beer is particularly recommended. Hence Jackson, the celebrated trainer, affirms, that if any person accustomed to drink wine would try malt liquor for a month, he will find himself so much the better for it, that he would soon take to the one and abandon the other. Malt liquors are divided into small beer, strong beer, ale, and porter. Small beer, and the weaker ales, are refreshing, gently stimulant, and nutritive drinks. Porter, and the stronger ales, are exceedingly nutritious, and strengthening when used within the limits of sobriety; but these liquors, can seldom be procured genuine, at least in London.

Off. Prep.—Decoctum Hordei L. E. D. Decoct. Hordei Compositum, L. D.

AVENA SATIVA.—*Common Oat.*

Gen. Char.—*Calyx* 2-valved, many-flowered; with a twisted awn on the back.

Spec. Char.—*Panniculed,* calyces 2-seeded; *Seeds* very smooth, 1-awned.

Syn.—Avena, *Camer. Epit.* 191; *Fuchs. Hist.* 185.
Avena sativa, *Lin. Sp. Pl.* 118; *Willd.* i. 443.

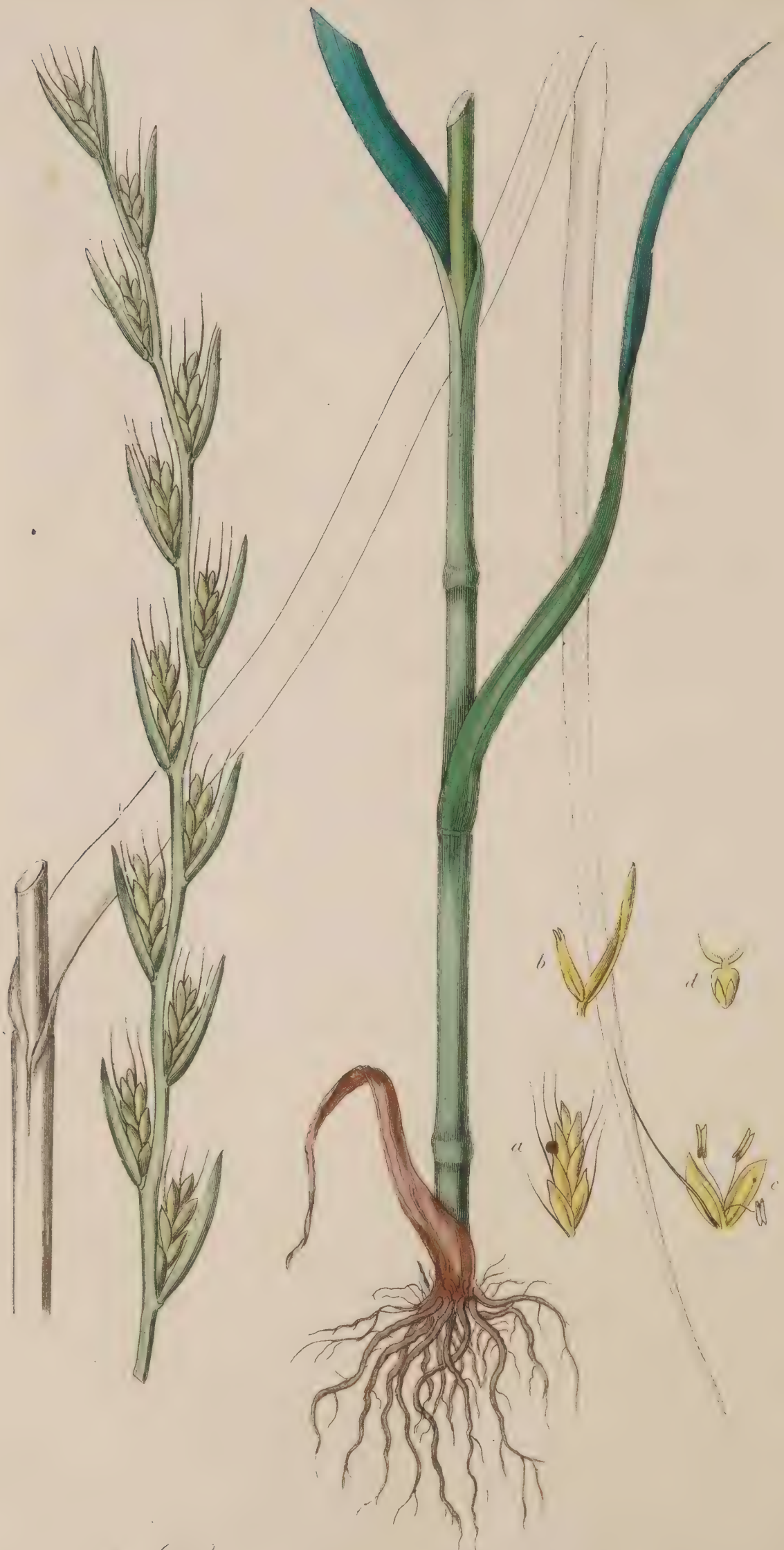
Foreign.—*L'avoine cultivée,* Fr.; *Tuttenhaver,* Ger.

The Oat was found by Anson growing wild upon the island of Juan Fernandez, but no one has been able to ascertain satisfactorily the place from whence it was first brought to Europe. The

root is an annual, sending up a culm or straw, about two feet in height. The inflorescence is in a loose pannicle, with the subdivisions on long pendulous peduncles. The two glumes or chaffs of the calyx are marked with lines, pointed, unequal, and longer than the flower. There are usually two flowers and seeds in each calyx; they are alternate, conical, the smaller one is awnless, the larger puts forth a strong, two-coloured, bent awn, from the middle of the back. Of this grain the varieties are more numerous than any other of the culmiferous tribe; but in this country, that which is called the *potatoe oat*, is considered the best.

Qualities.—M. Vogel could detect no gluten in oats; but he obtained an azotized substance, destitute of elasticity, and having no resemblance to gluten. Oats contain, besides fecula or starch, a saccharine matter, a bitter principle, and a fixed oil, of a yellowish green colour.

Uses.—The flour or meal made into cakes and pottage, is the common food of the country people in the north. Grits, or oats freed from their cuticle, are much used in making broths and gruels. They are wholesome and gently laxative. Gruel, is prepared by boiling either the meal or grits, for a proper length of time, in water. It is moderately nutritive, and demulcent, hence it is frequently prescribed in inflammatory diseases, diarrhœa, cholera, dysentry, and other diseases. The meal boiled in water forms an excellent suppurative poultice.



Lolium temulentum

d by J. Churchill Leicester

LOLIUM TEMULENTUM.

Bearded Darnel.

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

Nat. Ord. GRAMINA, *Lin.* GRAMINEÆ, *Juss.*

GEN. CHAR. *Calyx* of one valve, fixed or permanent, inclosing several flowers.

SPEC. CHAR. *Spike* awned. *Spikelets* compressed, shorter than the calyx. *Florets* elliptical, of equal length with the rigid awn. *Root* annual.

Syn.—Lolium album, *Raii. Syn.* 395, 1; *Ger. Em.* 78; *Park,* 1145.
Lolium, n. 1420, *Hall. Hist. v.* 2. 205.
Lolium album, *Ger. Em.* 78, *f.*; *Raii Syn.* 395.
Crachalia temulenta, *Schranc. Fl. Bat.* 255.
Bromus temulentus, *Bern. Erford.* 419.
Lolium temulentum, *Lin. Sp. Pl.* 122; *Willd. v.* 1. 462; *Stokes v.* 3. 161; *Fl. Brit.* 150; *Eng. Bot. v.* 16. *t.* 1164; *Hvok. Scot.* 45; *Host. Gram. v.* 1. 20. *t.* 26.

PROVINCIALLY.—*Intoxicating Darnel; Annual Rye-grass; White Darnel; Annual Darnel-grass. Droke,* Yorksh.; *Sturdy,* Ireland; *Drill,* Isle of Thanet.

FOREIGN.—*Ivraie* or *Ivroie,* Fr.; *Loglio,* Ital.; *Jakrige Loch, Germaine Loch, Somme Loch, Schassgrass,* Ger.; *Joyo, Zizania,* Span.; *Heyre, Heyregrass,* Dan. *Kukol.* Russ.

THIS is one of the rarer British grasses. It has been, generally, regarded as not unfrequent in many parts of England; and we had never been able to meet with it, excepting once in Battersea fields, till during the last summer, when on a visit at Mersea island; it was pointed out to us as growing amongst wheat, on a farm at East Mersea, and on another at Peldon. Dr. Bouè, of Geneva, in his Inaugural Thesis, published at Edinburgh in 1817, enumerates it among the scarce plants of Scotland.* Dr. Hooker, in his *Flora Scotica,* informs us, that it is occasionally found in the neighbourhood of Glasgow. It is an annual, growing spontaneously in corn-fields among wheat, barley, and flax; and flowering in July.

The culm or stalk is rough in the upper part, erect, cylindrical, striated, three or four feet high, and clothed at the

* *Diss. Inaug. de Methodo Floram Regionis cujusdam conducendi, p.* 12.

joints, which are from three to five in number, with linear pointed leaves, a foot or more in length, rough on the upper surface, but smooth below, and of a pale green colour. The sheaths are roughish, striated, and crowned with a short, blunt ligula, slightly notched at the edge. The inflorescence is an erect spike, frequently a foot or more in length. The spikelets are erect, sessile, disposed in two rows, alternately along the rachis or common receptacle, each containing many flowers. The single valve of the calyx is the length of the spikelet, awl-shaped, and without any awn; the terminating flower of each spikelet, and frequently the lower ones, are furnished with a minute elliptical, inner valve. The corolla consists of two unequal valves; the outer only half the length of the calyx; it is edged with white, and puts forth below the tip a straight awn, twice its own length. The filaments are three; capillary, shorter than the corolla, and supporting oblong anthers, cloven at each end. The germen is turbinate; styles two, very short; stigmas feathery along the upper side. The seeds are solitary, elliptical, convex on one side, compressed, and attached to the inner valve of the corolla. In some specimens the awns are very short, or altogether wanting. Lolium *arvense* is very nearly allied to this species, but differs in having the spikelets mostly destitute of awns, and the spicule, and calyx, of equal length. *Fig.* (*a*) spikelet; (*b*) under calyx; (*c*) floret; (*d*) germen, and styles.

This is the only species of the extensive natural order, Gramina, that is known to possess deleterious qualities. It is the αιρα of Dioscorides, of Theophrastus, and Galen; the Zizania, or Zinzania of the Arabians: and is generally met with in corn-fields, espepecially amongst wheat, where to a bad farmer it proves a troublesome, and noxious weed. As such it is referred to by Ovid:—

———"Lolium, tribulique fatigant
Triticeas messes, et inexpugnabile gramen."
Ovid. Met. lib. v. v. 485.

And in allusion to this, the term LOLLARD was given as a reproach to a religious sect, which arose in Germany about the beginning of the fourteenth century:* also to the followers of

* Since this article was written, we entertain some doubts as to the correctness of this passage, for on perusing the Eclectic Review for December, we find that in an animated conversation which took place between a Waldensian clergyman, and the Rev. W. Gilly, A.M. Rector of Fambridge, Essex, the former asks, "Whence came

Wickliffe in our country, who were considered by the enemies of the Reformation, as pernicious weeds in Christ's vineyard, choking and destroying the pure wheat of the gospel.

Virgil, in his Georgics, (lib. i. v. 154,) refers to the plant :—

——— "interque nitentia culta
Infelix lolium et steriles dominantur avenæ."

And again, in his fifth Eclogue, (v. 36.)

"Grandia sæpe quibus mandavimus hordea sulcis
Infelix lolium, et steriles dominantur avenæ."

While the late Professor Martyn, in his notes to Virgil, remarks, that the word "*dominantur*" is very proper, "for these weeds grow so tall that they overtop the corn."

"Being an annual plant, (remarks Mr. Sinclair, in his Hortus Gramineus Woburnensis,) it may be easily kept under, or totally extirpated, by the practice of the drill mode of husbandry."

The generic name, Lolium, appears to be derived from the Greek, δολιος, *deceitful, base, counterfeit,* an opinion having prevailed amongst the ancients, that several species of the noxious weeds which infest corn-fields, are only species of grain, in a degraded, or corrupted state. Wild, or barren oat, the Ægilops of Pliny, they conceived to be a degenerated oat, and Darnel, in like manner, to be an inferior kind of wheat, or barley. Thus Plautus—

"Mirum est *lolio* victitare te, tam vili *tritico*."*

And so prevalent was this idea even during the last century, that Linneus wrote a dissertation expressly to refute it. "It seems highly probable," says Milne, "that the Greek ξιξανια, which occurs in the 13th chapter of St. Matthew's Gospel, Darnel would have better conveyed the meaning than *Tares*." And in accordance with this view of the subject, the French always translate it Ivraie, (ivroie) from *enyvrer,* to render drunk.

Qualities.—The seeds are inodorous, and have a slight bitterish, disagreeable taste. They are said to redden the blue colour of vegetables; but their chemical properties and composition have not been hitherto ascertained.

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your term *Lollards,* but from a Waldensian pastor, *Walter Lollard,* who flourished about the middle of the thirteenth century?"

* *Mile's Glorios.* act. ii. sc. iii. v. 50.

Poisonous Effects and Morbid Appearances.—Haller* states, that this species of Lolium possesses intoxicating effects, as its trivial name *temulentum* implies; and whether baked into bread, or fermented in ale, it is attended by very disagreeable, and even fatal effects. It produces headache, vertigo, vomiting, lethargy, drunkenness, difficulty of speech; and the tongue exhibits a very strong trembling: while Seeger remarks, that a trembling of the body is one of the most certain signs of poisoning by this plant. It also affects with blindness for several hours, and is thus commemorated by Ovid in his Fasti:†

"Et careant loliis oculos vitiantibus agri
Nec sterilis culto surgat avena solo."

And this property has given rise to the proverb, "He feeds on Darnel," which refers to a dim-sighted person: thus Plautus in the scene referred to above, where Palæstro enquiring what Sceledrus meant by his living on Darnel, receives this answer, *Quia lusciosus*, "because you are purblind." By the Chinese laws (for this plant is found in China, and Japan) it is forbidden to be used in fermented liquors. According to Withering, dogs are particularly affected by Darnel; geese, and horses, are killed by it; but a small quantity mixed with their food, is said to fatten chickens, and hogs.

The subjoined cases, communicated to the Editors of the Medical and Physical Journal, in the year 1799, by Mr. Marsh, surgeon to the 2nd Wiltshire Militia, fully illustrate the symptoms produced by the Lolium *temulentum* in England; and it will be perceived, that the bread, of which it was composed, excited the more violent effects when eaten hot: a fact previously noticed by Linneus.

"In the month of September a sack of leased wheat, with an equal quantity of tarling wheat, (*i. e.* the refuse seeds which pass the sieve,) abounding very much with darnel (lolium), which by the generality of people, where the plant is much known, is called *cheal*, were ground and dressed together, and in the evening about ten o'clock bread was made of a part of it. Of this bread James Edmonds, about thirty-three years of age, and Robert his son, aged thirteen, eat the next morning about three o'clock; at five

* Haller. *Hist. Stirp. indig. Helv. vol. ii. p.* 206.
† Ovid. *Fast. lib. i. v.* 692.

(two hours after) James became sick, and giddy, vomited, and purged much, felt pain and tightness in the calves of his legs, was confined at home the whole day, but on the following day was so far recovered as to be able to resume his work. Robert eat, during the day, about a pound and a half of this bread, and at night, on his return from his work, he eat more of the same; he felt giddy, and had pain of the head during the whole of the first day, with great pain and tightness of the legs, especially of the calves of the legs, extending to the ancles, attended with redness, and swelling, and itching of the skin, but it did not vomit or purge him till the third day. James, eleven years old—John, three—and Elizabeth, four—all partook of this bread the following morning about nine o'clock. They soon became giddy, were sick, vomited and purged greatly, their legs became painful, felt excessive tight, were swelled, inflamed, and itched much, and continued in that state eight or nine days, when the symptoms gradually disappeared, producing in one of them only (James) a small collection of a gelatinous fluid, in the inside of the foot. But with Robert, who eat with his father at three o'clock in the morning, and also in the evening, and who was not vomited and purged till the third day, the pain and inflammation continued to increase till it terminated in gangrene; sphacelus succeeded, and he was under the necessity of suffering amputation of both legs. Very little general fever accompanied this till the latter stage of the disease, which, it is presumed, was the effect of absorption. The remedies made use of in this case (and that too without any sensible advantage) were, in the beginning, evacuants; in the latter state, camphor and bark, with the use of spirituous fomentations and antiseptic cataplasms. It should however be remarked, that this poor family lived at seven or eight miles from medical assistance, and therefore they were not attended till two or three days after their attack.

" In several cases which have since occurred, as soon as the legs became painful, attended with inflammation, and swelling, scarifications were made of considerable length, and depth, which, with evacuants in the very first stage, and afterwards large doses of camphor, with nitre, and opium, occasionally, have been attended with success.

"It may perhaps be worthy of notice, to remark that this plant seems to have produced more deleterious effects when eaten quite new, and warm, which was the case with James, and Robert, at three o'clock in the morning, and there is no doubt but the father would have suffered equally with the son, had it not so soon been thrown off the stomach. There is also another circumstance to be noticed, which is, that all the patients I have seen have universally complained of violent pain in the calves of their legs, and expressing their pain nearly similar, viz. as though their calves were very tightly bound with cords."

In the second volume of the "*Histoire de la Societé Royale de Medicine à Paris,*" it is likewise stated that a farmer, his wife, and servant, eat bread made with darnel and wheat. The two latter were attacked with vomiting and purging, and refused to partake of more. The farmer continued to use it the three following days, and died after suffering the most severe colic pains. But the affection of the calves of the legs, as noticed by Mr. Marsh, is not spoken of.

During the blockade of Genoa, in 1800, some speculators in grain, mixed darnel with wheat, in their supplies. And a family of five individuals having eaten of flour bought in the public market, were all of them soon after seized with dimness of sight; confusion of ideas; prostration of strength; trembling; restlessness; depression of spirits; and cold rigors, especially in the extremities. These were most severe; attended with a disposition to vomit; and continued longest in the maid servant, who had eaten the largest quantity.

Dr. Cordier, in a paper addressed to M. Orfila, describes the effects produced upon himself by the ingestion of bread made of the farina of the seed of Lolium *temulentum.* It was taken in the quantity of six drachms, without other food, early in the morning; and had a peculiar slightly disagreeable taste. Distraction of thought; indistinct vision; torpor, accompanied with general uneasiness, debility, and drowsiness, succeeded by efforts to vomit, speedily came on. Tremor of the limbs; part of the bread rejected by vomiting; great depression; speech difficult; slept for a few minutes; vomited the remainder of the bread with much colourless mucus; slept again at intervals, taking only a

little soup, without appetite, till evening, when weakness and inappetence only remained. Next day, convalescent; but yet a sense of uneasiness in the epigastrium, accompanied by eructations of a peculiar taste, continuing on the following days, and still perceptible in bread containing some portion of darnel. Dr. Cordier was prevented from ascertaining the state of the circulation, and respiration, by the general disorder of the system. He concludes from it, that darnel should be ranked amongst the stupifying narcotic poisons; and that its action is especially exerted on the cerebral, and nervous systems. The position of many naturalists, respecting the similarity of properties possessed by plants of the same natural family, is thus moreover controverted.*

Dr. Beck, in his valuable work on Medical Jurisprudence, remarks, "that it has been a subject of some interest and inquiry whether the spotted fever which ravaged several districts in the United States some years since, had its origin in part, or altogether from eating this substance, combined with grain. The facts adduced are very unsatisfactory; and lead to no definite conclusions." Some observations on the subject are contained in the New-England Journal, vol. v. p. 133, 156, and 285, by Professor Bigelow.

In the years 1722-23 an epidemic prevailed in Muscovy, which was also attributed to Darnel. Medical men were appointed by the government to investigate the subject, and the following were the appearances observed on dissection.

In apertis cultro anatomico cadaveribus omnes partes ac organa tam externa quam interna emaciata, exsucca atque flaccida erant. Cor et vasa sanguifera parum cruoris retinebant. Ventriculus erat tenuis et contractus ad magnitudinem pugnæ minoris manus, aliquid lymphæ continens: Intestina flatibus reperiebantur turgida: pulmonis et omenti substantia putrida et fere consumpta: hepar maxima ex parte sphacelatum. Hæc facies erat morborum epidemicorum apud adultos. Apud infantes vero cladem enormiorem excitabant variolæ pessimi moris,

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* Vide *Med. Repository, vol.* xiii. *p.* 260.

confluentes et nigræ cum febre maligna, ut plurimum mortem post se trahentes.*

Medical Properties and Uses.—It will hence appear that both ancient † and modern writers fully agree as to the intoxicating qualities of Darnel grass: and from its resemblance to barley, we fear that beer not unfrequently owes its powers to it; being credibly informed, by an eminent practical botanist, that two acres of ground, in Battersea fields, were lately cultivated with it; and we know no other purpose to which it could be applied. As a medicine it is not now employed: but was used internally by the ancients in cephalalgia, sciatica, gout, &c. and Aretæus administered it in pleurisy. According to Boerhaave, "it resists putrefaction, if applied externally; and from its cleansing quality, proves highly efficacious in disorders of the skin." Galen applied it to wounds, mixed with vinegar; and Celsus recommended the meal of Lolium to be used in poultices. "Gravioribus vero doloribus urgentibus, cataplasma imponi quoque conveniet, vel ex lolio, vel ex hordeo, cui pinguis fici tertia pars sit adjecta." ‡

As we have not witnessed the effects of Darnel, we cannot offer any practical information, as to the *treatment* required. Mr. Marsh, however, has pointed out the plan which has proved successful in several cases: and one of our Gallic neighbours, after describing in general terms the symptoms it produces, says, "*il faut provoquer le vomissement avec un grain d'emetique dans beaucoup d'eau tiede, et boire ensuite beacoup d'eau et de vinaigre.*"

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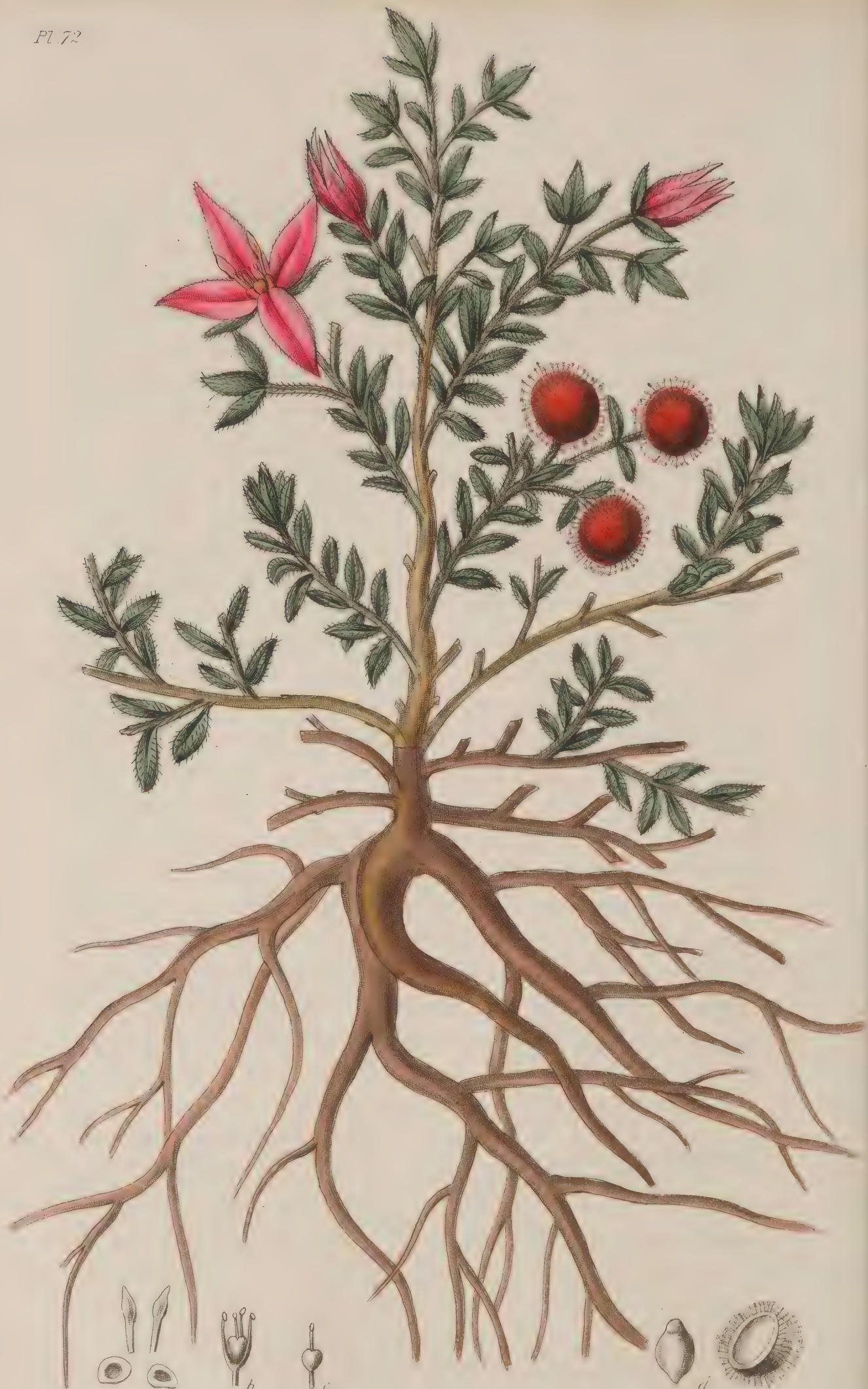
* Schœber, in *Acta Erud. Ann.* 1723. *p.* 446.

† Vide *Aristoteles. l.* V. *de sommo et Vigil. c.* 3. Theophrastus *Eres. Hist. Plant. l.* 8. *c.* 5. Plin. *Hist. Nat. l.* 18. *c.* 17. Galen. *l.* 17. *simpl. et lib.* I. *de Aliment. Facult.*

‡ *A. Corn. Cels. de Med. lib.* viii. *cap.* 9.



Krameria triandria.

Weddell sc.

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

KRAMERIA TRIANDRA.

Triandrous, or Peruvian Krameria.

Class IV. TETANDRIA.—*Order* I. MONOGYNIA.

GEN. CHAR. *Calyx* 0. *Petals* 4. *Nectaries* 2; the superior 3-parted, the inferior 2-leaved. *Berry* dry, echinated, and containing one seed.

SPEC. CHAR. *Leaves* oblong-ovate, pointed. *Stamens* 3.

Syn.—Krameria triandra, *Ruiz. Fl. Peruv. tom. i. Icon.* 93. *Mem. Reg. Acad. Matrit. v. i. p.* 364.

FOREIGN.—*Ratanhie,* Fr.; *Ruiz para los dientes,* Sp.; *Ratanhia,* Huanuco; *Mapato,* Tarma.

THIS species of Krameria, called by us Rhatany, and by the Spanish inhabitants Ratánhia, is the spontaneous growth of many provinces in Peru, delighting in a dry argillaceous or sandy soil, and growing on the declivities of the mountains, exposed to the intense heat of a vertical sun. It was first discovered by Don Hypolito Ruiz in 1780, in the province of Tarma, and Xanca; and subsequently by the same naturalist in the province of Huánuco, Huamalies, and Canta; and is found in abundance in the vicinity of Lima, on the high-lands of Puelles, and other hilly districts. It flowers nearly throughout the year; but blossoms most luxuriantly in October and November. It is gathered in large quantities, from which a beautiful extract is prepared, which, as well as the root, is imported to Portugal for improving the colour, astringency, and richness of red wine. From this use in the manufacturing of wine the Portuguese and Spanish merchants have kept its properties so concealed, that in this country the root was unknown, till the captain of a Spanish ship mentioned these facts to Dr. Reece; which induced him to apply to some Spanish merchants for further information, who corroborated the account, with respect to a certain root being used as

Modified tannin	40	
Gum	1	30
Fecula . . .	0	50
Woody matter . . .	48	
Gallic acid, a trace; water and loss	10	
	100	

Medical Properties and Uses.—Rhatany is a very valuable tonic medicine, for indigestion, arising from direct debility; and for flaccid leucophlegmatic habits. The late Dr. Perceval, of Manchester, speaks highly of a solution of the foreign extract, dissolved in camphorated mixture, as a remedy in the advanced stages of typhus fever; and says, that it possesses all the good qualities of port wine, and is exempt from its pernicious ingredient, alcohol. Sir Henry Halford informs us, that he is in the constant habit of prescribing it for fluor albus, with the most marked success; and for passive uterine hæmorrhage. It is also an excellent tonic to accompany the use of diuretics, cathartics, and absorbent stimulants in cases of dropsy arising from debility: and when the different preparations of bark disagree with the stomach, it may be substituted for it with the most beneficial results.

Preparation.—The *extract* which is made by inspissating the expressed juice of the root in the heat of the sun, (by the natives of South America,) possesses, in great perfection, the medicinal properties of the root, and may be taken, in the form of pills, to the extent of five or ten grains, twice a day.

Of the *powder* may be taken from ten to thirty grains.

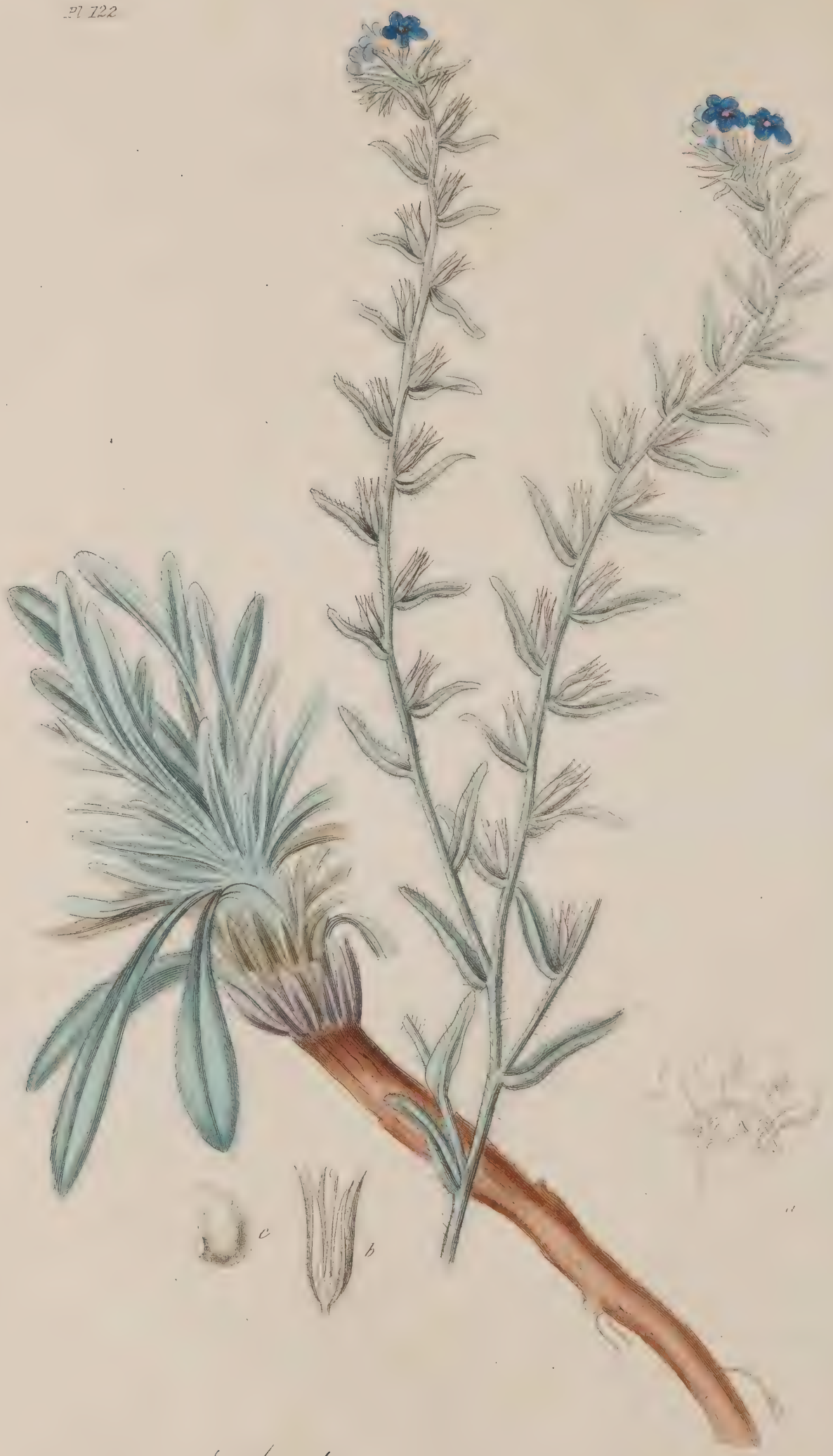
COMPOUND TINCTURE OF RHATANY.

R.—Rad. Krameriæ Triandræ contus. . .	℥ iij.
Cort. Aurantii . .	℥ ij.
Rad. Serpentariæ Virg. . . .	℥ ss.
Croci Anglic. . . .	℥ i.
Sp. Vini Rectificat. . . .	lb ii.

Macera per dies duodecim, et cola.

This *compound tincture* is much recommended by the physicians of the Continent, as a pleasant and efficacious stomachic; and our own experience teaches us, that two tea-spoonsful in a little water, taken three or four times a day, will prove an admirable remedy for indigestion, and its consequences—as flatulency, heart-burn, cramp in the stomach, nervous irritability, &c.

The *simple tincture* is made with three ounces of the root to a quart of *proof* spirit; and is much used by dentists, combined with equal parts of rose water, as a lotion to astringe the gums, and correct unpleasant fœtor of the mouth. Equal parts of powdered Rhatany-root, orris-powder, areca-nut charcoal, form the best tooth-powder with which we are acquainted.



Anchusa tinctoria L.

London, Published for the Authors, July 1 1822.

CXXII

ANCHUSA TINCTORIA.

Dyer's Alkanet.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. ASPERIFOLIÆ, *Lin.* BORAGINEÆ, *Juss.*

GEN. CHAR. *Corolla* closed with concave obtuse valves; funnel-shaped; tube straight, tumid below. *Seeds* concave at the base.

SPEC. CHAR. Downy; *leaves* lanceolate, obtuse; stamens shorter than the corolla.

Syn.—Anchusa monspeliana, *Bauh. Hist. v.* 3. 584.
Anchusa parva, *Lob. Icon.* 578.
Anchusa prima, *Matth. Valgr. v.* 2. 341,
Lithospermum tinctorium, *Andr. Repos. t.* 576.
Buglossum radice rubrâ, sive Anchusa vulgatior, *Tourn. Inst.* 134.
Anchusa tinctoria, *Desfont. Atlant. v.* 1. 156; *Ait. Hort. Kew. ed.* 2. *v.* 1. 290; nec Linn. *Fl. Græc. Sibth. v.* 2. *t.* 166.
Αγχουσα, *Diosc.*

FOREIGN.—*Le buglos teignante*, Fr.; *Ancusa tintoria*, It.; *Anchusa de tinte*, Sp.; *Farber-Ochsenzunge*, Ger.; *Orkanette*, Dan. and Swed.

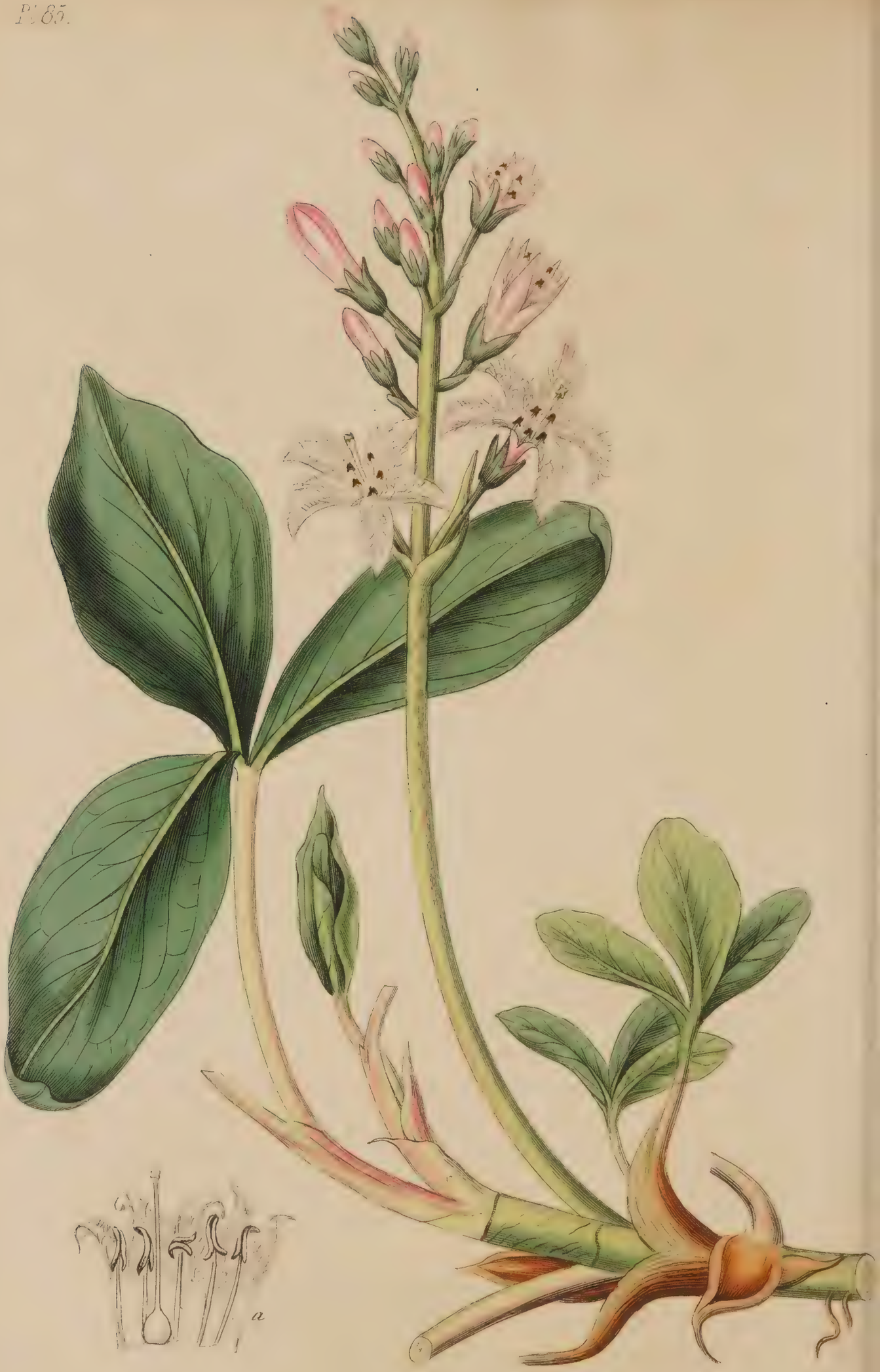
THIS plant is a perennial, a native of the south of Europe, and was found by Sibthorp in Greece. It is sometimes raised in our gardens; but the roots do not acquire in this country the fine red colour for which the foreign are prized. It has long been extensively cultivated for medicinal purposes in the neighbourhood of Montpellier, in France. It flowers from June to October.

The root is woody, long, round, tapering, branched, and covered with a blackish-red coloured bark. The herb is all over rough with short bristly hairs, proceeding from small cartilaginous tubercles or warts. Several stems arise from one root; they are round, leafy, branched, panicled above, and about a foot or eighteen inches high. The leaves are oblong, entire, convex above, and keeled underneath; the radical ones forming a turf on the ground, elongated and tapering towards the base; the rest smaller, alternate, slightly dilated at the base, and partly embracing the stem. The spikes are generally in pairs, bent

towards the top, many-flowered, with ovate bracteas, twice the length of the calyx. The calyx is reddish, with short hairs, and divided into five oblong-lanceolate segments. The corolla is funnel-shaped, consisting of a straight cylindrical tube, tumid at the lower part, closed at the mouth with five small roundish convex valves, and divided at the limb into five deep, obtuse, equal segments, of a deep azure colour. The filaments are shorter than the corolla, bearing roundish anthers: the germens four, with awl-shaped styles, nearly as long as the tube, with a small notched stigma. The seeds are oblong, and rough with tubercles. Fig. (*a*) the flower somewhat magnified, showing the stamens and arched valves; (*b*) the calyx and pistil a little magnified; (*c*) the seed.

Qualities and Chemical Properties.—Alkanet root, as met with in commerce, is inodorous and nearly tasteless. The red colouring matter, according to Pelletier, with which the cortical part abounds, is of a brownish red colour, runs into a mass, which breaks with a resinous fracture, is soluble in alcohol, ether, and fat oils, which it colours red, while they preserve their transparency. It imparts scarcely any colour to water. It forms blue combinations with potass, soda, barytes, strontian, and lime: is decomposed by the action of concentrated sulphuric acid; and is converted into oxalic acid by nitric acid. When precipitated from its alcoholic menstrua by the aid of metallic solutions, it forms an excellent varnish. M. Chevreul has lately discovered in it and in the root of the Viburnum *opulus* a new acid, which he terms *Phocénique*. Sometimes the roots of the Onosma *echioides*, and O. *tinctoria*, are substituted for the Anchusa *tinctoria*. Bergius also states that the roots of the Borago *officinalis* are sometimes boiled in a decoction of Brazil wood, and sold for alkanet: the fraud, however, is easily detected by inspection, and by the substitute failing to yield its colour to the fixed oils.

Uses.—This plant was formerly administered as an astringent; but has given place to medicines much more worthy of regard. It is useless, excepting as a colouring matter for oils, lip-salve, and plasters.



Menyanthes trifoliata.

Weddell Feat

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

MENYANTHES TRIFOLIATA.

Common Buckbean or Bog-bean. Marsh Trefoil.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. Allied to Gentianæ, *Juss.*

GEN. CHAR. *Calyx* 5-cleft. *Corolla* funnel-shaped, 5-lobed, equal, hairy within. *Stigma* 2-cleft. *Capsule* 1-celled, 2-valved.

SPEC. CHAR. *Leaves* ternate.

Syn.—Trifolium paludosum, *Ger. Em.* 1194. *f.*

Menyanthes palustre triphyllum, latifolium et augustifolium, *Raii Syn.* 285.

Menyanthes, *n.* 633; *Hall. Hist. v.* 1. 280.

Menyanthes trifoliata, *Lin. Sp. Pl.* 208; *Willd. v.* 1. 811; *Fl. Brit.* 225; *Eng. Bot. v.* 7. *t.* 495; *Curt. Lond. fasc.* 4. *t.* 17; *Hook. Scot.* 71; *Fl. Dan. t.* 541; *Bull. Fr. t.* 131; *Bigelow Med. Bot. Amer. t.* 46; *Stokes. v.* 1. 298.

FOREIGN.—*Menianthe, ou treffle d'eau,* Fr.; *Trifolio fibrino,* It.; *Menyanthes de tres en rama,* Sp.; *Bitterklee,* Ger.

BUCKBEAN, or Bog-bean, so termed from its leaves resembling those of the common garden-bean, is one of the most beautiful of our indigenous plants; "nor does it suffer," as Mr. Curtis justly observes, "when compared with the Kalmias, the Rhododendrons, and the Ericas of foreign climes, which are purchased at an extravagant price, and kept up with much pains and expense, while this delicate native, which might be procured without any expense, and cultivated without any trouble, blossoms unseen, and wastes its beauty in the desert air."

It is a native of many parts of Europe, growing abundantly in marshy meadows, ponds, and sometimes in ditches. The most spongy, boggy soils, which are inundated at certain seasons, and never wholly destitute of water, are the favourite stations of this plant. It often constitutes large beds, at the margins of ponds, and brooks. We obtained it on the great bog on the western slope of Hampstead heath, where it grows in great plenty; but flowers very sparingly, about the end of June and beginning of July. On the same spot we also found Ranunculus *Flammula,* and *arvensis,* Cardamine *pratensis,* Lychnis *Flos Cuculi,* Myosotis *palustris,* Potamogeton *fluitans,* Montia *fontana,* Pedicularis *palustris,* Drosera *rotundifolia,* Orchis *maculata,* Eriophorum *polystachion,* with several species of the genus Carex, and Juncus. It is common in many parts of North America, particularly in New England, and grows, according to Pursh, as far south as Virginia.

Professor Bigelow states, that the Buck-bean is one of those plants which are native in Europe, and North America, with so little difference of structure in the two continents, that their specific identity can hardly be described; and after examining specimens from both, he could perceive no definable difference, excepting in size. The English plant, however, flowers a month later than it does in the neighbourhood of Boston; a circumstance not usual with other species of vegetables.

Buckbean has a long, creeping, jointed root, with perpendicular radicles, from which proceeds a smooth, erect, cylindrical stem, that is naked and destitute of leaves, and rises to the height of a foot. The leaves are bright green, obovate, wavy, with a thick midrib, smooth on both sides, ternate or grow by threes, like those of trefoil, (whence the names Marsh-trefoil, *trifolium* paludosum, *le Treffle d'eau,* and Menyanthes *trifoliata,)* at the extremity of a common foot-stalk, which issues immediately from the root, and is round, striated, forms a sheath at the bottom, and is shorter than the flowering stem. The flowers grow in a loose spike at the extremity of an erect, round, smooth stalk, longer than the leaves, which springs from within the sheath of a leaf. They are ten or twelve in number, each sup-

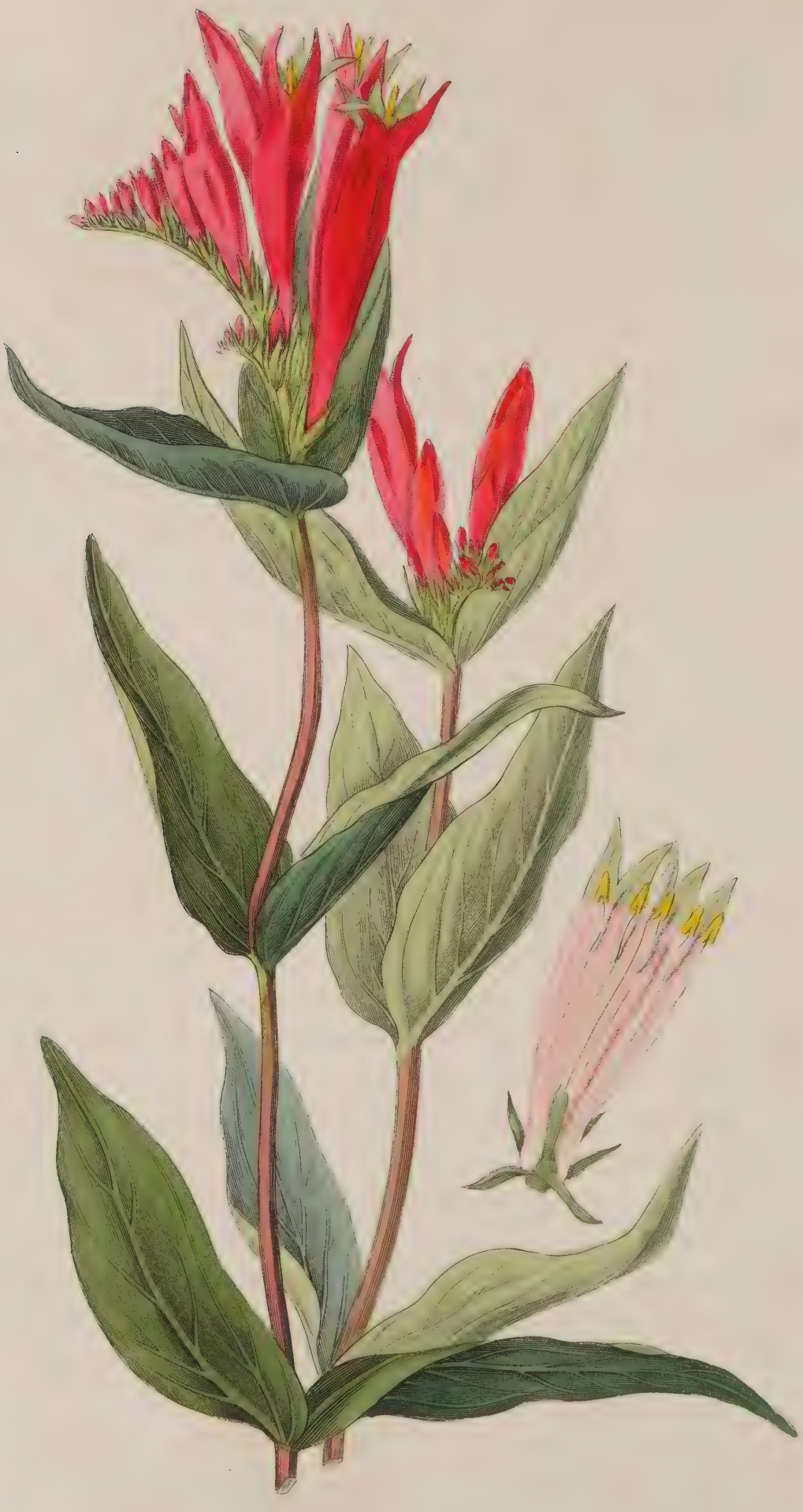
ported on its proper pedicel, and accompanied by small, ovate bracteas. The calyx is divided into five deep, slightly spreading segments; the corolla is a funnel-shaped petal, divided beyond the middle into five deep, spreading or recurved, pointed segments, which are white tipped with rose-colour, smooth externally, and clothed with dense, white, shaggy fibres on their upper side. The filaments are awl-shaped, bearing erect saggitate anthers of a reddish colour; germen conical; the stigma lobed or notched, with a slender style twice the length of the stamens. The capsule is ovate, succulent, 1-celled, which, when it has attained maturity, separates into two valves, inclosing several small roundish seeds of a brown or yellowish colour. Fig. *(a)* represents the flower expanded and somewhat magnified, to show the stamens, germen, and style.

Of the etymology of the *generic* name MENYANTHES, retained from the Greek and Latin botanists, we can give no satisfactory account. Some render it Moon-flower, in which case it should have been written *Meneanthos,* as being compounded of *μηνη,* the moon, and *ανθος,* a flower. Others deriving it from *μενω,* to remain, conceive the name to be expressive of the permanency of the flower; but this conjecture is even more fanciful than the former. The name Buck-bean, is either a corruption of Bog-bean, or what is more probable, is derived from the French, *le Bouc,* a he-goat; the plant having formerly been dis tinguished by the appellation, *Phaselus Hircinus,* that is, Goat's-bean.

QUALITIES AND CHEMICAL PROPERTIES.—The whole plant, and particularly the root, has an intensely bitter taste, which resides chiefly in an extractive matter, soluble in water and spirit. The root is, however, resinous, and impregnates alcohol more strongly than water; and may be precipitated from its tincture, in part, by the latter fluid.

MEDICAL PROPERTIES.—The root of this given in small doses of about ten grains, imparts vigour to the stomach, and strengthens digestion. Its virtues were formerly properly estimated, and strange it is that so excellent, and cheap a tonic should be so little employed. It gives out its virtues to boiling

water, and a tincture may be made from it quite equal in its effects to that of gentian. Large doses, either in substance or decoction, produce vomiting and purging, and frequently powerful diaphoresis; in which respect it resembles many other vegetable bitters. Formerly it was employed with benefit in intermittent, and remittent fevers. Boerhaave was relieved from gout by drinking the juice of the plant mixed with whey; while Alston, and others, assert that it has the power of keeping off the paroxysms of that painful complaint. Dr. Cullen speaks still higher of its virtues, for he had several instances of its good effects in some cutaneous diseases of the herpetic, or seemingly cancerous kind, when taken by infusion, in the manner of tea. Others have commended it for rheumatism, dropsy, scurvy, and worms; and its reputation in the north of Europe, particularly in Germany, was at one time so high that it was consumed in large quantities, and deemed a sort of panacea. Its true character, however, is simply that of a powerful bitter tonic, like gentian, and centuary, to which, as Professor Bigelow observes, it is closely related in its botanical habit, as well as sensible properties. Linneus informs us in his Flora Lapponica, that in times of scarcity sheep will subsist upon this plant, notwithstanding its bitterness; and Dr. Tancred Robinson asserts, that sheep which have acquired a tabid condition are quickly recovered by feeding on the marshy meadows, which abound with it. The Laplanders employ it as a substitute for hops; and they even introduce it in some instances into their bread, upon which Linneus bestows the epithet, "amarus et destabilis." We conclude in the words of Bigelow when speaking of the American species: "we may regard this plant as one of the numerous bitters abounding in our country, which are fully equal in strength to imported articles of their class, and which may hereafter lessen our dependance on foreign drugs."



Spigelia Marilandica.

London Published by John Campbell Leicester Square 1st Jan 1804

SPIGELIA MARILANDICA.

Maryland Worm-grass, or Carolina Pink.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. STELLATÆ, *Lin.* GENTIANÆ, *Juss.*

GEN. CHAR. *Corolla* funnel-shaped. *Capsules* twin, 2-celled, many seeded.

SPEC. CHAR. *Stem* four-sided, all the leaves opposite.

Syn.—Periclymeni Virginiani flore coccineo. &c. *Raii. Dendr.* 32.
Lonicera marilandica spicis terminalibus. &c. *Lin. Sp. Pl.* 2. *p.* 249.
Spigelia marilandica. *Sp. Pl. Willd.* 1. 824; *Bot. Mag .t* .80; *Woodv.* 2. *t.* 105.

BRITISH.—*Indian Pink, Pink-root, Worm-grass, Perennial Worm-grass.*

FOREIGN.—*Spigelie de Maryland,* Fr.; *Spigelia,* Ital.; *Nordamerikanische Spigelie,* Ger.; *Unsteetla,* of the Cherokee Indians.

OF this genus, which derives it name from Adrian Spigelius, a distinguished botanist, and Professor of Anatomy and Surgery at Padua, there are besides the *marilandica* but four species; three natives of Brazil and Cayenne, the other of Jamaica. The present species is a native of all the southern states of America from Pennsylvania to Georgia and Louisiana; but will not bear the severity of a northern winter. It grows in rich dry soils, on the borders of woods, and flowers from May to July. It was introduced into this country in 1694.

Spigelia *marilandica* is a low perennial plant, seldom more than eight or nine inches high in this country, but in its native soil sometines attaining a height of nearly two feet. The root is

horizontal, and consists of a great number of slender fibres, forming together a large bunch. When recent they are of a yellow colour, but become black on keeping. From the root proceed several erect, herbaceous, annual, smooth stems, four sided, and of a reddish purple colour. The leaves are opposite, sessile, ovato-acuminate, entire, and smooth. The stem is terminated by a spike of flowers, ranged on one side of the foot-stalk, and supported on short peduncles. Calyx short, cut into five acute segments; corolla funnel-shaped, of a deep crimson externally, and pink within; having the five segments of the border of a yellow colour, tinged with green; the stamens are five, shorter than the corolla, supporting oblong sagittate anthers; germen superior, ovate; style the length of the corolla, terminated by a long fringed stigma. The capsule is double, 2-celled, and contains many seeds.

The dissection which accompanies the plate, shews the corolla cut open; the position of the stamens and pistil; and the germen attached to the calyx. For the drawing we are indebted to Mr. R. Morris, F.L.S. author of "Flora Conspicua."

Qualities and Chemical Properties.—Spigelia is a mucilaginous plant, with a mild and not very disagreeable taste. The infusion and decoction of the root and leaves afford a flocculent precipitate with alcohol. They are discoloured, but not precipitated by silicated potash. They have little sensibility to gelatin, although the tincture is made turbid by it. After the decoction was filtrated from the mucus, which had been coagulated by alcohol, it gave a precipitate with nitrate of mercury, but none with muriate of tin. Sulphate of iron caused a dark green precipitate from the decoction, and but little change in the tincture. No distinct evidence of resin presented itself. A substance, which may perhaps be considered a variety of extractive matter, appears to exist in this plant, as the tincture was affected in nearly the same manner by the salt of tin and mercury above mentioned, as the filtrated decoction. Water may be considered an adequate solvent, for the chief proximate principles of this plant.

M. Feneuille has recently analized the leaves and roots of this plant:

The leaves yield,
- Chlorophylle, mixed with a fatty oil,
- Albumen,
- Nauseous bitter substance,
- Mucus,
- Gallic acid,
- Woody fibre,
- Malate of potass, of lime, &c.

The roots yield,
- Fatty oil,
- Volatile oil,
- Resin, in small quantity,
- Bitter substance,
- Saccharine mucus (*mucoso-sucré*),
- Albumen,
- Gallic acid,
- Woody fibre,
- Malate of potass and of lime,
- Silex,
- Oxide of iron.

The bitter substance is said to be the active part, and to exist in greater abundance in the leaves, than in the root. It is of a brown colour, and taken internally produces vertigo, and a kind of intoxication.

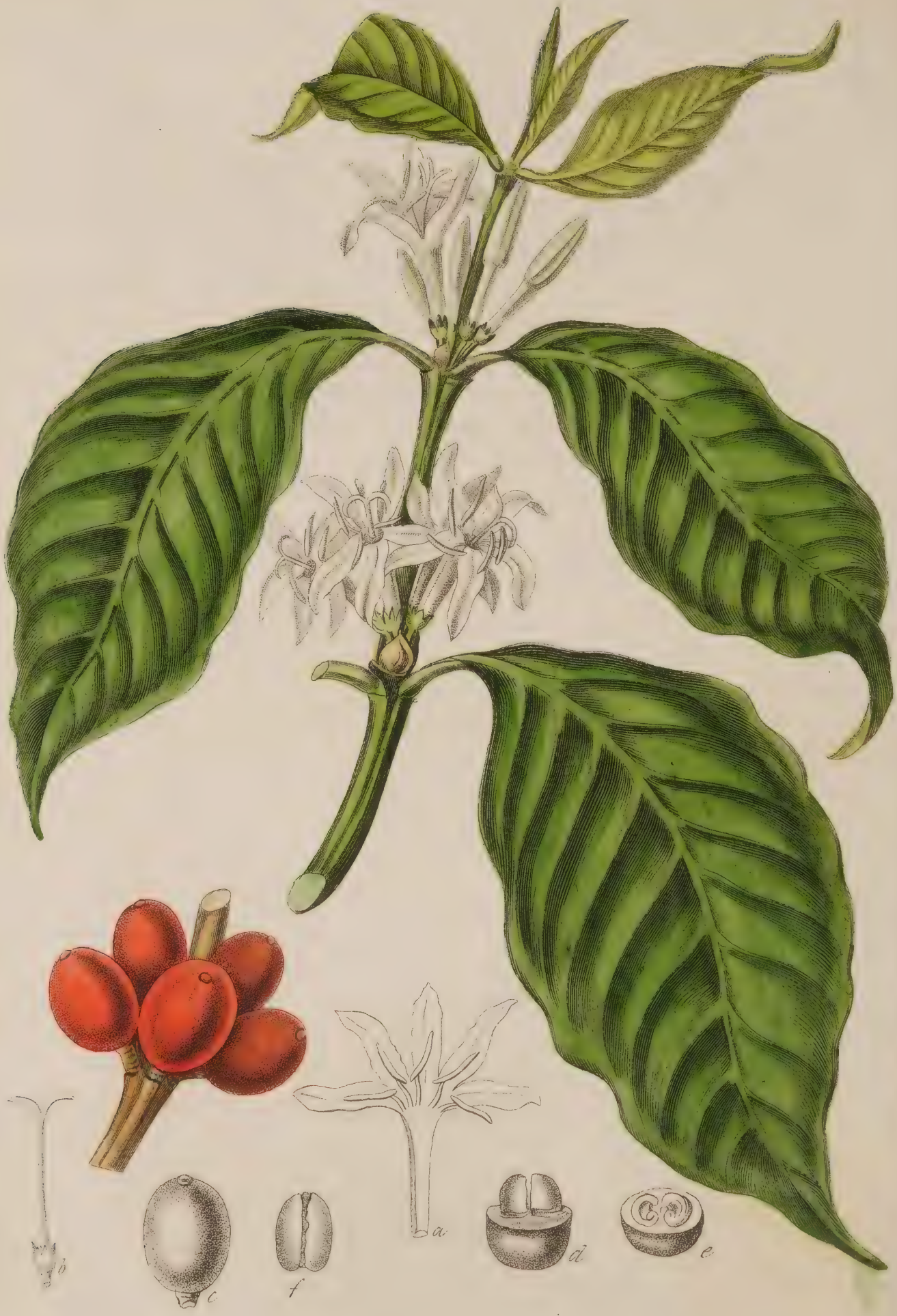
Medical Properties and Uses.—This plant was first used by the Cherokee Indians, as an anthelmintic. Drs. Lining, Garden, and Chambers first introduced it to notice, and their subsequent experience tended to confirm its utility. The root possesses the greatest activity, and is given in doses of from grs. x. to ; two or three times a day. If it proves purgative it is said to be most effective: and should it not, it must be conjoined with cathartics; which prevent the narcotic symptoms, such as stupor, headache, dilated pupil, flushings of the face, stiffness of the eyelids, that so frequently follow its administration. It is said to be most useful in *lumbrici;* and it is to its acrid narcotic principle, that Dr. Good attributes its vermifuge powers; which it possesses in common with *S. anthelmintica*, a native of Jamaica. Notwithstanding what has been advanced

in its favour, we consider it an unnecessary appendage to our materia medica, for independently of its deleterious properties, its real anthelmintic ones are somewhat equivocal; and our pharmacopœia gives no direction for its administration. For the benefit, however, of those who wish to make trials of it, we subjoin the following form:—

℞ Spigeliæ radicis concisæ ʒiß.
Sennæ Foliorum ʒij.
Aurantii corticis concisi
Santonici seminum contus.
Fœniculi seminum contus. āā ʒj.
Aquæ ferventis. ℥xij.

Macera per horas duas in vase leviter clauso, et cola.—Dose, a wine glassful three times a day on an empty stomach.

Pl. 182.



Coffea arabica.

J. Reid del. W. Clark sc.

London, Published for the Authors, Oct. 1830.

CLXXXII

COFFEA ARABICA.

Arabian Coffee-Tree.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. STELLATÆ, *Lin.* RUBIACEÆ, *Juss.*

GEN. CHAR. *Calyx* 5-toothed; teeth deciduous. *Corolla* salver, or funnel-shaped. *Stamens* inserted into the tube of the corolla. *Anthers* sagittate. *Berry* 2-seeded. *Seeds* with an arillus.

SPEC. CHAR. *Leaves* oblong, ovate, acuminate. *Peduncles* axillary, aggregate. *Corolla* 5-cleft.

Syn.—Bon vel Bam. *Alpin. Ægypt. ed.* 3. *p.* 36 *t.* 16; *Bauh. Hist.* 1. 422; *Pluck. Alm.* 69; *Phyt. t.* 272. *f.* 1; *Park Theatr.* 1622.

Euonymo similis Ægyptiaca, fructu lauri simili. *Bauh. Pin.* 498.

Jasminum arabicum. *Till. Pis.* 87. *t.* 32; *Jussieu Act. Paris,* 1713. *p.* 291. *t.* 7.

Coffea. *Hort. Cliff.* 59; *Blackw. t.* 37; *Lamarck Ill. t.* 160.

Coffea arabica. *Lin. Sp. Pl.* 245; *Willd. v.* 1. *p.* 973; *Gærtn. Fr.* 1. 118. *t.* 25; *Hort. Kew.* 1. *p.* 374; *Bot. Mag. v.* 32. *t.* 1303; *Tussac. Fl. Antill. p.* 121. *t.* 18.

FOREIGN.—*Caffayer arabique,* Fr.; *Arabische Kafferbaum,* Ger.; *Cay caphe,* Cochinch.

FEW vegetable substances have been more generally esteemed for their medicinal and dietetic properties than the berries of the coffee-tree. The plant is fully described by Ellis and several other writers, and Gærtner has given an elaborate description of the fruit. The coffee-tree is generally regarded as a native of Arabia, but Bruce says, it derives its name from Caffee, a province of Narea, in Africa, where it grows spontaneously in great abundance. The plant does not appear to have been known to the Greeks or Romans, nor are there any facts on which we can rely respecting its origin in the East. It has been well ascertained, however, that the berries were imported into every part of Europe, and used as a favourite beverage, long before it was known of what plant they were the product. Prosper Alpinus had seen the coffee-tree without fructification, in some gardens

in Egypt; but the first intelligible botanical account was published by Anth. de Jussieu, in the Memoirs of the Academy of Sciences in Paris, in 1713. We are informed by Boerhaave, in his "Index to the Leyden Garden," that it was first introduced into Europe by Nicholas Wisten, a Burgomaster of Amsterdam, and chairman of the Dutch East India company, who gave directions to the governor of Batavia, to procure seeds from Mocha in Arabia Felix. These being sown in the island of Java, several plants were procured, and one was transmitted by Wisten, about the year 1690, to the botanic garden at Amsterdam. From the progeny of this plant, not only the principal botanic gardens in Europe, but also the West India islands, were supplied with this valuable tree. Soon after its introduction into Holland, it was cultivated by Bishop Compton, at Fulham.

The coffee-plant is an evergreen shrub, rising from fifteen to twenty feet in height. The trunk is erect, seldom exceeding two or three inches in diameter, and covered with a brownish bark. The leaves are opposite, ovate-lanceolate, pointed, entire, wavy, smooth, shining; bright green on the upper surface, paler beneath, and placed on short petioles. At each knot of the branches are two awl-shaped, opposite, interfoliaceous stipules. The flowers are white, sweet-scented, sessile, disposed in clusters of four or five together, in the axillæ of the leaves, and soon falling off. The calyx is superior, very small, 5-toothed. The corolla is monopetallous, funnel-shaped, and divided into five lanceolate, spreading segments. The filaments are five, inserted into the tube of the corolla, and supporting yellow, linear anthers. The germen is ovate, inferior, bearing a simple style the length of the corolla, and two awl-shaped, reflexed stigmas. The berry is globular, about the size of a cherry, umbilicated at the summit, 2-celled, and containing a somewhat gelatinous pulp. The seeds are hemispherical, convex on one side, flat and furrowed longitudinally on the other, of a pale glaucous colour, and involved in a thin, elastic, pellucid aril. Fig. (*a*) exhibits a flower cut open; (*b*) the pistil with the calyx; (*c*) single berry; (*d* and *e*) different sections of the same; (*f*) the seed.

The coffee-tree is frequently cultivated in our gardens as an ornamental evergreen, and will both flower and ripen its fruit. It is propagated by the berries, which must be sown soon after they are gathered, or they will not vegetate. Being an intra-tropical plant, it must be kept in the stove, and should be allowed a free circulation of air, to prevent the attacks of insects.

In Arabia, the fruit is dried in the sun upon mats, and the outer coat is separated by means of a large stone cylinder. It is again placed in the sun, winnowed, and packed up in bales. In the West India islands, as soon as the fruit is of a deep red colour, it is reckoned to be ready for being gathered. A large linen bag, kept open by means of a hoop round its mouth, is suspended to the neck by the negroes, who pull the berries with their hands, and, after filling the bag, empty it into a large basket. A single negro can easily collect three bushels in a day. As the berries do not ripen together, they are collected at three different gatherings. One thousand pounds of good coffee is produced from one hundred bushels of *cherries* just from the tree. The coffee-berries may now be dried in two different ways. The first method is to place them in the sun, in layers of four inches thick, on inclined planes. In a few days, the pulp is discharged by fermentation, and in about three weeks the coffee is completely dry. The skin of the berries, already broken, is removed by mills, or in wooden mortars. The second method, is to separate the grain from the pulp at once, by means of a mill, and the grains are then left to soak in water for twenty-four hours. They are afterwards dried, and then stripped of the pellicle, or parchment, as it is called, by means of appropriate mills. The grains of coffee are afterwards winnowed, and mingled with the grindings and dust of the parchment, in which state they are put into bags for sale.

Qualities and Chemical Properties.—When the berries of coffee are roasted, a portion is converted into tannin by the action of the heat, and an agreeable aromatic substance is developed, the nature of which has not been ascertained. The same principle is also developed by roasting barley, beans, and many other vegetables, which on that

account, are occasionally employed as substitutes for coffee, and suit some stomachs better. The infusion of unroasted coffee in boiling water, is of a yellowish green colour; but the decoction, by continuing the boiling, becomes brown. It becomes turbid on cooling. The alkalies render it more brown. It strikes a black with sulphate of iron, but does not precipitate with gelatin. Chlorine nearly destroys the colour; but if an alkali be added, the liquid becomes red. When water was distilled from coffee, what came over had an aromatic odour, and a few drops of a substance, similar to myrtle wash, swam on the surface of it; the residual liquid became milky when mixed with alcohol, and let fall a substance possessing the properties of gum. From experiments made, chiefly by Cadet,* it appears that coffee contains an aromatic principle, a little oil, gallic acid, mucilage, extractive and bitter principle. The result of Cadet's experiments on sixty-four parts of coffee, was as follows:—

Gum	8·0
Resin	1·0
Extract and bitter principle	1·0
Gallic acid	3·05
Albumen	0·14
Fibrous and insoluble matter	45·05
Loss	6·86

From 1920 parts of Levant and Martinique coffee, Hermann obtained the following proportions respectively:

	Levant.	Martinique.
Gum	130	144
Resin	74	68
Extractive	320	310
Fibrous matter	1335	1386
Loss	61	12*

Other analyses have been made by chemists. M. Grindel found it contain kinic acid; and M. Payssé has discovered, what he has endeavoured to show as a peculiar acid, to which he has given the name of coffee-acid. More recently M. Robiquet is said to have demonstrated another principle which, he

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* *Ann. de Chim.* lviii. 226.
† Crell's *Ann.* 1800, ii. 108.
‡ Hist. Paris, iv. 545.

names *caféine*. It is in silk-like acicular crystals, bearing a resemblance to benzoic acid. It liquifies by the aid of a gentle heat: in close vessels, it volatilizes and sublimes in needles. Cafeine is neither acid nor alkaline. It furnishes a great quantity of azote. It dissolves with difficulty in ether, but quickly in water and alcohol.

Medical Properties and Uses.—It is evident that we are indebted to the Arabians for our use of this pleasant berry, as the first right of eastern hospitality is the presentation of a bowl of coffee. In Europe, it is said to have been first used in Italy in the year 1650; and, according to Dulaine, was introduced at the court of Paris in 1669, by Soliman Aga, ambassador from the Porte. An Armenian named Pascal, opened the first café, and Procope, the second in "Rue des Fossés, Saint Germain des Prés." Nearly about the same time coffee was introduced into the British metropolis.

By some coffee is supposed to be best suited to the aged; and its abuse, as when taken too strong, is said to impair digestion instead of promoting it; and it stimulates, heats, and produces watchfulness in certain constitutions. The Mahometans of India, who use a great deal of coffee in the same way as we do, with the exception of combining milk with it, believe it to have the effect of soothing and allaying nervous irritation, and prescribe it to stop the vomiting in cholera morbus. Dr. Ainslie also states, that it is often employed for the same purposes by the Spaniards at Manilla. It is said that Sir John Floyer, during his residence at Lichfield, found great benefit in his own person by the use of coffee in asthma. Sir John Pringle confirms its success, in a letter to Dr. Percival. "On reading the section on coffee," says he, "in the second volume of your Essays, one quality occurred to me which I had observed of that liquor, confirming what you had said of its sedative powers. It is the best abater of periodic asthma that I have seen. The coffee ought to be the best Mocha, newly burnt, and made very strong, immediately after grinding it. I have commonly ordered an ounce for one dish, which is to be repeated

fresh, after the interval of a qnarter of an hour, without milk or sugar."*

As a general palliative, strong coffee is often serviceable in various kinds of head-ache, and where its own sedative power is unavailing, it forms one of the best vehicles for the administration of laudanum. It diminishes in some degree the hypnotic power of the latter, but counteracts its distressing secondary effects. When laudanum is intermixed with strong coffee for the cure of many modifications of head-ache, tranquillity and ease are produced, though there may be no sleep : when laudanum, on the contrary, is taken alone, sleep will, perhaps, follow, but is mostly succeeded by nausea, and a return of pain. Hence, the Turks and Arabians make strong coffee their common vehicle for opium, from its tendency to counteract the narcotic principle of the latter; and on the same account, it is plentifully administered after the stomach has been evacuated of its contents, in cases of poisoning by opium.

For common purposes, infusion of coffee is the most agreeable method of preparing it, as the aromatic and volatile principles are dissipated by boiling.

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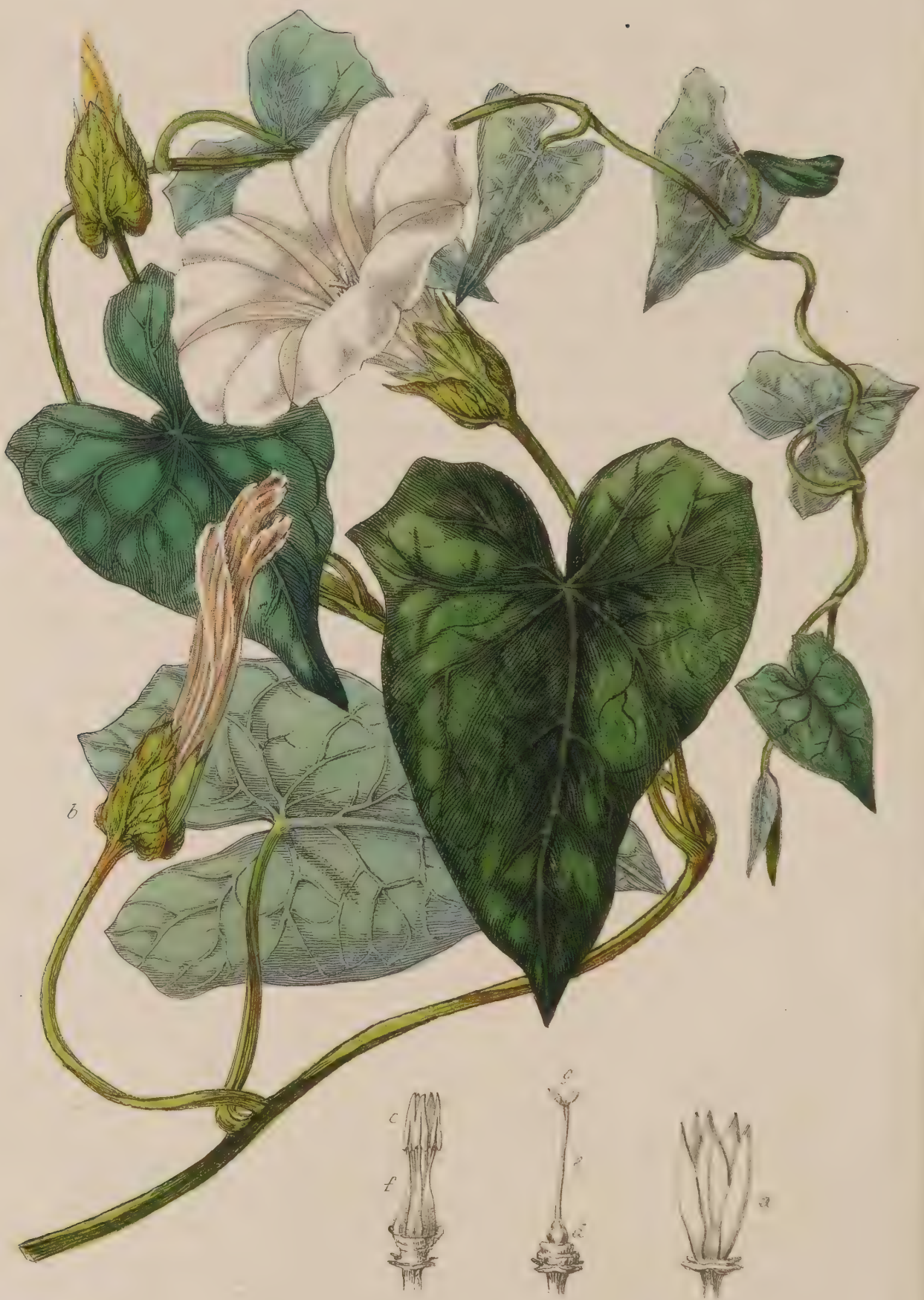
* See Perceval's Essays, vol. iii.



Convolvulus sepium.

J. Clark, del. et lith.

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

CONVOLVULUS SEPIUM.

Great Bindweed.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. CAMPANACEÆ, *Lin.* CONVOLVULI, *Juss.*

GEN. CHAR. *Corolla* bell-shaped, plaited. *Stigmas* two. *Capsule* 2 or 3-celled, each cell containing two seeds.

SPEC. CHAR. *Leaves* sagittate, notched, or truncated at the base. *Peduncles* 4-angled, supporting a single flower. *Bracteas* cordate, close to the flower.

Syn.—Convolvulus major, *Raii Syn.* 275; *Bauh. Hist. v.* 2. 154, *f.*
Convolvulus major albus, *Park*, 163.
Calystegia sepium, R. Brown, *Prodr. Fl. Nov. Holl.* 483.
Convolvulus, n. 663, *Hall. Hist. v.* 1. 295.
Smilax lenis, sive lævis, major, *Ger, Em.* 861, *f.*; *Dod. Pempt.* 392, *f.*
Smilax lævis, *Matth. Valgr. v.* 2. 552, *f.*; *Camer. Epit.* 932, *f.*
Convolvulus sepium, *Lin. Sp. Pl.* 218; *Willd. v.* 844; *Fl. Brit.* 233; *Eng. Bot. v.* 5. *t.* 313; *Hook. Scot.* 74.

PROVINCIALLY.—*Hedge Bindweed, Withe-wind, Hedge-Bells.*

FOREIGN.—*Le grand Liseron*, Fr.; *Viluchio maggiore*, Ital.; *Zaunwinde*, Ger.

THIS species of Convolvulus, which derives its generic name from the convolutions of the stalk, is a perennial plant, growing in woods, and moist hedges, in England, and other parts of Europe, America, and Peru. Nearly all the hedge-rows, in the vicinity of London, abound with it; and it is from this characteristic habit that it obtains its trivial appellation, *sepium* being the genitive plural of *sepe*, a hedge. It produces its large, elegant, bell-shaped flowers, in July, and August. In Scotland it is comparatively rare. It was found by Dr. Yule near Edinburgh, in a

hedge by the road-side, leading from Abbey-hill to Leith; and by Dr. Hooker, it is mentioned as occurring in plenty about Dumbarton; and on the north bank of the Clyde, four miles below Glasgow.

This plant climbs like a vine, sending up, from a long, slender, white, fibrous root, several smooth, weak, angular twisted stems; which entwine themselves around any support: and frequently extend to the length of ten or twelve feet. The leaves are large, arrow-shaped, smooth, variously truncated at the base, of a light green colour, placed alternately, and supported on longish foot-stalks. The flowers are solitary, on smooth, square peduncles, that proceed singly from the alæ of the leaves; each bearing a very large, monopetalous, bell-shaped, plaited, and obsoletely five-lobed snow-white flower. The calyx (*a*) is composed of five oval, obtuse, very small pale-green leaves, that endure till the fruit be ripe. At the base of the calyx are placed two heart-shaped *bracteas*, (*b*) large, pointed, slightly keeled, and tinged with reddish-purple on the edges. The anthers (*c*) are arrow-shaped, and compressed, on slender awl-shaped filaments, shorter than the corolla. The germen (*d*) is ovate; the style (*e*) is filiform, of the length of the stamens; (*f*) and there are two spreading stigmas. (*g*) The fruit is a globular, pointed capsule, composed of two or three valves, and containing two roundish seeds, of a chocolate colour.

Properties and Uses.—All the species of this extensive genus, or nearly so, possess purgative qualities in a greater, or less degree; and to it we are indebted for those valuable articles of the materia medica, scammony, and jalap. Most writers have ascribed similar virtues to the Convolvulus *sepium*; and others have ranked it amongst our indigenous poisons; but having instituted a series of experiments, we have ascertained that an extract may be obtained from its roots, possessing simply a cathartic power.

Twenty pounds of the recent root, yielded a watery extract of one pound twelve ounces, from fifteen to twenty grains of which, act freely on the bowels, as a drastic purgative, and gripe but little. A pill, composed of one ounce, and a half, of the extract, two drachms of aloes, and one drachm of ginger, acts with certainty, and ease, in doses of ten grains; and might be substituted, in most cases, for the compound extract of colocynth, where economy is required. Haller affirms that the expressed juice of the herb, taken in the quantity of twenty, or thirty grains, possesses the virtues of scammony;* hence it is sometimes called German scammony; and is recommended by Dr. Mason Good as a hydragogue purgative in dropsies. Haller (Op. cit.) likewise remarks, "Cataplasma cum oleo ad tumorem in genu dissipandum imposuit. Canem decoctum non purgavit."

Besides the Convolvulus *sepium*, there are two other species of this genus, natives of Britain, viz. *C. arvensis*, and *C. soldanella*, both of which we have found to possess cathartic powers; but in an inferior degree. The former has, indeed, been ranked among the acrid poisons, upon the most vague and unsatisfactory authority.

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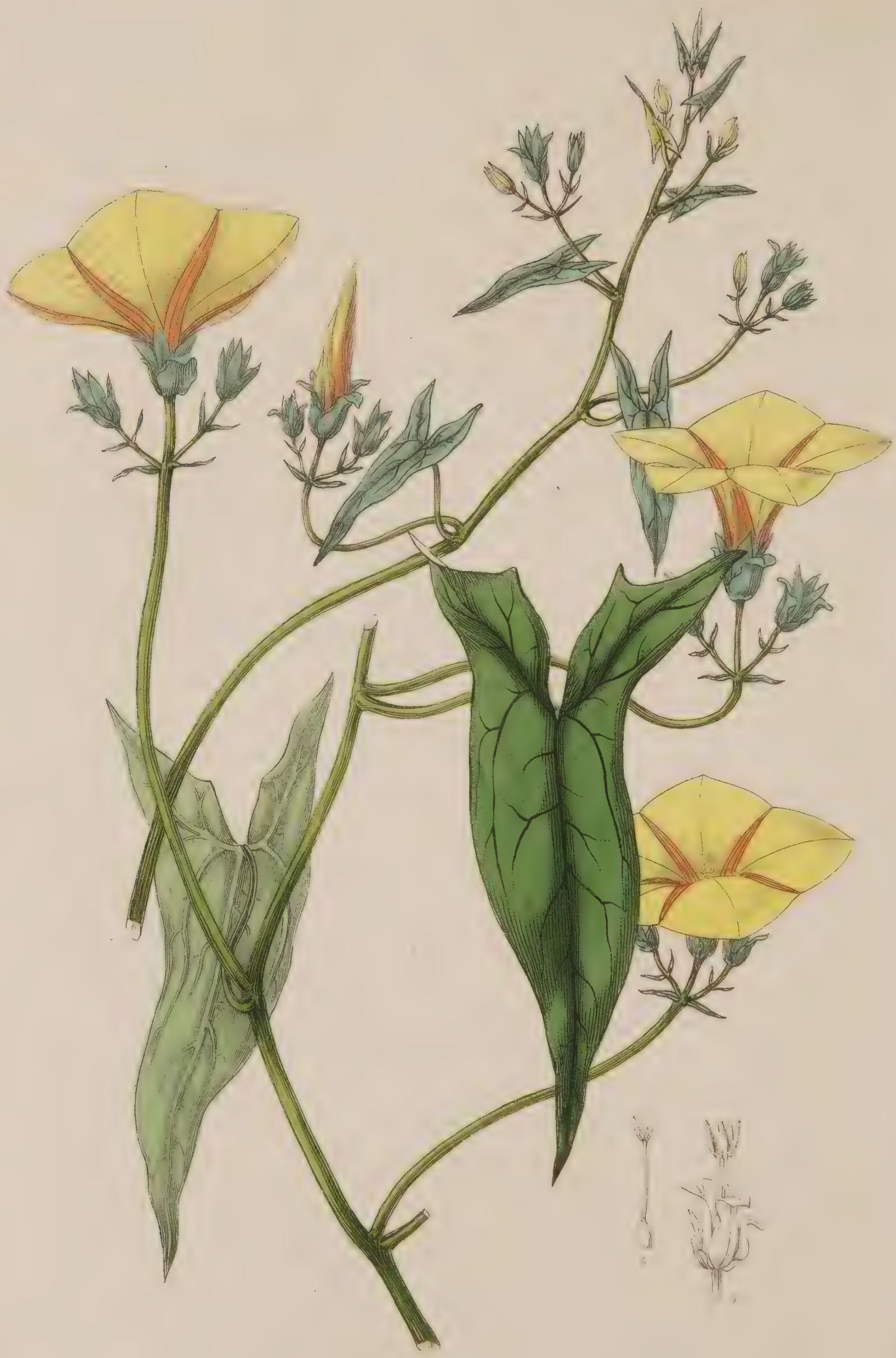
* Haller *Stirp. Indig. Helv.* tom. 2 p. 295.



Convolvulus Sarmentosus.

London Pub. by John Churchill, Leicester Square, March, 1828.

LX.

CONVOLVULUS SCAMMONIA.

Syrian Bindweed, or Scammony.

For the Class, Order, and Generic Character, see Convolvulus *sepium*.

SPEC. CHAR. *Leaves* sagittate, the posterior margins with a tooth. *Foots-talks* cylindrical, nearly double the length of the leaves, mostly 3-flowered.

Syn.—Scammonium syriacum, *Ger. Em.* 866; *Lob. Ic.* 1. 620; *Raii. Hist.* 722; *Park*, 163; *Bauh. Hist.* 2. 163.

Convolvulus syriacus, sive Scammonia, *Moris. Hist.* 2. 12. *t.* 3. 5; *Bauh. Pin.* 294.

Εκαμμωνια, *Diosc.*

Convolvulus Scammonia. *Sp. Pl. Willd.* 1. 844. *Sm. Fl. Græc. Sibth.*; *Woodv. Med. Bot. 2d. edit.* 243. *t.* 86; *Stokes* 1. 322.

FOREIGN.—*Scammonèe*, Fr.; *Scammonea*, It.; *Escamonea*, Sp.; *Scammonium Von Aleppo*, Ger.; *Sukmunga*, Hind. and Arab.

THIS species of Convolvulus, which much resembles our great Bindweed (C. *sepium*) is a native of Turkey, Syria, Greece, Persia, and Cochinchina. According to Dr. Russel, it grows in abundance on the mountains between Aleppo and Latachea, from whence the greater part of the Scammony of commerce is obtained. It is a perennial plant, and is reported to have been cultivated in England by Gerarde in 1597.

The root is fleshy, tapering, from three to four feet in length, and from three to four inches in diameter, covered with a light grey bark, branched at the lower part, and abounding with a milky juice. It sends up several slender, cylindrical, somewhat

villous stems, which entwine themselves round the plants in their neighbourhood, or spread themselves on the ground, and frequently extend to the length of fifteen or twenty feet. The leaves are arrow-shaped, alternate, smooth, pointed, of a bright green colour, with a tooth on the inner side of each, and supported on long pedicels. The flowers grow upon slender erect stems, of about six inches long, dividing near the top into two small pedicels, an inch or two in length, each supporting a pale yellow bell-shaped flower, with its margin turned outwards and undivided. These flowers begin to be sent off from the stalk within about two feet from the root, and so continue through the whole length of the plant. The segments of the calyx are emarginate; bracteas awl-shaped, spreading remote from the flower. The form and structure of the other parts of the flower do not differ materially from the other species of convolvulus already described. The capsule is three or four-celled, containing several small pyramidal seeds. Fig. *(a)* represents the corolla removed to show the stamens; *(b)* the germen and style.

Medical Properties and Uses.—Scammony was employed as a drastic purgative by Hippocrates and other Greek physicians; and although Ætius, Mesue, and many of the Arabians, aver that it ought never to be used; Rhazes appears to have formed an opinion in accordance with what modern experience teaches: he allows it to be taken cautiously, and adds, "bilem rubeam vehementer expellit."* Those of the ancients who did employ it, prescribed it for gout, rheumatism, and many other chronic diseases; and they were also in the habit of ordering an acetious decoction of it to be mixed with meal, and applied in the form of a poultice to painful affections of the joints. Celsus expressly recommends it for worms,† and practitioners of the present day frequently adopt his advice. Van Swieten ordered it to be given some hours before the accession of a fit of the ague; and it was supposed to change,

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* Oper. de Re Med. lib. viii. p. 206.

† Lib. iv. chap. 17.

or modify the particular disposition that led to the paroxysm, by the action that it excited; but it is a violent and unjustifiable method, and now very properly forgotten. Scammony we consider to be a valuable drastic purgative in cases of dropsy; torpor of the intestinal canal, hypochondriasis and mania; and when aloes produce unpleasant effects on the hæmorrhoidal vessels, it may generally be substituted with advantage; but it sometimes excites the intestinal canal so violently, as to produce numerous evacuations, that are occasionally bloody; painful senesmus, colic, and inflammation: the ancients, aware of this, attempted to modify its action by sulphur; while the moderns employ sugar, gum, or almonds; or what is preferable, combine it with other purgatives.

Scammony is an important article in the materia medica of *empirics* and a combination of scammony, cream of tartar, and antimony, being recommended by Robert Dudley, Earl of Warwick, to Marcus Cornachinus, of Pisa, the latter wrote a work in favour of it, which passed through several editions; by which means its virtues became so notorious, that in France it is called *Poudre Cornachine, Poudre des Tribus, or Poudre des Trois Diables.*

Dose.—Scammony may be given in doses of from five to ten grains; but in smaller quantities when combined with other cathartics.

Off. Prep.—Confect Scammoneæ, *L. D.*
Pulv. Scammoneæ Comp. *L. E.*
Pulv. Sennæ Comp. *L.*
Extractum Colocynthidis Comp. *L. D.*

Scammony (says Dr. Russell*) grows naturally on all that chain of mountains which extends from Antioch to Mount Lebanon, and on that part of Mount Taurus which is near to Maraash. I have also seen it in the plains between Latachia and Tripoly Syria, where there was any cover for it from the intense heat. From these places it is chiefly collected and brought to Aleppo; but as I have also seen some plants of it on the Mountains Amanus, I imagine it might probably be found on most of the hills in Syria that produce any

* Med. Observ. and Inquiries, vol. i. p. 18.

verdure; but the plundering disposition of the inhabitants renders it very unsafe to venture amongst them in search of it. The time of collecting the scammony is in the beginning of June. The people employed in it are only a few peasants, who travel over the country on purpose at that season. For as the plant grows entirely without culture, the scammony is the property of any person who will be at the pains to collect it. In many villages, about which it grows in the greatest plenty, the peasants either do not know it, or are unwilling to take the trouble of gathering it. The method of collecting it is this: having cleared away the earth from the upper part of the root, they cut off the top in an oblique direction, about two inches below where the stalks spring from it. Under the most depending part of the slope they fix a shell, or some other convenient receptacle. into which the milky juice generally flows. It is left then about twelve hours, which time is sufficient for the drawing off the whole juice; this however is in small quantity, each root affording but a very few drachms. This milky juice from the several roots is put together, often into the leg of an old boot, for want of some more proper vessel, when in a little time it grows hard, and is the genuine scammony. It is the root only that produces this concrete; for the stalks and leaves near the root, even when pressed, afford no signs of a milky juice; though, at the superior extremity of the plant, the leaves and stalks, when strongly pressed, do emit a very thin milky liquor; yet both the quantity is inconsiderable, and, according to the best observation I could make, the quality of it is different; for neither stalks, leaves, flowers, nor seeds, seem to have any purgative quality. Of this entirely pure scammony, but very little is brought to market, the greatest part of what is to be met with, being adulterated, if not by those who gather it, by those who buy it of them abroad; for the chief part of what is brought hither, passes through the hands of a few people, chiefly Jews, who make it their business to go to the villages of any note, near which the scammony is collected; as Antioch, Shogre, Elib, Maraash, &c. and then buying it while it is yet soft, they have an opportunity of mixing it with such other things as suit their purpose best; as wheat-flower, ashes, or fine sand, all of which I have found it mixed with; but there seems to be some other ingredient (possibly the expressed juice) which makes it so very hard and indissolvable, that I have not been able to discover it to my satisfaction.....

Qualities and Chemical Properties.—"Pure scammony is light, shining when broke, and crumbles with the least force when rubbed between the fingers. If a wetted finger but touches it, it turns immediately milky; and if broke, and put into a glass of water, it soon dissolves into a milky liquor of a greenish cast;* which though it lets fall a small sediment after

* This of course applies only to the recent article.

a little time, yet the liquor still retains its milky colour. The colour of Scammony seems to be a mark of little consequence, for I have seen it in all degrees, from almost jet black, to a yellowish white, and all equally good in every respect upon trial; but though it differs so much in colour when in large pieces, yet all good scammony, when powdered, is nearly of the same colour, a brownish white. Those who gather it assert, that the difference of colour proceeds from the different methods of drying it; alleging, that what is dried in the sun will differ widely in colour from what is dried in the shade." (*Russel.*) This description applies only to what is known in the markets by the name of Aleppo Scammony; but another sort brought from Smyrna is said to be the produce of the Periploca *Scammonia.**

Smyrna Scammony is in compact ponderous masses of a black colour, harder, and of a stronger smell and taste than the other kind, and full of impurities. The smell of Scammony is peculiar and nauseous, its taste is bitter, and acrid; with water it forms a greenish-coloured opaque liquid. Alcohol dissolves the greatest part of it. Its specific gravity is 1.235.

Vogel and Bouillon La Grange † have analysed the two varieties, as follows:—

Aleppo.		Smyrna.	
Resin . . .	60	Resin . . .	29
Gum	3	Gum	8
Extractive . .	2	Extractive . .	5
Vegetable *debris*, earth, &c.	35	Vegetable *debris*, &c. .	58
	100		100

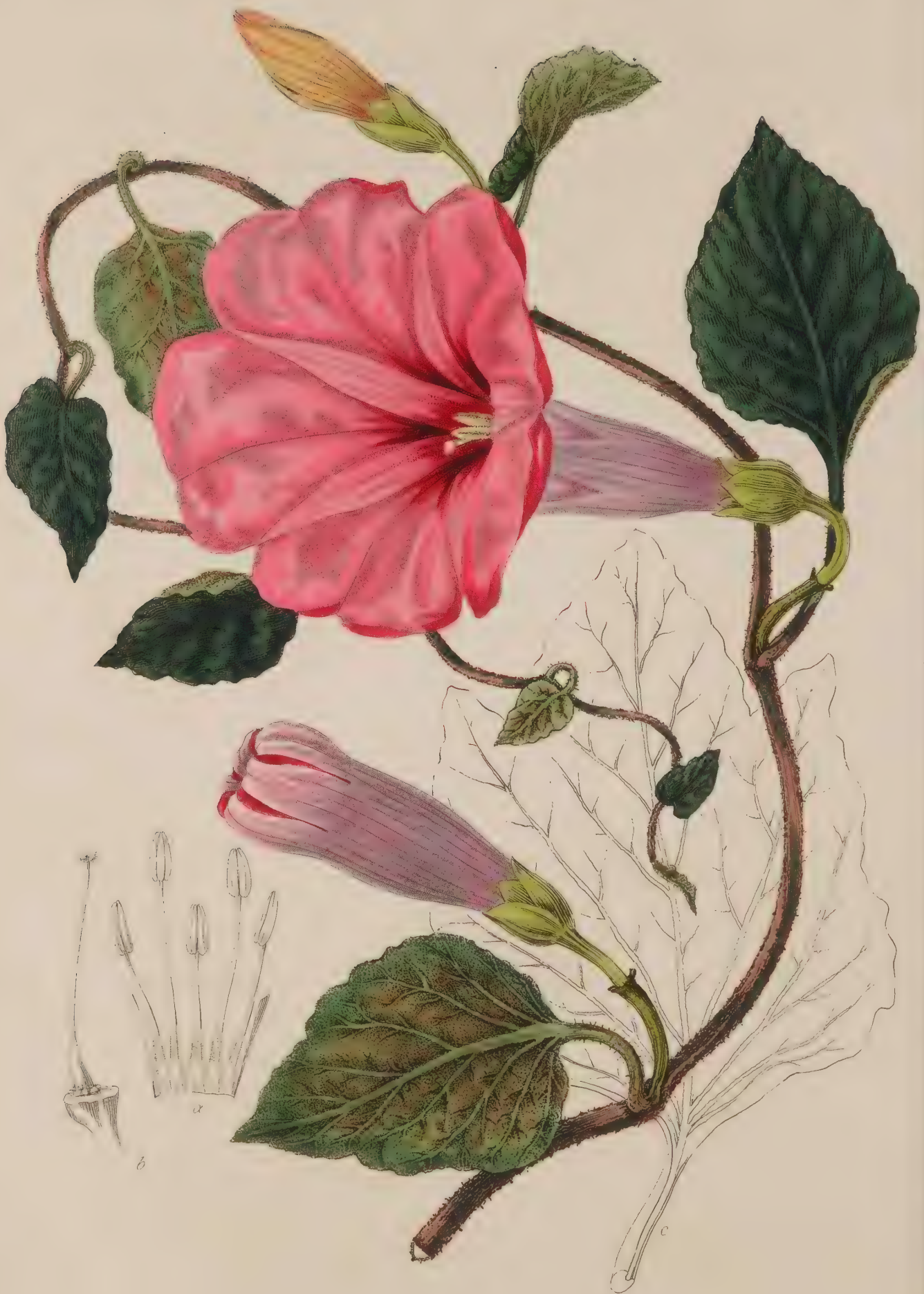
Mr. Gate, of Princes Street, Soho, who lived at a large wholesale druggists in the City, has favoured us with the fol-

* Pharmacop. Francaise, by Ratier, p, 94.
† Ann. de Chin. Lib. xxii. 69.

lowing receipt for a spurious kind of Scammony, with which the profession are supplied by these unprincipled men :—

Take of Gum Scammony, six pounds.
Gum Arabic, six pounds.
Calomel, two ounces.
Aleppo Scammony, one pound.
Ivory Black, *q. s.*

The whole, after being powdered, is formed into a mass by the addition of water.



Convolvulus Jalapa.

W. Clark del. et sculp.

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

CONVOLVULUS JALAPA.

Mexican or Jalap Bindweed.

GEN. CHAR. &c. See *Convolvulus sepium.*

SPEC. CHAR. *Leaves* ovate, somewhat cordate, obtuse, obsoletly repand, villous underneath; peduncles one-flowered.

Syn.—Convolvulus americanus, Jalapium dictus, *Raii Hist. v.* 1. 724.
Bryonia Mechoacana nigricans, *Bauh. Pin.* 298.
Cacamotic Tlanoquiloni, seu Batata purgantia, *Hernand. Mexic.* 229. *cap.* 54.
Convolvulus foliis variis, pedunculis unifloris, radice tuberosa, *Mill. Dict. ed.* 8. *n.* 31.
Ipomœa Jalapa, *Pursh. Amer. Sept.* 1. 146; *Bot. Regist. v.* 8. 342.
Jalapa; flore roseo, foliis sepius integris convolvulus Jalapa, *Lin. Mant.* 42. *ejusd. Mat. Med.* 60.
Convolvulus Jalapa, *Hort. Kew.* 1. 211. *ed.* 2. 1. 332; *Willd. Sp. Pl.* 1. 860; *Curt. Magazin.* 1572; *Woodv. t.* 21; *Stokes, v.* 1. 313.
FOREIGN.—*Jalap*, Fr.; *Scialappa*, It.; *Jalapa*, Sp.; *Jalappenharz*, Ger.

THE Convolvulus Jalapa is a native of Mexico, and is the produce of the temperate region, principally in the neighbourhood of Xalapa, and hence its appellation. It abounds on the eastern slope of the Cordillera of Anahuac, between the 19° or 20° of latitude, and in the same latitude is procured the vanilla and sarsaparilla. From 200,000 to 300,000 pounds are annually exported from Vera Cruz. Although the root forms a well-known and valuable cathartic, which is perhaps more generally employed than any other of vegetable origin, it was not till of late that the genus of the plant, to which it belongs, was accurately ascertained. It seems to have been first brought into Europe by Dr. Houstoun, and communicated to Miller, before the year 1733. Our figure was taken from a fine specimen which flowered this autumn (1827) in the garden belonging to the Apothecaries'

Company at Chelsea. In its wild state, the plant delights in a dry sandy soil, and flowers in August and September.

The root is perennial, large, of an irregular oblong shape; externally blackish, and when fresh, abounding with a milky juice. The stems are numerous, herbaceous, slender, twining, like those of C. *sepium*, round any support, striated, and rises to the height of eight or ten feet. The leaves vary very much in shape; they are petioled, obsoletly serrated, smooth on the upper surface, and hoary or tomentose underneath; the lower ones are generally more or less heart-shaped, but often lobed, as represented in the plate; the upper ones more oblong and acute. The flowers are large bell-shaped, plaited, entire, and stand upon short axillary peduncles, each bearing one or more flowers of a rose-colour externally, and a dark purple within; the calyx consists of five oval, concave, pale green leaves; the anthers are of a pale yellow colour, large, oblong, and tapering; the filaments, which do not protrude beyond the tube, are slender, varying in length, covered at the base with short purple hairs, and inserted into the corolla. The germen is oval, supporting a slender style, crowned with a roundish two-lobed stigma. The seeds are said to be covered with a very white cottony down. Fig. (*a*) represents the stamens, showing their insertion into the corolla; (*b*) the pistil; (*c*) a lower leaf in outline.

Qualities and Chemical Properties.—The dried root of Jalap is imported in thin transverse slices, and in round masses; it is solid, hard, and heavy; of a dark grey colour, and striated appearance. It has a sickly smell, and a sweetish, sub-acrid, nauseous taste. Powdered, it is of a pale yellow brown colour. Proof spirit is its proper menstrum. When dear, it is often adulterated with scammony, or gamboge—if with briony root, the powder is of a paler colour, and it burns less readily when applied to the flame of a candle. Even two parts of black resin, are sometimes mixed with one of Jalap, "but this may be known by putting the powder into rectified spirit, which will dissolve the resin of the Jalap, but not touch the other." By M. Henry's analysis, the constituents of three varities of Jalap are—

	Jal. leger.	Jal. sain.	Jal. pique.
Resin	60	48	72
Extract . . .	75	140	125
Starch . . .	95	102	103
Woody-fibre .	270	210	200
	500	505	500

Jalapine or *Jalapia.*—Mr. Hume, jun. of Long Acre, is said to have discovered a vegeto-alkaline principle in Jalap, and proposes to call it *Jalapine.* It is procured in the following manner. Coarsely powdered jalap is macerated for twelve or fourteen days, in strong acetic acid; a highly coloured tincture is thus obtained, which, when filtered, is to be supersaturated with ammonia, and this must be violently shaken; a sabulous deposit will fall rapidly, and a few crystals will form on the sides of the vessel. The deposit and crystals are to be collected, and washed with distilled water, again dissolved in a small quantity of concentrated acetic acid, and reprecipitated by ammonia added in excess, which throws down the jalapine in small white acicular crystals.

Jalapine is without any perceptible taste or smell, and seems to be heavier than morphia, quinia, or other substances of this class; it is scarcely soluable in cold water, and only to a small extent in hot water; ether has no effect upon it; alcohol is its proper solvent. Very little trouble is requisite to purify jalapine from extractive or colouring matter, for which it appears to have but a slight affinity.

Mr. Hume has not made many experiments upon this substance, but thinks that about one ounce of jalap will, on careful treatment, afford about five grains of the substance."

Medical Poperties and Uses.—Jalap is an active purgative, and one on which we can rely. It produces copious evacuations from the small and large intestines, and would be administered much oftener, were it not for the griping and distressing nausea that often arise from it. It is, notwithstanding, a safe medicine, and combined with other purgatives, has been proved by Dr. James Hamilton to be of eminent use in typhus, scarlatina, cynanche maligna, marasmus, chorea and tetanus. Added to the supertartrate of potass, it produces copious watery evacuations; and an increased secretion of urine generally accompanies these alvine discharges: indeed, by a judicious and persevering use of this preparation, which by the Edinburgh College is termed the " Compound powder of Jalap," it is astonishing how much good has been effected in dropsical cases. A watery extract is ordered by the Dublin pharmacopæia, which

is said to purge moderately without griping, and is therefore well adapted for children. Both the London and Edinburgh Colleges order an alcoholic extract, which is generally so carelessly prepared that no reliance can be placed on it; but when good, it is a more active preparation than the former, exerting its effects in doses of ten or twelve grains. Jalap is best given in substance, in doses, from ten grains, to half a drachm, combined with a drop or two of any essential oil. The preparations are seldom prescribed.

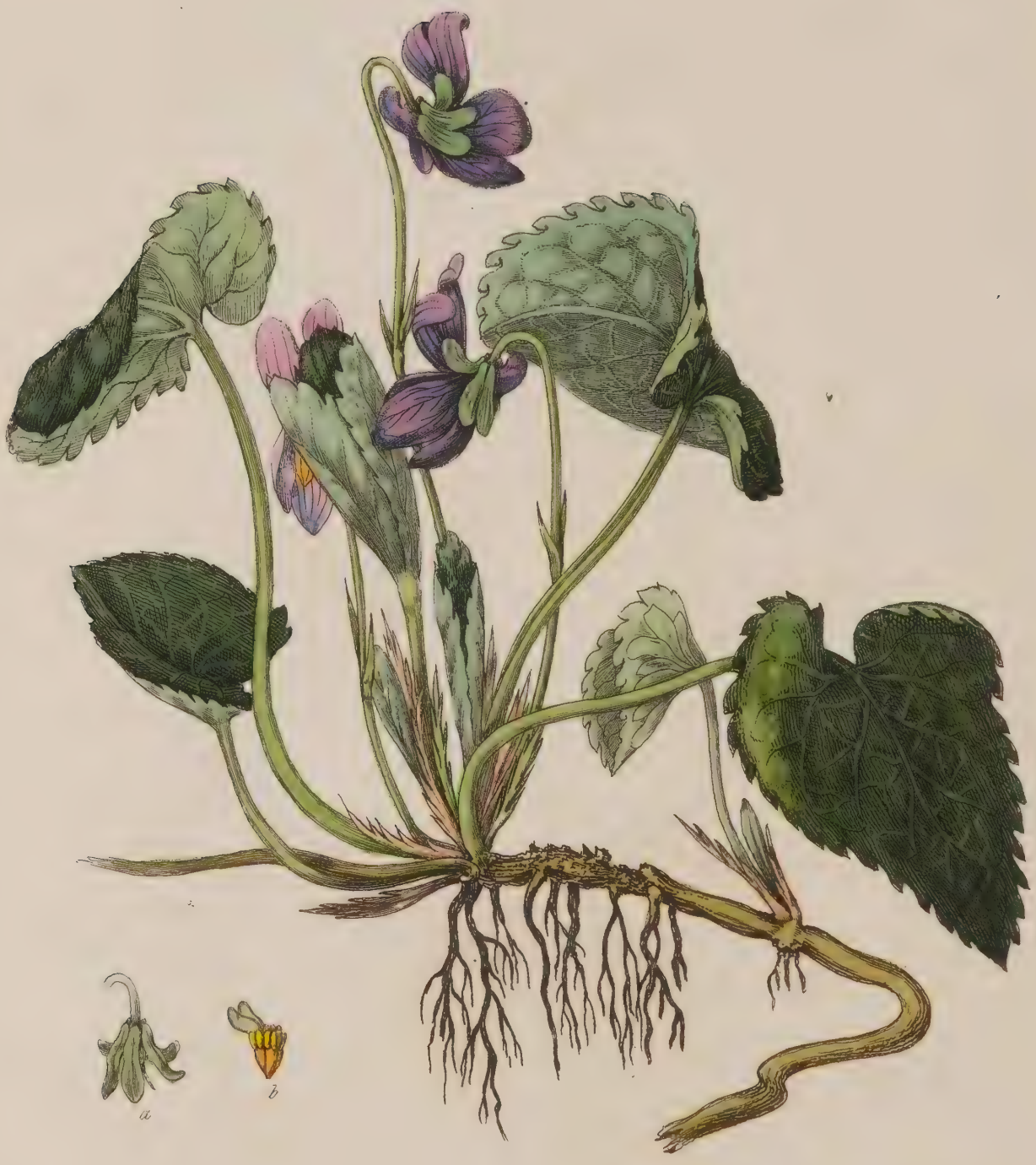
Off. Prep.—Pulv. Jalapæ Comp. Ed.

Dose, two drachms. *L. E. D.*

Extractum Jalapæ. *L. E. D.*

Tinctura Jalapæ. *L. E. D.*

Tinctura Sennæ Comp. *E.*



Viola odorata.

London. Published by John Churchill Leicester Square. Aug.st 1834.

VIOLA ODORATA.

Sweet Violet.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.
Nat. Ord. CAMPANACEÆ, *Lin.* CISTI, *Juss.*

GEN. CHAR. *Calyx* 5-cleft. *Corolla* 5-petalled, irregular, the upper petal spurred at the base. *Anthers* cohering. *Capsule* 3-valved, 1-celled.

SPEC. CHAR. *Stem* none. *Scyons* creeping. *Leaves* cordate, smooth, as well as the footstalks. *Calyx* obtuse.

β alba. With white, or reddish flowers.

Syn.—Viola martia purpurea, *Raii. Syn.* 364. *Bauh. Hist. v.* 3. 542. *f.*
Viola nigra, sive purpurea, *Ger. Em.* 850. *f.*
Viola n. 558. *Hall. Hist. v.* 1. 240.
Viola odorata, *Lin. Sp. Pl.* 1324. *Willd. v.* 1. 1162. *Fl. Brit.* 245. *Eng. Bot. v.* 9. *t.* 619. *Curt. Fl. Lond. fasc.* 1. *t.* 63. *Stokes Bot. Mat. Med. v.* 2. 440. *Hook. Scot,* 77.
FOREIGN.—*Violette odorante,* Fr.; *Viola Mammola,* Ital.; *Violeta,* Span.; *Blaue veilchen,* Ger.; *Pachutschaja fialk,* Russ.; *Kiet tuong hoa,* Chin.

THE subject of this article is a common indigenous plant, growing in most parts of our island, and universally esteemed for the beauty of its flowers, and the sweetness of their scent. It is most frequently found in woods, and moist banks; but a variety, with double flowers, is chiefly cultivated for medicinal purposes.

The plant has no stem, but it increases by runners, which throw out many fibrous radicles, and sends up leaves in tufts. The leaves are heart-shaped, serrated, smoothed above, somewhat wrinkled, petioled, and of a dark green colour. The flowers which appear in March, stand upon smooth channelled

foot-stalks, taller than the leaves, bearing above their middle a pair of small lanceolate bracteas. The calyx consists of five oblong acute leaves. The flowers are drooping, deep purplish blue, and pale in the mouth; the corolla consists of five unequal petals; the two lateral ones are opposite and bearded near the base, the posterior is slightly keeled and has a horned nectarium; the stamens are five, nearly sessile, and terminate in a membranous expansion that covers the upper part of the germen, which is roundish, with a falcated pistil.—Fig. *(a)* represents the calyx and pistil; *(b)* the anthers and nectaries.

The violet is a native of every part of Europe, and Desfontaines says, that it is common in Barbary, in the palm groves, where the blue and white grow promiscuously, and flower in the winter. Hasselquist found it in Palestine and Japan, and Laureiro saw it in China, near Canton. It has always been a favourite with poets; and were we to indulge in quotations, we could fill several pages with their inspirations. We shall merely make one or two extracts:

"There was a mark on Laïs' swan-like breast,
(A purple flower with its leaf of green,)
Like that the Italian saw when on the rest
He stole of the unconscious Imogene,*
And bore away the dark fallacious test
Of what was not, although it might have been,
And much perplexed Leonatus Posthumus;
In truth, it might have puzzled one of us.

"The king told Gyges of the purple flower;
(It chanced to be the flower the boy liked most;)
It has a scent as though love, for its dower,
Had on it all his odorous arrows tost;
For though the rose has more perfuming power,
The violet (haply 'cause 'tis almost lost,
And takes us much more trouble to discover,
Stands first with most, but always with a lover."

BARRY CORNWALL.

———— "Where to pry aloof,
Atween the pillars of the sylvan roof,
Would be to find where violet beds were nestling,
And where the bee with cowslip-bells was wrestling.

* That flower, however, was a cowslip.

" Gay villagers upon a morn of May,
When they have tired their gentle limbs with play,
And formed a snowy circle on the grass,
And placed in midst of all that lovely lass
Who chosen is their queen: —with her fine head
Crowned with flowers, purple, white, and red;
For there the lily and the musk-rose sighing,
Are emblems true of hapless lovers dying:
Between her breasts, that never yet felt trouble,
A bunch of violets, full-blown, and double,
Serenely sleep."

KEATS.

OVID refers to its vulnerary properties:

" Ut si quis violas, riguove papaver in horto,
Liliaque infringat, fulvis hærentia virgis."

Lib. x. v. 190.

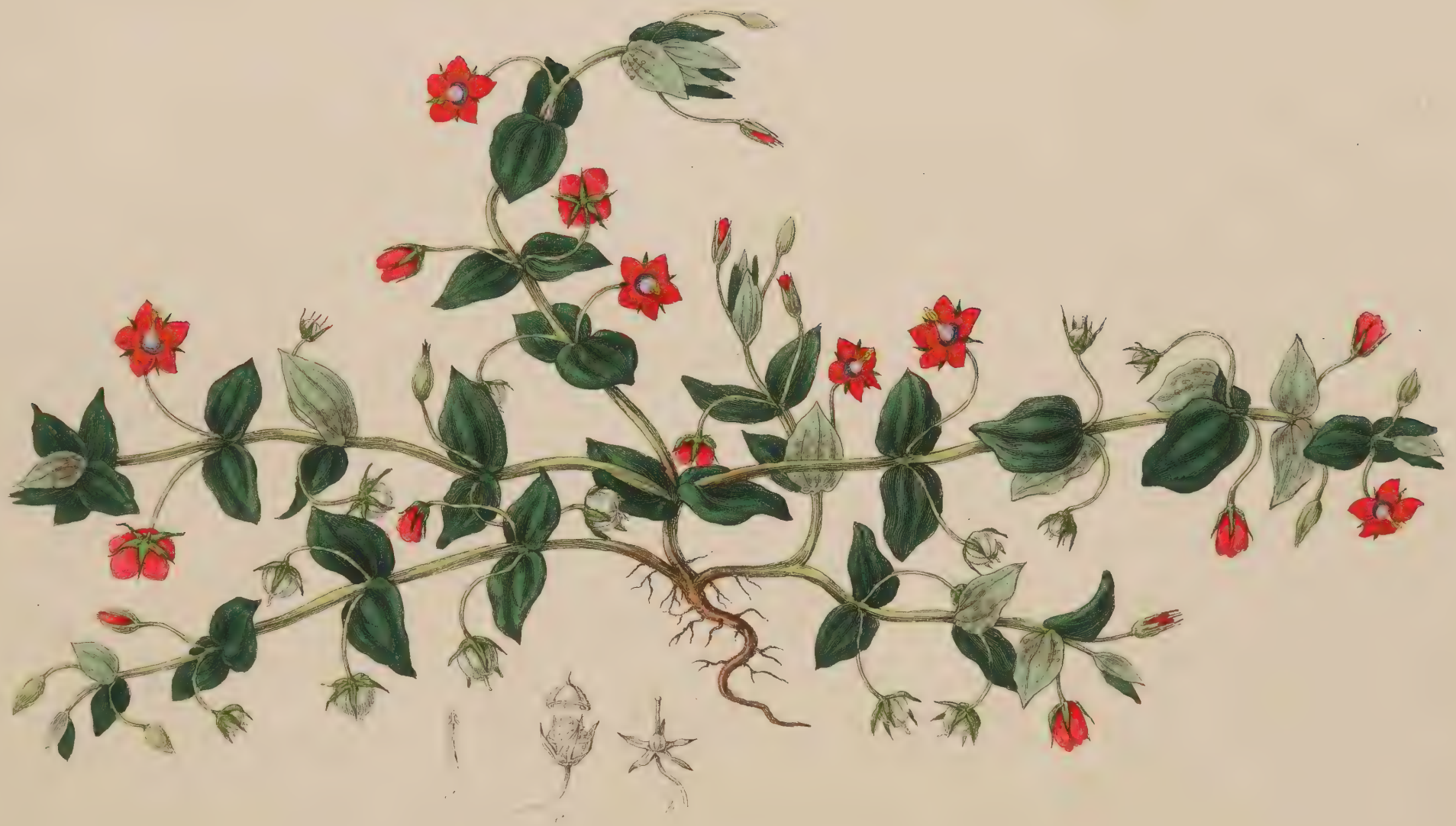
QUALITIES AND CHEMICAL PROPERTIES.—The odour of violets is particularly pleasant, but they are somewhat bitter to the taste. They yield their colour and flavour to boiling water. At a sitting of the Académie Royale de Médicine, M. Boullay read a paper on the analysis of the violet, *viola odorata*, from which it appears that it contains an active alkaline principle, which is bitter and acrid, similar to the *emetine* of Ipecacuanha,* and which he proposes to name, *Emetine of the violet, indigenous emetine*, or *violine*. According to M. Orfila, it is energetically poisonous. It is found to reside equally in the root, leaves, flowers, and seeds of the plants; but associated with different proximate principles, so as to have its action on the animal system modified. It is procured in the same manner as that from Ipecacuanha, and possesses the same properties, excepting its being united to the *malic* acid, instead of the *gallic*. (*Journal de Pharmacie. Jan.* 1824.)

MEDICAL PROPERTIES AND USES.—It is said, that the sherbet that is most esteemed by the Turks, and which is drank by the Grand Signor himself, is made of violets and sugar. The petals were formerly used as a laxative, one drachm of which,

* For the method of procuring Emetine, vide Magendie's Formulary, by Haden, fol. 60.

in powder, operates pretty freely; and two ounces of the root, infused in water, both purges and vomits. The syrup is not now used medicinally, but as well as an aqueous tincture of the flowers, is a useful chemical test; uncombined acids changing the blue colour to a red, and alkalies to a green.

OFF. PREP.—Syrupus Violæ. E. D.



Anagallis arvensis.

ANAGALLIS ARVENSIS.

Scarlet Pimpernel.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. ROTACEÆ, *Lin.* LYSIMACHIÆ, *Juss.*

GEN. CHAR. *Corolla* wheel-shaped. *Stamens* hairy. *Capsule* 1-celled, bursting transversely all round.

SPEC. CHAR. *Leaves* ovate, sessile, dotted beneath *Stems* procumbent. "*Corolla* minutely notched."

Syn.—Anagallis arvensis, *Lin. Sp. Pl.* 211; *Willd. v.* 1. 822, β; *Fl. Brit.* 230.
Anagallis flore phœniceo, *Raii. Syn.* 282, 1; *Park. Theatr.* 558; *Vaill. Paris*, 12.
Anagallis mas, *Ger. Em.* 617. *f*; *Fuch.* 20. *c.* 2; *Math. Valgr. v.* 1. 569. *f*; *Camer. Epit.* 394. *f.*
Anagallis, *n.* 625. *Hall. Hist. v.* 1. 276.
FOREIGN.—Αναγαλλις, *Dioscor.*; *Mouron*, Fr.; *Anagallide*, Ital.; *Gaucheil*, Ger.

THIS is a low, annual plant, with elegant scarlet flowers, and a procumbent stem; resembling common chickweed. It is indigenous to Britain; growing plentifully in cultivated grounds, particularly in rich garden soils; and flowering nearly the whole summer.

Pimpernel has a small fibrous root. The stem is square, much branched, smooth, slender, and clothed with small ovate, shining green leaves, which are either placed opposite, in pairs, without foot-stalks, or four together, and marked with purple spots underneath. The flour-stalks are angular, opposite, one flowered, bending downwards after flowering. The calyx is five-parted, acute, keeled, and permanent. The corolla is bright scarlet, violet coloured at the mouth, monopetallous, wheel-shaped, and divided into five ovate segments, the margins of

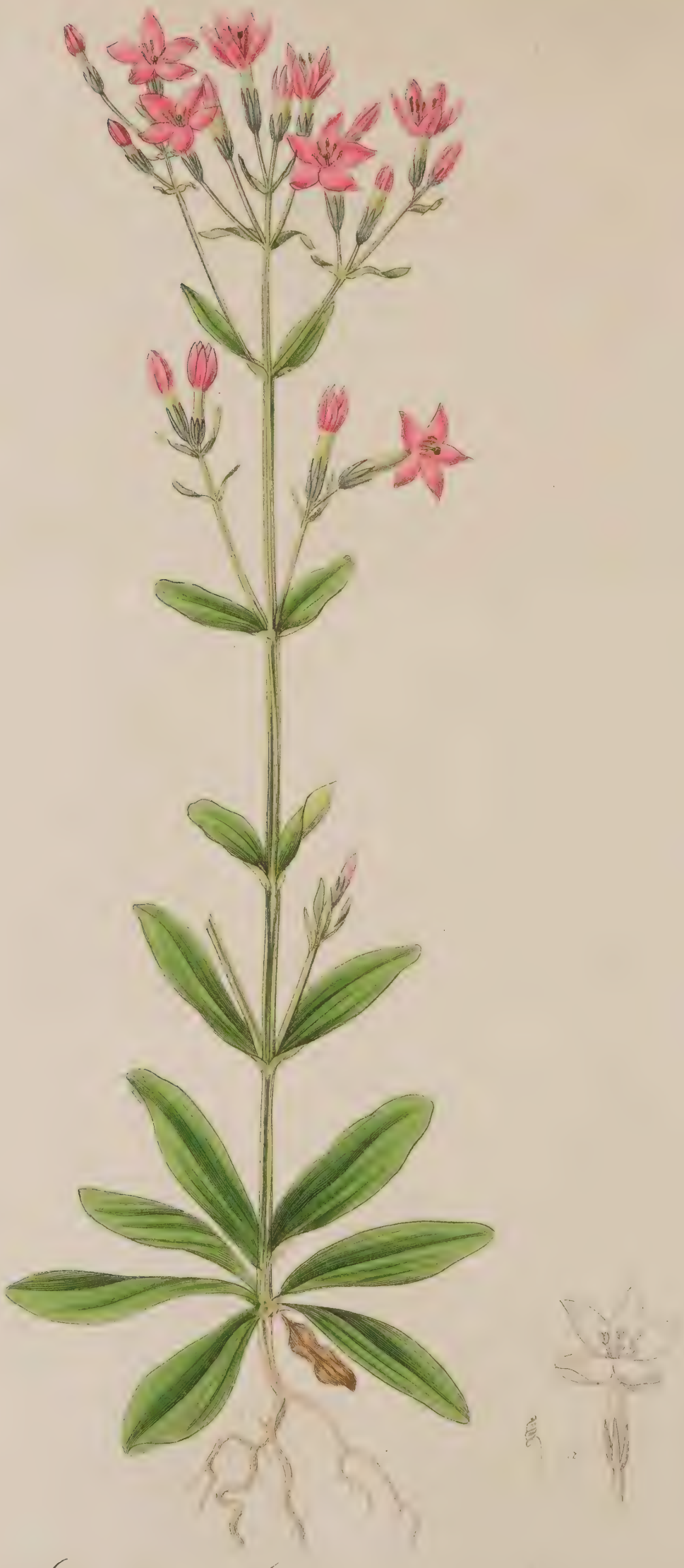
which are slightly notched, or beset with minute glands. The stamens are five, purple, hairy, and supporting yellow heart-shaped anthers. The germen is globular; the style purple, filiform, with a capitate stigma. The capsule is spherical, about the size of a pea, opening horizontally, and containing several small, brown, angular, roughish seeds.—Fig. (*a*) exhibits a single stamen; (*b*) the calyx, germen, and pistil; (*c*) the capsule.

The name *Anagallis*, retained from the old Greek and Roman authors, is supposed to be deduced from the verb *αναγελαω*, to smile, because the plant is conspicuous for the beauty of its flowers. The flowers expand only about the middle of the day, and close at the approach of rain; and from this circumstance it is denominated the *shepherd's, or poor man's weather-glass.*

Properties and Uses.—Pimpernel formerly held a place in our pharmacopœias, and was considered to be detergent, vulnerary, and cephalic; and by the ancients it has been extolled for its virtues in gout, gravel, convulsions, and the plague. Gelin and others have asserted its success in hydrophobia; and had subsequent experience confirmed its powers in this disease, we should view it not merely as a pretty flower, but as the most useful of the vegetable kingdom. It is not now employed, but the following account from Orfila, will prove its poisonous effects.

"At eight in the morning, three drachms of the extract of Pimpernel, dissolved in an ounce and a half of water, were introduced into the stomach of a robust dog. At half-past twelve he had a motion. At six in the evening he was dejected. At eleven sensibility appeared diminished. The next morning at six, he was lying upon the side, and appeared to be dead: he might be displaced like an inert mass of matter. He expired half an hour after. The mucous membrane of the stomach was slightly inflamed; the interior of the rectum was of a bright colour; the ventricles of the heart were distended with black coagulated blood; the lungs presented several livid spots, and their texture was preternaturally dense. Two drachms of the same extract, applied to the cellular texture of a dog's thigh, produced death in twelve hours; and the heart and lungs presented the same appearances as in the other.

Birds, of the passerine kind, are said to feed on the seeds with avidity.



Erythræa Centaurium.

London Published for the Authors June 1 1829.

CXVIII

ERYTHRÆA CENTAURIUM.

Common Centaury.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. ROTACEÆ, *Lin.* GENTIANÆ, *Juss.*

GEN. CHAR. *Capsule* 2-celled. *Corolla* salver-shaped. *Anthers* becoming spiral.

SPEC. CHAR. *Stem* nearly simple. *Panicle* forked corymbose. *Leaves* ovate-lanceolate. *Calyx* half the length of the tube, its segments partly combined by a membrane.

Syn.—Centaurium minus, *Raii Syn.* 286; *Bauh. Pin.* 278; *Camer. Epit.* 426. *f.*
Centaurium parvum, *Ger. Em.* 547. *f.*; *Matth. Valgr. v.* 2. 19. *f.*
Centaurium, n. 648, *Hall. Hist. v.* 1. 288.
Gentiana Centaurium, *Lin. Sp. Pl.* 332; *Bull. Fr. t.* 253; *Fl. Dan. t.* 617.
Chironia Centaurium, *Fl. Brit.* 257; *Eng. Bot. v.* 6. *t.* 417; *Willd. Sp. Pl. v.* 1. 1068; *Curt. Lond. fasc.* 4. *t.* 22; *Woodv. t.* 157.

FOREIGN.—*Gentiane centaurelle; Petit Centaurée*, Fr.; *Centaurea minore*, It.; *Centaurea menor*, Sp.; *Tausendgüldenkraut*, Ger.; *Solotnik polewoi*, Russ.

THIS elegant annual grows spontaneously in most parts of Britain, in dry gravelly pastures, and in woods; flowering in July and August. Dr. Milne found it in great abundance in Charlton Wood, near the seven mile-stone, on the lower road to Woolwich; in the meadows about Eltham and Sidcup; in Shooter's Hill Wood; and in the chalk-pits at Northfleet. We also observed it plentifully in Birch Wood, Kent. A white variety was gathered by Mr. Lawson, near the medicinal well at Cartmel, in Lancashire; and is affirmed by the editor of the third edition of Ray's Synopsis, to be pretty common in Kent and in the isle of Sheppey. It occurs generally throughout Europe, as far northward as Sweden.

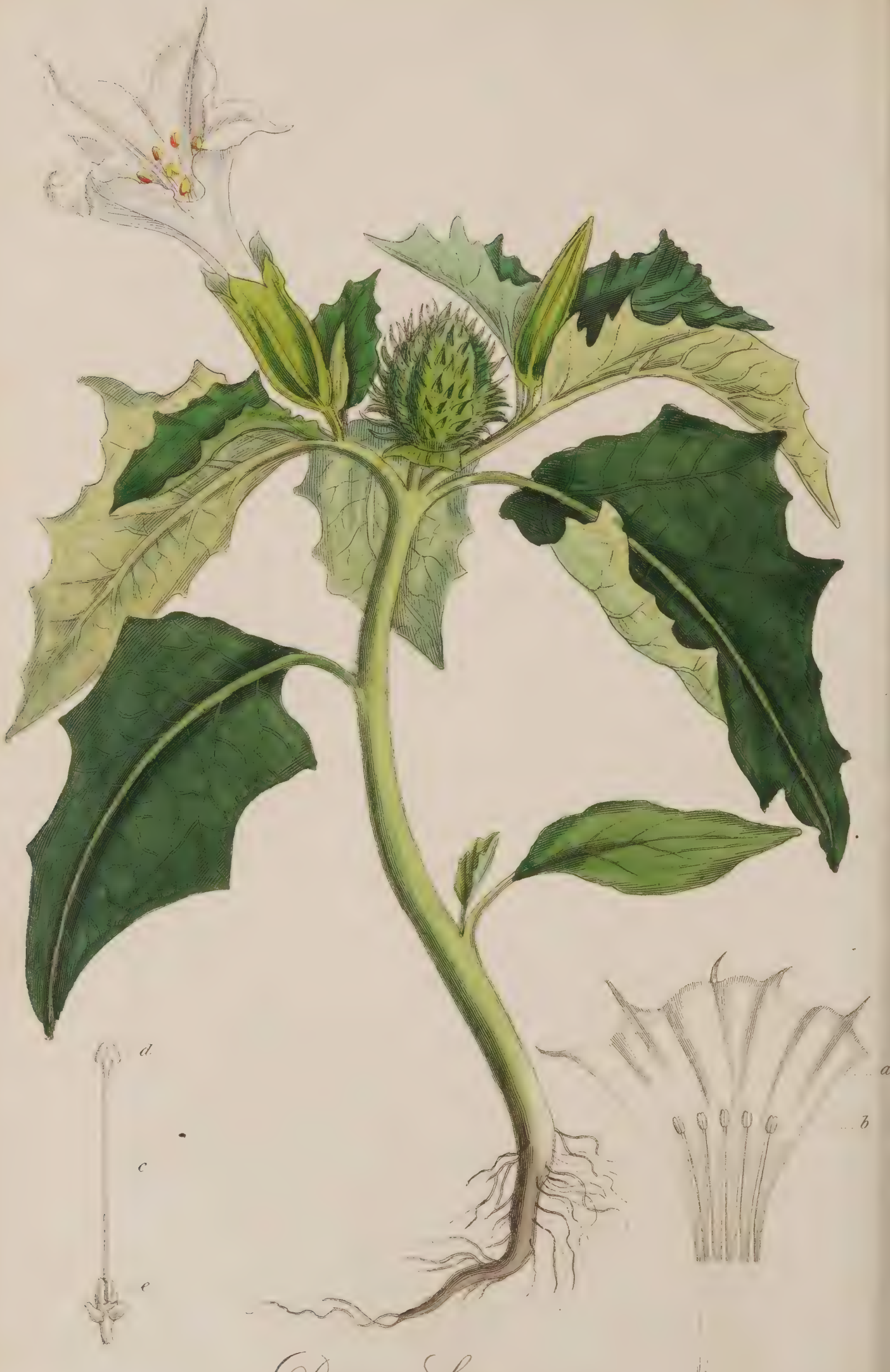
The plant rises from a small woody, fibrous root, to the height of ten or twelve inches. The stem is slender, erect, angular, leafy, sometimes branched at the upper part, and when very

luxuriant, from the base also. The leaves grow close to the stalk, in pairs, tending upwards, and are pointed, ovate, or elliptic-lanceolate. Those next the root are numerous, obovate, and form a turf near the ground: they are all smooth, ribbed like those of plantain or soap-wort, and of a bright green colour. The flowers, which open in the day-time and shut at night, are disposed in a beautiful more or less dense panicle, at the extremity of the forked branches. They have a smooth, striated, 5-cleft calyx, about half the length of the tube of the corolla, whose limb is of a brilliant pink or rose-colour, rarely white, and divided into five elliptical spreading segments, succeeded by an oblong cylindrical capsule, that opens by two valves, disclosing a number of small seeds. The filaments are thread-shaped, and furnished with oblong, yellow anthers, which become spiral or three-times twisted, after bursting, as represented by fig. *a*, on the plate. The germen is oblong, bearing a straight style, with a roundish bifid stigma.

The genus Erythræa, so named from the red colour of most of the flowers, contains four British species. It differs from Chironia, (which was originally appropriated to an African genus,) in habit, in the long tube and short limb of the corolla, and in other less important characters. The term Centaurium was bestowed on this species in honour of Chiron the Centaur, the celebrated preceptor of Achilles, who by the testimony of Pliny, (l. xxv. c. 6,) cured with it Hercules's foot, which had been wounded with a poisoned arrow.

Qualities.—The flowering tops are principally used in medicine; they are intensely bitter, without any peculiar smell. Their active powers are extracted both by water and alcohol. The decoction with water affords, by inspissation, a bitter extract.

Medical Properties and Uses.—Common, or Lesser Centaury, as it is sometimes called, has long been celebrated for its medicinal virtues, and is justly esteemed to be among the most efficacious of our indigenous bitters. It is a useful stomachic and antiseptic, and before the discovery of cinchona, was much employed as a useful tonic, in the cure of intermittent and continued fevers. As a bitter, it may be given with advantage in dyspeptic complaints, and in all cases where that class of remedies is indicated. The tops enter as an ingredient into the Portland powder; once in the highest repute as a remedy against the gout, but now very properly discarded from medical practice. The extract agrees in its medical properties with that of gentian, and being less expensive, is perhaps preferable. The *dose* of the powder is from ʒß to ʒj; of the extract gr. v. to ϑj; of an infusion, made by macerating ℥ß of the dried tops in ℔ß of boiling water, of which ℥ij, may be taken three or four times a day.



Datura Stramonium.

C. Spratt del.

London Published by John Churchill, Leicester Square, Feb.y 1827.

DATURA STRAMONIUM.

Officinal Thorn-Apple.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

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

GEN. CHAR. *Corolla* funnel-shaped, plaited. *Calyx* tubular, angular, deciduous. *Capsule* 2-celled, 4-valved.

SPEC. CHAR. *Pericarps* spinous, ovate, erect. *Leaves* ovate, glabrous.

Syn.—Solanum pomo spinoso oblongo, flore calathoide, Stramonium vulgò dictum. *Raii. Syn.* 266. 1.
Stramonium majus album. *Park.* 260; *Raii. Hist.* 748.
Stramonium spinosum. *Ger. Em.* 348. 2; *Lamarck. Fl. Gall.*
Stramonium fœtidum. *Scop. Carn. n.* 252.
Stramonium. *n.* 586. *Hall. Hist. v.* 1. 258; *Med. Mus.* i. 448. *t.* 6.
Datura lurida. *Salisb. Prodr.* 131.
Solanum Manicum, Dioscoridis. *Column. Phytob.* 46. *t.* 47.
Tatula. *Camer. Epit.* 176. *f.*
Datura Stramonium. *Lin. Sp. Pl.* 255; *Willd. v.* 1. 1008; *Fl. Brit.* 254; *Curt. Lond. fas.* 6. *t.* 17; *Woodv. t.* 124; *Bull. Fl. t.* 13.
FOREIGN.—*Pomme-èpineuse, ou l' endormie*, Fr.; *Stramonio*, Ital.; *Steckapfel*, Ger.

THIS is an annual plant originally imported from America, where it is known under the name of *Apple of Peru, Devil's Apple,* and *Jamestown weed;* but was first cultivated in this country from seeds that were brought from Constantinople by Lord Edward Zouch, about the year 1597, and by the old writers of that period, it is called the "Thorny Apple of Peru." A variety is also native to America, which is generally a larger plant, bear-

ing purple flowers, striped with deep purple inside, and having a reddish stem, minutely dotted with green. It is supposed to be the D. *tatula* of Linneus, and possesses the same sensible and medicinal properties as the plant under consideration.* The common Thorn-apple is an annual plant, frequently observed naturalized on dunghills, in waste places, and near gardens, in the south of England, particularly in the environs of London, whence it has been admitted into our Flora, by Sir J. E. Smith, and figured in " English Botany," t. 1288. Our figure, which is of the natural size, was taken from a very small specimen found on Wimbledon Common, about three miles south of Putney, where we have observed it for several years.

Thorn-apple rises from a white, branched, woody, and fibrous root, to the height of about two feet. The stem is herbaceous, erect, round, smooth, of a yellowish green colour, undivided below, dichotomous above, and cloathed with leaves, springing from the divisions of the stem and branches; which are of a dark green colour on the upper surface, and paler beneath; ovate, pointed, smooth, alternate, sinuated, and toothed, on long cylindrical footstalks. The flowers are large, erect, of a snow white colour, and proceed singly, on short footstalks from the axillæ of the stem and branches. The calyx is monopetalous, oblong, tubular, and five-toothed: the corolla (*a*) is funnel-shaped, with the tube cylindrical, longer than the calyx; the limb, spreading, five-angled, acuminate, with five teeth. The filaments are five, awl-shaped, and support oblong flat heart-shaped anthers.(*b*) The style (*c*) is erect, filiform, the length of the stamens, with an obtuse bi-lobed stigma (*d*). Germen ovate(*e*). The fruit is a roundish, ovate capsule, beset with sharp awl-shaped spines, 2-celled, four valved, and seated on the base of the calyx. The seeds are numerous, and kidney-shaped.

* Kalm, in his travels in North America, speaking of this plant, observes, that " it grows in great quantities in all the villages; its height is different according to the soil it is in; for, in a rich soil, it grows eight or ten feet high; but, in hard and poor ground, it will seldom come up to six inches. This *Datura*, together with the *Phytolacca*, or American Nightshade, grow here, in those places near the gardens, houses, and roads; which in Sweden are covered with nettles and goose-foot: which European plants are very scarce in America; but the *Datura*, and the *Phytolacca* are the worst weeds here; nobody knowing any particular use of them."

The generic name Datura, some writers have derived from the American name of this plant, of similar sound, made classical from *do, dare, daturus*, because it is given as a narcotic. The specific name, stramonium, is supposed to be a corruption of στρυχνομανικον, in reference to its effects in causing madness.

Qualities.—Every part of Stramonium when recent, has a strong, heavy, disagreeable odour: in America sometimes so powerful, that intermittent fever has been ascribed to it, which Beck remarks, "is evidently laying too much stress on the plant; but its effluvia is certainly noxious." It possesses a bitter taste, and imparts to the saliva a green tinge, when chewed. Cows, horses, sheep, and goats refuse this plant.

Chemical Properties.—The virtues of Stramonium, which appear to be extractive, are imparted to water and alcohol; but most readily to the former. This extractive principle, is copiously precipitated from the infusion, by muriate of tin. With *sulphate of iron* it gives a deep green, and sometimes an olive colour; and with *gelatin* undergoes no change. "The watery infusion is transparent, with a very pale yellow hue, which is dissipated by acids, but very much deepened by the alkalies." According to Wedenberg, (Dissertatio Medica de Stramonio usu,) it contains gum or mucus; resin, and a volatile principle, which Dr. Todd Thompson pronounces to be carbonate of ammonia. Dr. S. Cooper, of America, by evaporating infusion of Stramonium, observed a large number of minute crystals, resembling particles of nitre: and Professor Bigelow, thinking that they might be analogous to the crystals, obtained by Derosne from opium, instituted a series of experiments to ascertain the fact, but was unsuccessful. Brandes has succeeded in extracting from the seeds * of Stramonium, an

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* The seeds yielded the following constituents to that gentlemen:—fixed oil 13.85; thick fatty oil 0.8; a fatty butyraceous matter with resinous chlorophylle 1.4; wax 1.4; resin insoluble in ether 9.9; yellowish red extractive matter 0.6; malate of *daturine* 1; uncrystallizable sugar, with a salt with the base of *daturine* 0.8; gummy extractive matter 6; gum, with different salts 7.9; bassorine, with alumina and phosphate of lime 3.4: woody fibre 22; phyleumacolle 4.55; albumen 1.9; a matter analogous to ulmin, called by M. Brandes *glutenoine* 5.5; malate of *daturine*, malate and accetate of potass, and malate of lime 0.6; a membranous secretion, containing silica 1.35; water 15.1; loss 1.95.

alkaline principle similar to Atropine in its relations, to which he has given the name *Daturine*. It contains the whole of the poisonous matter of Stramonium, and its vapour is likewise exceedingly prejudicial.

Poisonous Effects.—Stramonium, when administered in too large doses, produces intoxication, nausea, delirium, loss of sense, drowsiness, a sort of madness and fury; loss of memory, sometimes transitory and sometimes permanent; convulsions, sense of suffocation, paralysis of the limbs, cold sweats, excessive thirst, dilatation of the pupil, tremblings, and death.

Milne remarks, "Of the intoxicating quality of their native species of Stramonium, the women in some of the Asiatic Islands, we are informed by travellers, so dexterously avail themselves, as not only with impunity to use the most indecent freedoms, but even to enjoy their gallants in the company of their husbands, who, being presented with a proper quantity of this soporific and lethean drug, are at first seized with a fatuity, and pleasing delirium, which are soon followed by those very convenient symptoms, stupor, and a total want of recollection:" and so general was this credulity in former times, that the Royal Society gravely inquired of Sir Philberto Vernatti, "Whether the Indians can so prepare the stupifying herb Datura, that they make it lie several days, months, or years, according as they will have it, in a man's body; and at the end kill him without missing half an hour's time?"

In Beverly's History of Virginia, p. 121, we find the following curious passage:—"The Jamestown weed, which resembles the thorny apples of Peru, (and I take it to be the plant so called,) is supposed to be one of the greatest coolers in the world. This being an early plant, was gathered very young for a boiled sallad, by some of the soldiers sent thither to quell the rebellion of Bacon; and some of them ate plentifully of it: the effect of which was a very pleasant comedy, for they turned natural fools upon it for several days. One would blow up a feather in the air, another would dart straws at it with much fury; another stark naked was sitting up in a corner like a monkey, grinning and making mows at them; a fourth would fondly kiss and paw his companions, and sneer in their faces with a countenance more antic than any in a Dutch droll. In this frantic condition they were confined, lest, in their folly, they should destroy themselves. A thousand simple tricks they played, and after eleven days returned to themselves again, not remembering anything that had passed."

Dr. Rush saw a child between three and four years old, who had swallowed some of the seeds. A violent fever, delirium, tremors in the limbs, and a general eruption on the skin were present, accompanied with considerable swelling, itching, and inflammation. Repeated emetics and purgatives, alleviated the disease and brought away some of the seeds. Dilatation of the pupils still remained, but

were obviated by a continuance of the previous remedies, and she recovered.

In the transactions of the College of Physicians of Philadelphia, Dr. Bartram relates, that he was called to a child suddenly seized with idiotcy without fever. The pulse was natural, tongue clean, and no internal function disturbed, excepting that of the brain. The child appeared very happy; talking, laughing, and in constant motion, yet so weak it could not stand or walk, without tottering. He exhibited an emetic, and the seeds of the *thorn-apple* were rejected, after which the child recovered.

"A lady, aged 30, was the subject of intense headache, the pain of which was so intense, as to destroy sleep, and disqualify her for all occupation. It observed periods of three or four hours, with intermissions of from twenty to forty minutes. The digestion was somewhat deranged; the other functions natural. Local and general blood-letting, antimonials, and cinchona had been tried in vain. One grain of extract of Stramonium was given every morning, for four successive days. No relief following, the dose was doubled on the fifth; and in four hours after, all the symptoms of poisoning by Stramonium were developed. The face was of a purple-red colour, and swollen; eyes prominent, pupil dilated; eye-lids half closed, and vision nearly lost; hearing impaired; muscles of the lower jaw, lips, right arm and leg convulsed; left side completely paralyzed, and the intellect singularly disturbed; continual incoherent stammering; weeping, and other expressions of dreadful suffering; deglutition difficult; abdomen sore; pulse small and frequent; respiration tight and hurried; temperature natural; cold sweats confined to the paralyzed foot. Ten leeches were applied behind the ears; sinapisms to the feet; injections of common salt and vinegar administered; and vinegar and water given internally. An emetic was not prescribed; the symptoms indicative of absorption, proving that the poison was no longer in the intestinal canal. The phenomena now gradually subsided, and the paralyzed limb began to execute slight movements. About midnight there was another but less violent attack, relieved by antispasmodics. Weakness and indistinct articulation only remained; and the headache never recurred. In nine days the patient was perfectly restored.

"The violent operation of the Stramonium is, in this instance, referred by Orfila to some peculiarity of constitution in the patient: since it may be administered commonly, without inconvenience, in a dose double that which produced the violent effects here described. The case occurred in Minorca: and most of the poisonous plants, Orfila observes, possess greater energy in this and similar situations, than in more northern latitudes. And, again, the inhabitants of the south are endued with a peculiar susceptibility, which renders them more sensible to the action of powerful medicines. However it may be, the fact of a general, and very intense headache having been speedily removed by Stramonium, is worthy of record."

Morbid Appearances.—The stomachs of animals poisoned with the watery extract of Stramonium, were found by Orfila,

inflamed: and blood was extravasated between the mucous coat, and the one subjacent to it. The lungs were of a deep red, and distended with black and fluid blood. Haller opened a woman, who was poisoned by Stramonium: the cortical part of the brain was full of blood, and there were some coagula in the cavities of the cranium.

Treatment.—The treatment required to counteract the effects of Stramonium, is precisely that which has already been advised for the Atropa *Belladonna;* to which it is very closely allied.

Medical Properties and Uses.—Stramonium, like Belladonna, is so powerful in its effects, that it is not very generally employed in this country: and like many other valuable agents, its real utility is depreciated, through the hyperbolical and laudatory strains that have been lavished on it, by its ardent admirers. Baron Störck was the first to recommend it in mania and epilepsy; and like other medicines of the narcotic tribe, it has been found to succeed in some instances, and to fail in many others. Dr. Davy, however, has found it useful in the former, by its allaying irritation, and procuring quiet sleep. And Bergius remarks, "Sœpius ipse," (that is, Wedenberg,) "vidi maniacos in integrum restitutos absque relapsu, ex propinato Extracto Daturæ, per tempus quoddam continuato. Delirium post puerperium sæpe curavi cum Datura, ubi alia fefellerunt."

Dr. Fisher, President of the Massachusetts Medical Society, divides the cases of epilepsy into three kinds; those in which the fits return daily; in which they revive at regular periods, as monthly, or give warning of their approach by previous symptoms; lastly, those in which they do not observe any regular period, and do not give any warning of their approach. In the two first kinds he asserts, that all the cases which came under his care, and which were not very few, had been cured by Stramonium. In those of the third kind, he found it of no benefit whatever; Dr. Arch, of Maryland, confirms his statement, by observing the same distinction in his practice.

Taken in large doses, and the system kept for some time under its influence, it has afforded decided relief in Tic Douloureux; and in the most severe, and best marked case of spasmodic

asthma we ever witnessed, the inspissated juice of Stramonium, brought to its proper consistence, by the spontaneous action of the atmosphere, was given in doses of a quarter of a grain every four hours, and speedily produced relief. It is also said to have been successfully administered in large doses for rabies, by the practitioners of India.

Professor Bigelow's remarks on its effects, when smoked, are so judicious, that we transcribe them from his valuable work :* "Within a few years, the thorn-apple has attracted much notice, both in Europe and in this conntry, as an efficacious palliative in asthma and some other affections of the lungs, when used by smoking, in the same manner as tobacco. The practice was first suggested by the employment of another species, the *D. ferox*, for similar complaints in the East Indies. An English gentleman having exhausted the stock with which he had been supplied of the oriental plant, was advised by Dr. Sims to have recourse to the common Stramonium as a substitute; and upon trial, experienced the same benefit as he had done from the former species. This instance of success led to further trials, and in a short time several publications appeared, containing cases of great relief, afforded by smoking this plant in the paroxysms of asthma. Many individuals of different ages, habits, and constitutions, had used it with the effect of producing immediate relief, and of terminating the paroxysm in a short time. The efficacy, however, of this medicine was called in question by Dr. Bree, who published in the Medical and Physical Journal a letter, containing the result of a great number of unsuccessful trials of Stramonium, in asthmatic cases. It may be doubted whether any other physician has been so unfortunate in its use as Dr. Bree, since he affirms that not one case, of those under his care, was benefited by it. Certain it is, that in this country, (America,) the thorn-apple is employed with very frequent success by asthmatic patients, and it would not be difficult to designate a dozen individuals in Boston and its vicinity, who are in the habit of employing it, with unfailing relief, in the

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* *American Medical Botany*, vol. i. part i. p. 23.

paroxysms of this distressing complaint. The cases, which it is fitted to relieve, are those of pure spasmodic asthma, in which it doubtless acts by its sedative and antispasmodic effects. In those depending upon effusion of serum in the lungs, or upon the presence of exciting causes in the first passages, or elsewhere, requiring to be removed; it must not be expected that remedies of this class can afford benefit. In several cases of plethoric and intemperate people, I have found it fail altogether, and venesection afterwards to give speedy relief." For the purpose of smoking, the leaf should be used instead of the root, as it is less fibrous, and possesses all the virtues of the plant.

Dr. Marcet published the result of his experience with Stramonium, and states that many kinds of diseases of a painful nature were more relieved by it, when taken internally, than by any other narcotic substance; and although it frequently excites nervous sensations that are disagreeable, and somewhat alarming to the patient, yet they did not always occur; and its effects on the bowels are rather relaxing, than astringent. Sometimes it rendered the pulse slower.

"Cataplasms of the fresh leaves bruised have been successfully applied to inflammatory tumours, and for discussing masses of indurated milk in the breasts of nurses; and an ointment made with the powdered leaves, allays the pain of hæmorrhoids."

Dose.—Of the inspissated juice, from half to two or three grains.

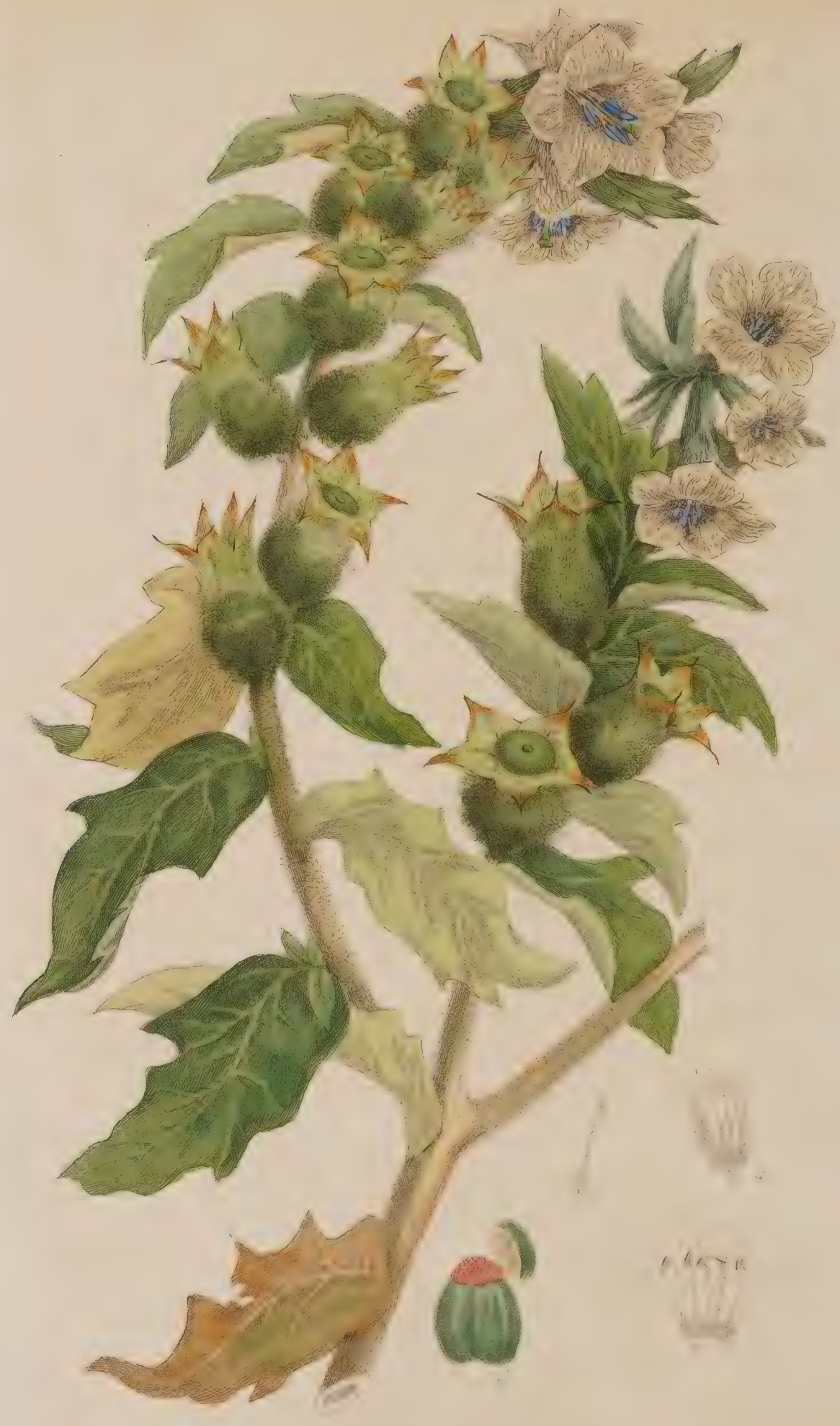
Formulæ.—*Tinctura Stramonii.*

℞ Daturæ Stramonii seminum contusi. ℥ij.
Spiritûs tenuioris ℥j.
Macera per dies quatuordecim, et cola.

Sir H. Halford recommends this preparation.

℞ Extracti Stramonii ʒj.
Saponis duri ʒij.
Acaciæ gummi pulv. ℈j.
Glycyrrhizæ pulv. ℈ij.
Mucil. Tragacanth. q. s. ft. Massa in pilulas sexaginta dividenda.—Dosis, una nocte maneque.

Off. Prep.—Extract. Stramonii. L.



Hyoscyamus niger.

HYOSCYAMUS NIGER.

Common Henbane.

Class V. PENTANDRIA.—*Ord.* I. MONOGYNIA.

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

GEN. CHAR. *Corolla,* funnel-shaped, the lobes obtuse. *Stigma* capitate. *Capsule,* covered with a lid, 2-celled.

SPEC. CHAR. *Leaves* sinuate, amplexicaul; *flowers* sessile.

Syn.—Hyoscyamus vulgaris. *Raii. Syn.* 274. 1.
Hyoscyamus. *Hall. Hist. v.* 1. 254. *Brunsf. Herb. v.* 1. 224. *Camer. Epit.* 807. *f.* *Matth. Valgr. v.* 2. 410. *f.*
Hyoscyamus niger vel. vulgaris. *Park. Theatr.* 363.
Hyoscyamus lethalis. *Salisb. Prodr.* 131.
Hyoscyamus flavus. *Fuchs. Hist.* 833. *f.*
Hyoscyamus niger. *Lin. Sp. Pl.* 257. *Willd. v.* 1. 1010. *Fl. Brit.* 254. *Ger. Em.* 353. *f.*; *Eng. Bot. v.* 9. *t.* 591; *Hook. Scot.* 78.; *Woodv. Med. Bot. t.* 52; *Bull. Fr. t.* 93.
FOREIGN.—*Jusquiame, ou hanebane potelée,* Fr.; *Bilsenkraut,* Ger.; *Giusquiamo, Fava porcina,* It.; *Beleno, Veleno,* Sp.; *Miemendro, Velheno, Yosciamo,* Port.; *Honsebane,* Dan.; *Bolmort, Honsable,* Swed.; *Belena,* Russ.; *Sickran,* Arab.

COMMON HENBANE is an annual plant, growing naturally in many parts of our island, on waste grounds, and particularly on dry calcareous soils, on the sea coast of Essex and Kent; flowering in July. The figure was drawn from a specimen found on Barnes Common; the only locality in the immediate vicinity of the metropolis with which we are acquainted: the London

herb-shops being chiefly supplied with it from Birch, near Colchester, and the Isle of Thanet, where it grows in great abundance. Mr. Greville, in his "Flora Edinensis," on the authority of Mr. Neill, mentions it as occurring at Lochend, and on the south-east end of the debris of Salisbury Craigs.

The root is fusiform, long, thick, wrinkled, brown externally, and white within. The stem rises to the height of two feet; is erect, branched, woody, cylindrical, somewhat viscid, and covered with a hairy down. The leaves surrounding the stalk at their base, stand irregularly, or in alternate order; are large, clammy like the stalks, soft, woolly, pointed at the ends, very deeply sinuated at the edges, and of a glaucous green colour. The flowers are numerous, mostly sessile, of a straw-yellow colour, reticulated with dark purple veins; and either emerge singly from the alæ of the leaves, or form long drooping, unilateral spikes, at the extremity of the stem and branches. A variety without these veins is mentioned by Sir J. E. Smith, as having been found by the Rev. J. Forby, at Fincham, in Norfolk. The corolla is monopetalous, funnel-shaped, and divided into five obtuse segments. The calyx is pitcher-shaped, 5-cleft, and remains till the fruit be ripe. The filaments are inserted into the tube of the corolla, downy at the base, subulated, inclined inwards, and supporting heart-shaped anthers of a deep purple colour. The germen is roundish; style filiform, the length of the stamens, with a blunt round stigma. The capsule is ovate, filling the body of the calyx; bilocular, and opening transversely by a convex lid. It contains numerous, small, obovate, unequal brown seeds. The whole plant is covered with soft, unctuous hairs. Fig. (*a*) represents the calyx; (*b*) the corolla, with the stamens and anthers; (*c*) the germen and style; (*d*) the capsule, with its lid.

The systematic name, *Hyoscyamus*, is of Greek origin, and is derived from ὑς, *sus*, and κύαμος, *faba*, a bean, Hogs-bean: because the exterior of the capsule has some resemblance to the shape of a bean, and the herb may be eaten by swine with impunity: whereas, to most other animals it proves poisonous. Ælian, however, relates that if this plant be devoured by swine,

its effects are extremely prejudicial, occasioning convulsions, and even death. The trivial name *niger* (black), is expressive of the colour of the seeds, and serves to distinguish the present species from another kind of European Henbane with white seeds, and which for that reason is termed Hyoscyamus *albus*. The English name Henbane, seems to be derived from the effects of the seeds on fowls: *Bana*, being the Saxon word for murdering, slaying; thus the plant is the destroyer, or *bane*, of hens. Matthiolus, in his Commentaries on Dioscorides, asserts that he was a witness to the effects of the seeds on children, and that birds, especially of the gallinaceous tribe, and fishes, die soon after eating them.

Qualities and Chemical Properties.—The whole plant has a strong fœtid narcotic smell, and abounds in a clammy juice of a similar odour. The root has a sweetish taste, which has caused it to be sometimes mistaken for that of the parsnip. Exsciccation is said to destroy these sensible qualities. "Its virtues are completely extracted by diluted alcohol. The watery infusion is of a very pale yellow colour, and insipid; and has the narcotic odour of the plant. It is not altered by the acids; the alkalies change the colour to a deep greenish yellow, which, on the addition of an acid, disappears, and a brownish flocculent precipitate is produced. Copious white precipitates are produced by the solution of subacetate of lead; and black ones by nitrate of silver. Sulphate of iron strikes with it a pale olive colour, and a dark precipitate is slowly formed."* Nitrate of mercury, also, produces a large precipitate; and the watery, and alcoholic solutions, do not disturb each other. Brandes has succeeded in extracting from the *seeds* an alkaline principle, termed *hyoscyamine*, on which its active principle depends; its vapour being exceedingly prejudicial.†

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* Thompson.

† The seeds of Hyoscyamus *niger* furnished to M. Brandes:—Fixed oil, readily soluble in spirit of wine 19. 6; fixed oil, *not* readily soluble in spirit of wine 4. 6; fatty substance analagous to cetine 1. 4; malate of *hyoscyamine*, with malates of lime and magnesia, and an ammoniacal salt 6. 3; uncrystallizable sugar, a trace; gum 1. 2; bassarine 2. 4; fecula 1. 5; woody fibre 26; phyteumacolle 3. 4; soluble

Poisonous Effects and Morbid Appearances.—Henbane, when administered in too large a dose, becomes a very dangerous poison. The effects produced by this plant, besides madness, are symptoms of intoxication, stupor, remarkable dilatation of the pupil, apoplexy, and convulsions; terminating in death. On dissection, the internal surface of the stomach is often found inflamed, and covered with gangrenous spots; the brain also exhibits appearances denoting great vascular excitement.

Wepfer relates, that several monks made a repast on the roots of wild endive, among which were mixed by mistake two roots of henbane. In a few hours some experienced vertigo; others a burning of the tongue, lips, and throat. Severe pains were also felt in the iliac region, and in all the joints. The intellectual faculties and organs of vision were perverted, and they gave themselves up to actions that were mad and ridiculous. They however recovered. In other cases a haggard countenance, dilatation of the pupils, difficulty of breathing, small and intermittent pulse, loss of speech, trismus, and temporary loss of intellect, have been the principal symptoms; while the extremities have been observed to be cold, and nearly paralyzed. A clyster, prepared from a decoction of henbane, caused a numbness and loss of motion of the upper and lower extremities, propensity to sleep, and difficulty of hearing.—Orfila, vol. II. p. 135 to 139. Foderè, vol. IV. p. 25.

"Dr. Patouillat, of Toucy, in France, saw nine persons who were poisoned with this root. Some were speechless and convulsive; others occasionally howled. In all, there was a protrusion of the eyes, contortion of the mouth, and delirium. Emetics relieved them, but their sight was for some days affected, and all objects appeared red, like scarlet."—Phil. Transact. vol. XL. p. 446.

The vapours of this plant were latety used by Hufeland in nervous affections. When exposed to this, even though precautions were taken to prevent the fumes from reaching the face, profuse perspirations ensued; with a sense of fulness in the head, and sometimes tremors, difficult respiration, and vertigo. Boerhaave also experienced a trembling and drunkenness, while preparing a plaster into the composition of which henbane entered. On animals, the juice and decoction of the root produced lethargic effects, but very seldom any giddiness or convulsions. When applied to the cellular texture, death ensued sooner; and vomiting occurred in one case: but generally the comatose symptoms were all that were observed. No inflammation was noticed in the stomach; the lungs were occasionally livid, and

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albumen 0. 8; hard albumen 3. 7; malate, sulphate? and sulphate of potass 0. 4; malate of lime 0. 4; malate of magnesia 0. 2; phosphates of lime and magnesia 2. 4; water 24.1; excess 1.4. The ashes contained—carbonate, phosphate, sulphate? and hydrochlorate of potass; carbonate, and much phosphate of lime; much silica, manganese, and iron, and a very little copper.—Majendie's Formulary, p. 221.

black blood was observed in the heart. Horses, goats, sheep, and swine, are said to eat it with impunity.

Hyoscyamus *aureus*, *physaloides*, and *Scopolia*, are all deemed to be poisonous: and the following account is illustrative of the effects of H. *albus*.

"In April 1792, a large quantity was carried by mistake on board the French corvette La Sardine, which the sailors had gathered in one of the isles of Sapienzi, in the Morea. A part of it was put into the ship's copper, and the remainder into those of some of the subaltern officers. At four o'clock they all dined. In a short time, vertigo, vomiting, convulsions, gripes, and purging, were generally experienced: and when Dr. Picard, the surgeon, came on board, he observed the gunner making a thousand grimaces and contortions. By keeping up the evacuations, most of them recovered; but those in whom there were none, remained for some time in a sickly condition."—Foderè, vol. IV. p. 23.

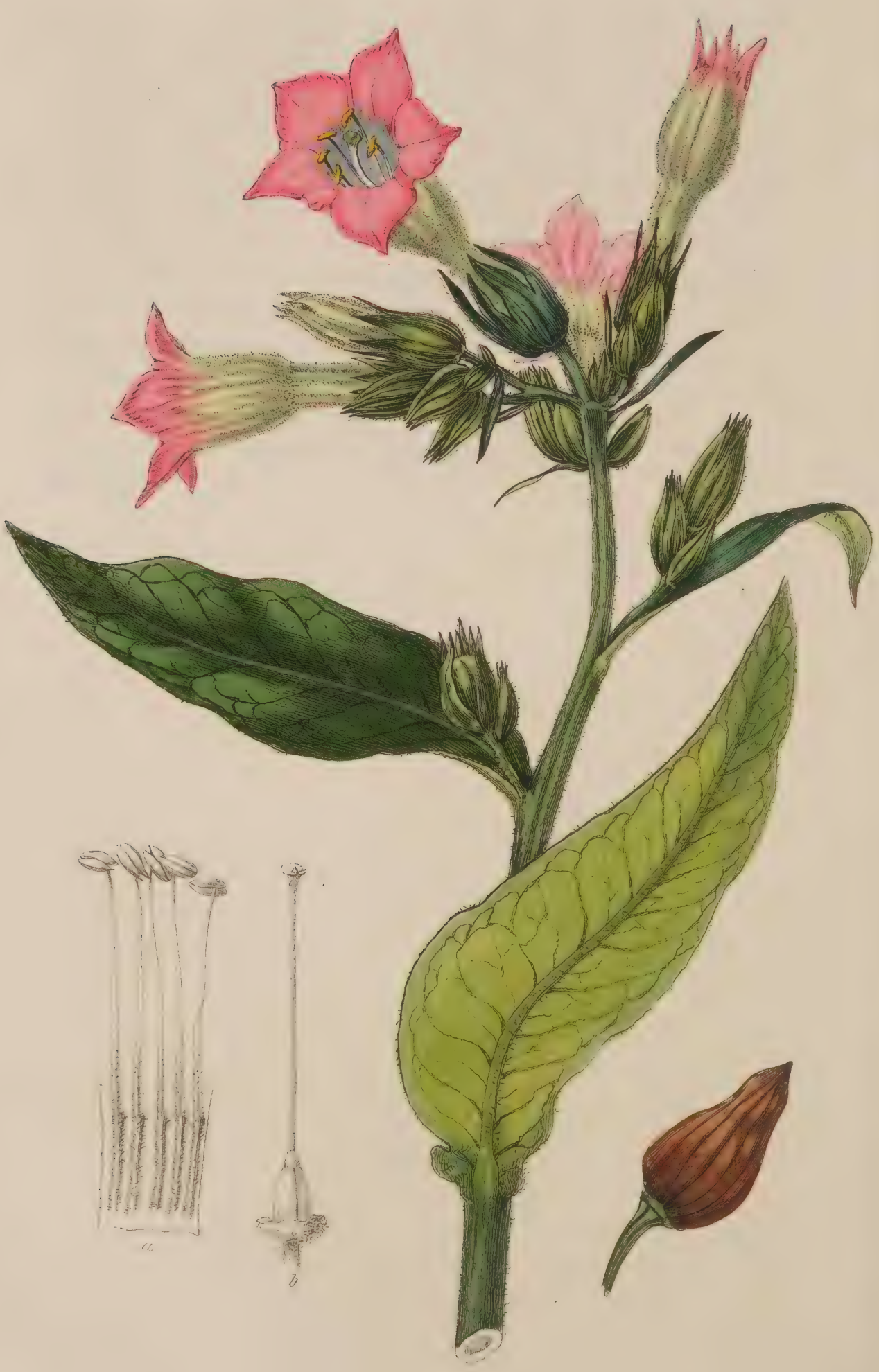
Treatment.—When Henbane is taken in an over dose, the effects are decidedly *narcotic;* and the same treatment is required that we have recommended for Atropa *Belladonna*.

Medical Properties and Uses.—Henbane is one of our most valuable narcotics. The principal use which is made of it, is as a substitute for opium, when the latter disagrees, or is contraindicated by particular symptoms. It appears to be free from the constipating qualities of opium, especially if exhibited in large doses. Like digitalis and other narcotics, it often operates as a diuretic, and sometimes increases the cuticular discharge. In moderate doses, it acts as a powerful sedative, diminishing excess of irritability; induces sleep, relieves chronic and anomalous pains of the abdominal viscera, and is employed, with singular advantage, in irritative conditions of the kidneys, bladder, and urethra. Conjoined with purgatives, it does not impede their operation; and is therefore frequently prescribed with colocynth and other drastic purgatives, where the bowels are irritable, and where it is necessary to increase their secretions. It is occasionally substituted for Belladonna, to cause dilatation of the pupil, prior to the operation for cataract; and it acts much more mildly. Although the seeds are less active than other parts of the plant, and may be eaten in small quantities, without danger, their efficacy in relieving

tooth-ache, when smoked, is generally acknowledged. Colica pictonum, hysteria, rheumatism, gout, palpitation of the heart, and chordee, are complaints for which it is often recommended: while the bruised leaves have been advantageously used as an external application, in the form of cataplasm, to scrofulous and cancerous ulcers, hæmorrhoids, and other painful diseases. But as in some cases it produces unpleasant symptoms, and sleep, which is laborious and unrefreshing, "it is generally resorted to more as a secondary medicine than one which we may confidently apply at first, with reliance on its anodyne effects."

Dose. The dose of the extract may be from grs. v. to ℈j; of the tincture from gtt. xx. to ʒj.

Off. Prep. Extractum Hyoscyami, *L. E. D.* Tinctura Hyoscyami, *L. E. D.*



Nicotiana Tabacum.

W. Clark, del. et sculp.

NICOTIANA TABACUM.

Virginian Tobacco.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

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

GEN. CHAR. *Corolla* funnel-shaped, with the border plaited. *Stamens* inclined. *Capsules* 2-valved, 2-celled.

SPEC. CHAR. *Leaves* lanceolate, ovate, sessile, decurrent. *Segments* of the *Corolla* acute.

Syn.—Tobacco latifolium, *Park.* 363. *t.* 361. *f.* 8; *Raii Hist.* 713.
Hyoscyamus peruvianus, *Ger. Em.* 357.
Petum latifolium, *Clus. Exot.* 309.
Herba sancta indorum, sive Nicotiana gallorum, *Lobel Advers.* 251.
Nicotiana major, sive Tabacum majus, *Bauh. Hist.* 3. 629.
Βλεννοχοις, *Renealm. Spec.* 38. *t.* 37.
Nicotiana Tabacum, *Lin. Sp. Pl.* 258; *Willd.* 1. 1014; *Woodv.* 162. *t.* 60; *Stokes,* 1. 390; *Hort. Kew.* 1. 241.
FOREIGN.—*Tabac,* Fr.; *Tabaco,* Sp.; *Tabacco,* Ital.; *Taback,* Ger.; *Bujjirbhong,* Arab.; *Tambácu,* Hind.

THE Nicotiana Tabacum, or Virginian Tobacco, is an annual plant, a native of America. It is the species chiefly imported into this country as a luxury, and appears to have been introduced since the middle of the sixteenth century. In its native soil the plant flowers in July, but with us it continues to bloom till the end of September.

Every part of the plant is downy, clammy, and fœtid. The stem is erect, round, branched towards the top, and rises to the height of four or five feet. The leaves resemble those of Foxglove, and are numerous, alternate, sessile, oblong, pointed, en-

tire, and of a dull green colour: those next the root are often two feet long, and four or five inches broad. The stem leaves are somewhat decurrent, and become smaller and narrower as they approach the summit. The flowers are produced in loose panicles, upon longish foot-stalks, and are furnished with long, linear-pointed bracteas: the calyx is bell-shaped, and divided into five acute pointed segments; the corolla is monopetalous, twice the length of the calyx, of a pale greenish colour, swelling into an oblong cup, which expands into five-pointed, plated, rose-coloured segments: the filaments are the length of the corolla, and surmounted by oblong compressed anthers: the germen is oval, and supports a long slender style, terminated by a round-ish bilobed stigma. To the flower succeeds an ovate capsule, containing many small kidney-shaped seeds, and bursting at the apex. Fig. (*a*) represents the stamens, showing their insertion into the tube of the corolla; (*b*) the germen and pistil.

The *generic* term "Nicotiana," was bestowed on this plant in honour to Jean Nicot, Ambassador of Francis II. in Portugal; who brought some Tobacco from Lisbon, and presented it to Catherine de Medicis, as a herb possessing valuable properties; hence also it has been termed *queen's herb*. By some, *Tobacco* is said to have been given to the plant by the Spaniards, who took it from Tabaco, a province of Yucatan, where they first found it, and learned its use; others derive it from the island of Tobago: but Humboldt asserts, that "the word tobacco (*tabacco*), like the words savannah, maize, cacique, maguey (agave) and manatee, belongs to the ancient language of Hayti, or Saint Domingo: and that it does not properly denote the herb, but the tube through which the smoke is inhaled."

A very general opinion prevails, that the plant was either brought from Virginia, or from South America; Humboldt expressly contradicts this, and confirms the previous statement, that Europe received the first Tobacco-seeds from Yucatan, about the year 1559; and we gather from his learned work, that the cultivation of this narcotic plant preceded the cultivation of the potatoe in Europe, more than 120 or 140 years. When Raleigh brought Tobacco from Virginia to England, in

1586, whole fields of it were already cultivated in Portugal; and so quickly did the practice of smoking spread, that at the end of the sixteenth century, bitter complaints were made in England of this imitation of the manners of a savage people—" Ex illo sane tempore (tabacum) usu cepit esse creberrimo in Anglia, et magno pretio dum quamplurimi graveolentem illius fumum per tubulum testaceum hauriunt et mox e naribus efflant, adeo ut Anglorum corpora in barbarorum naturam degenerasse videantur, quum iidem ac barbari delectentur." We may see from this passage of Camden's, that they emitted the smoke through the nose.

In 1634, smoking was denounced in Russia, under the penalty of cutting off the nose; and twenty years afterwards, a council of one of the Swiss cantons, cited all smokers before them; and every innkeeper was ordered to inform against those who were found smoking in their houses.

In the laws of Bern, the importance attached to this custom was evident by the place which it held; the prohibition of smoking following the crime of adultery. The Turkish Sultan, Amurath the Fourth, rendered smoking Tobacco punishable with death, from an apprehension that it produced barrenness; and Urban VIII. anathematised those who used it in churches.

King James I. imbibed similar prejudices, and wrote a curious work, entitled " A Counterblaste to Tobacco;" from which we extract the following passage:

" Tobacco being a common herb, which (though under divers names) grows almost every where, was first found out by some of the barbarous Indians to be a preservative, or antidote against the Pox, a filthy disease, whereunto these barbarous people are (as all men know) very much subject, what through the uncleanly and adust constitution of their bodies, and what through the intemperate heat of their climate. So that, as from them was first brought into Christendom that most detestable disease, so from them likewise was brought this use of tobacco, as a stinking and unsavoury antidote for so corrupted and execrable a malady, the stinking suffumigation whereof they yet use against that disease, making so one canker or vermine to eat out another. And now, good countrymen, let us (I pray you) consider what honour or policy can move us to imitate the barbarous and beastly manners of the wild, godless, and slavish *Indians*, especially in so vile and stinking a custome. Shall we, that disdain to imitate the manners of our neighbour *France*, (having the style of the great Christian kingdom,) and that cannot endure the spirit of the *Spaniards*, (their

king being now comparable in largeness of dominions to the greatest emperor of Turkey;) shall we, I say, that have been so long civil and wealthy in peace, famous and invincible in war, fortunate in both; we that have been ever able to aid any of our neighbours, (but never deafened any of their ears with any of our supplications for assistance;) shall we, I say, without blushing, abase ourselves so far as to imitate these beastly *Indians*, slaves to the *Spaniards*, the refuse to the world, and as yet aliens from the holy covenant of God? Why do we not as well imitate them in walking naked as they do, in preferring glasses, feathers, and such toys, to gold and precious stones, as they do? Yea, why do we not deny God, and adore the devils as they do?"

The monarch, not content with writing against this favourite luxury, endeavoured to abolish its use by taxing it heavily; but finding that notwithstanding both his writings and prohibitions the demand for it increased, he commanded, in 1619, that no planter in Virginia should cultivate more than 100lbs.

It is supposed, that "the juice of cursed hebenon," by which, according to Shakspeare, the king of Denmark was poisoned, was the essential oil of Tobacco:

> ——————— "Sleeping within mine orchard,
> My custom always of the afternoon,
> Upon my secure hour thy uncle stole,
> With juice of cursed hebenon in a vial,
> And in the porches of mine ears did pour
> The leperous *distilment.*"

"The learned commentator, Dr. Gray, observes, that the word here used (hebenon), was more probably designated by a *metathesis*, either of the poet or transcriber, for *henebon*, i. e. henbane. Now it appears, from Gerarde, that Tobacco was commonly called *henbane of Peru*, (Hyoscyamus Peruvianus); and when we consider how high the prejudice of the court ran against this herb, as so strikingly evinced by the 'Counterblaste' of king James, it seems very likely that Shakspeare, who was fond of playing the courtier, should have celebrated it as an agent of extraordinary malignity, upon such an occasion. No preparation of the hyoscyamus with which we are acquainted, would produce death by an application to the ear; whereas the essential oil of Tobacco might, without doubt, occasion a fatal result."—*Paris Med. Jurisp.* p. 417. vol. ii.

Four species of Tobacco are cultivated in Europe, viz. N. *tabacum;* N. *rustica;* N. *paniculata;* and N. *glutinosa.* Hum-

boldt found only the two latter growing wild; but the N. *loxensis*, and the N. *andicola*, which he discovered on the bank of the Andes, at 1850 toises of elevation, almost the height of the Peak of Téneriffe, are very similar to the N. *tabacum* and N. *rustica*. The whole genus is almost exclusively American, and the greater number of species appeared to him to belong to the mountainous and temperate region of the tropics. When Sir W. Raleigh was confined in the Tower, he smoked the N. *rustica*.

Tobacco appears to thrive nearly in every part of the globe; being cultivated by the Ceylonese; the natives of the Cape of Good Hope; by the inhabitants of the West Indies; of the Levant; of the coasts of Greece and the Archipelago, &c.; but what is principally imported into this country, we derive from Maryland and Virginia. The latter being sweet-scented, is generally preferred here.

Culture.—This plant was formerly cultivated in many parts of England, particularly in Yorkshire, and thrives remarkably well. Half a rood is still allowed to be grown for domestic use, but for the encouragement of the American colonies, any greater cultivation was prohibited: and although those colonies are now lost, the prohibitions still remain in force. Some hopes were however held out in the last session of Parliament, that the prohibitory enactments might be repealed: we therefore subjoin those methods of propagation and culture which have been recommended by J. C. Loudon, Esq. F.L.S. in his valuable, entertaining, and curious book, "The Encyclopædia of Agriculture."

"*The soil* for Tobacco must be deep, loamy, and rich; well pulverised before planting, and frequently stirred, and kept free from weeds, during the growth of the plants. The plants in this country should be raised in a warm part of the garden: the seed is very small, and should be sown and lightly covered, and then the surface pressed down with the back of the spade, in the middle of March. In May they will be fit to transplant, and should be placed in lines three feet apart every way. If no rain fall, they should be watered two or three times. Every morning and evening, the plants must be looked over, in order to destroy a worm which sometimes invades the bud. When they are about four or five inches high, they are to be cleared from weeds, and moulded up. As soon as they have eight or nine leaves, and are ready to put forth a stalk, the top is nipped off, in order to make the leaves longer and thicker. After this, the buds which sprout at the joints of the leaves are all plucked, and not a day is suffered to

pass without examining the leaves, to destroy a large caterpillar, which is sometimes very destructive to them.

"The following is the mode of *taking and fermenting* the leaves in America. When they are fit for cutting, which is to be known by the brittleness of the leaves, they are cut with a knife, close to the ground; and after laying some time, are carried to the drying-house or shed, where the plants are hung up by pairs upon lines, leaving a space between, that they may not touch one another: in this state they remain to sweat and dry. When perfectly dry, the leaves are stripped from the stalks, and made into small bundles, tied with one of the leaves. These bundles are laid in heaps, and covered with blankets. Care is taken not to overheat them, for which reason the heaps are laid open to the air from time to time, and spread abroad. This operation is repeated till no more heat is perceived in the heaps, and the Tobacco is then stowed away in casks for exportation. To *save seed,* allow one or two plants to run; they will flower and be very ornamental in June, July, and August; and ripen their seeds in September or October.

"In the *manufacture of Tobacco,* the leaves are first cleared of any earth, dirt, or decayed parts; next, they are gently moistened with salt and water, or water in which some salt, and sometimes other ingredients have been dissolved, according to the taste of the fabricator; this liquor is called Tobacco sauce. The next operation is to remove the midrib of the leaf; then the leaves are mixed together, to render the quality of whatever may be the final manufacture or application equal. Next, they are cut into pieces with a fixed knife, and crisped or curled before a fire. The succeeding operation is to spin them into cords, or twist them into rolls, by winding them with a kind of mill round a stick. These operations are performed by the grower, and in this state (of rolls) the article is sent from America to other countries, where the tobacconists cut it into chaff-like shreds, by a machine like a straw-cutter, for smoking, form it into small cords for chewing, or dry, and grind it, for snuff. In manufacturing snuff, various matters are added to give it an agreeable scent, and hence the numerous varieties of snuff. The principal kinds are called Rappees, Scotch, or Spanish, and thirds. The first is only granulated; the second is reduced to a very fine powder; and the third is the siftings of the second sort.

Qualities and Chemical Properties.—The leaves of Tobacco are large, and of a dull green colour, which they retain when properly dried; their brown colour being produced purposely by the action of a little sulphate of iron. They have a fetid smell, and are extremely acrid, and bitter to the taste. They contain a quantity of nitre, and therefore deflagrate in burning. Mucilage, albumen, gluten, extractive, a bitter principle, and an essential oil, also enter into their composition. Vanquelin has also discovered a peculiar acrid principle, which is volatile, and soluble both in water and alcohol, named *nicotin.* It has the

peculiar smell of Tobacco; occasions violent sneezing; and is precipitated from its solutions by tincture of galls. Tobacco yields its active matter to water and alcohol, but decoction impairs its activity.

Poisonous Effects.—A young man residing in Leicester-Place, unaware of the serious consequences, infused about an ounce of Tobacco in a quart of coffee, that was standing in the pot for the use of the maid-servant, a girl eighteen years of age, and of robust health. Of this a large tea-cupful was hastily drank, which immediately produced the most depressing nausea, inefficient attempts to vomit, vertigo, tremors, a copious flow of urine, and the greatest depression of the vital powers that could be imagined. Under these circumstances, Mr. Churchill was sent for, and found her bathed in cold perspirations; the pupil was dilated; and the pulse so feeble as scarcely to be felt: she had lost the power of speaking. Frictions to the region of the heart were vigorously employed, and vomiting excited by large draughts of the carbonate of Ammonia, dissolved in water, and by the application of a feather to the fauces. These efforts were soon effectual in evacuating the stomach, but the general torpor of the system existed six hours, and she required constant attendance for that time, during which frictions were very generally employed: hot water was applied to the feet; and a stimulating purgative injection was most advantageously administered. When vomiting had been copiously excited, pills composed of the compound extract of colocynth, combined with capsicum, evacuated the intestines; after which, the girl quickly recovered, merely requiring some effervescing medicine, containing small doses of opium.

"When the evening was pretty far advanced, the master of a schooner conducted me to the cabin, which was almost full of large packages, and pointing out where I was to sleep, left me alone. I felt a heavy suffocating smell, but did not examine the contents of the bales, and immediately went to bed. Soon afterwards, I was harassed by wild and frightful dreams, and suddenly awakened about midnight, bathed in a cold dew, and totally unable to speak or move. However, I knew perfectly where I was, and recollected every thing that had occurred the preceding day; only I could not make any bodily effort whatever, and tried in vain to get up, or even to change my position. The watch on deck struck four bells, and I counted them, though it seemed to me that I did not hear the beats, but received the vibration through my body. About this time, a seaman came into the cabin with a light, and carried away a hour-glass that hung upon a nail, without observing me, though I made several efforts to attract his attention. Shortly after, a pane in the sky-light was broken by accident, and I saw the fragments of glass drop on the floor. These circumstances actually occurred, as I found on enquiry the next day; and I mention them to prove, that the sensations I describe were realities, and not the offspring of perturbed dreams. My inability to move was not accompanied with pain or uneasiness, but I felt as if the principle of life had departed from my frame. At length I became totally

insensible, and continued so till an increase of wind made the sea a little rough, which caused the vessel to roll. The motion, I suppose, had the effect of awakening me from my trance, and I contrived, some how or other, to get up and go upon deck. My memory was totally lost for about a quarter of an hour, and I had no ideas connected with any thing that was not present before me. I knew that I was in a ship, but nothing more. While in this state, I observed a man drawing water from the sea in buckets, and requested him to pour one on my head. After some hesitation he did so, and all my faculties were immediately restored, and I acquired a most vivid recollection of a vast variety of ideas and events which appeared to have passed through my mind, and occupied me during the time of my supposed insensibility. All this singular derangement had arisen from a copious inhalation of the fumes of Tobacco; for on examining the cabin, I found that the piles of packages consisted of that narcotic plant, and that quantities of it lay even under my bed; in short, that the sloop contained nothing else."—*Foreign Scenes, by J. Howison, Esq.* vol. ii, p. 279.

" As I was endeavouring to set a snake at liberty, which was about two feet in length, of a blueish colour, and had coiled itself round the body of a lizard, one of the Hottentots took out, with the point of a stick, from the short stem of his wooden tobacco-pipe, a small quantity of a thick black matter which he called tobacco-oil. This he applied to the mouth of the snake while darting out its tongue, as those creatures usually do when enraged. The effect of the application was instantaneous, almost as that of an electric shock. With a convulsed motion, that was momentary, the snake half untwisted itself, and never stirred more; and the muscles were so contracted that the whole animal felt hard and rigid, as if dried in the Sun. The Hottentots consider the oil of tobacco amongst the most active of poisonous substances; but it is never applied to the points of their arrows, being probably of too volatile a nature to retain its deleterious quality for any length of time."—*Barrow's Travels in Africa,* p. 268.

" A woman applied to the heads of three children, who were afflicted with scald-head, a liniment prepared with the powder of tobacco and butter: soon after, they experienced vertigoes, violent vomitings, and faintings; they had profuse sweats. During twenty-four hours, they walked as if they were intoxicated.—*Ephem. des Cur. de la Nat.* Dec. 11. Art. iv. p. 461.

We read in the same work of a person who fell into a state of somnolency, and died apoplectic, in consequence of taking by the nose too much snuff.

" The celebrated Santeuil experienced vomitings and horrible pains, amidst which he expired, in consequence of having drunk a glass of wine, into which some Spanish snuff had been put."—*Orfila.*

Fatal cases, arising from an injudicious use of the infusion for Hernia, are recorded by Sir A. Cooper; and Mr. C. Bell, in his *Surgical Observations,* part ii. p. 189, adverting to a patient, says, " His strength held up until the tobacco clyster was administered to him, after which, he very suddenly fell low, and sunk." The smoke also

proved fatal in an instance witnessed by Desault.—*Œuvres de Chir. t. 2. p.* 344.

That indefatigable and successful physiologist, Mr. Brodie, injected some infusion of Tobacco into the rectum of several cats and dogs, all of which quickly died. On examining them after death, their hearts were extremely distended; whence Mr. Brodie concludes, that the effect of the infusion of Tobacco when injected into the intestine of a living animal, is to destroy the action of the heart, stopping the circulation and producing syncope.

"It appeared to me (continues Mr. B.) that the action of the heart ceased even before the animal had ceased to respire; and this was confirmed by another experiment, in which, a dog killed by the infusion of Tobacco, I found the cavities of the left side of the heart to contain scarlet blood, while in those of the right side, the blood was dark coloured. . . . The infusion of Tobacco renders the heart insensible to the stimulus of the blood, but it does not altogether destroy the power of muscular contraction, since the heart resumed its action in one instance on the division of the pericardium, and I have found that the voluntary muscles of an animal killed by this poison are as readily stimulated to contract by the influence of the VOLTAIC battery, as if it had been killed in any other manner."

Mr. Brodie was at first induced to suppose that the heart becomes affected in consequence of the infusion being conveyed into the blood by absorption, since there is no direct communication between it and the intestines, but a subsequent experiment on a dog, whose head had been removed, and in whom the circulation was kept up by means of artificial respiration, led him to doubt the correctness of such induction.

Mr. B. also poisoned dogs with the empyreumatic oil of tobacco, procured by subjecting the leaves of tobacco to distillation in a heat above that of boiling water: a quantity of watery fluid comes over, on the surface of which is a thin film of unctuous substance. Two minutes after the apparent death of a dog, who had had a drop of the oil injected into his rectum, his thorax was opened; the heart was found acting regularly one hundred times in a minute, and it continued acting for several minutes.

Mr. Brodie concludes from these experiments, "that the em-

pyreumatic oil of Tobacco, whether applied to the tongue, or injected into the intestines, does not stop the action of the heart and induce syncope, like the infusion of Tobacco; but that it occasions death by destroying the functions of the brain, without directly acting on the circulation. In other words, its effects are similar to those of alcohol, the juice of aconite, and the essential oil of almonds."

These differences in the effects arising from the infusion of Tobacco and essential oil, may probably be referred to the existence of *nicotin* in the former: and the experiments of M. Orfila demonstrate that the action of Tobacco is much more energetic when the soluble portion is injected into the anus, than when it is applied to the cellular texture.

Treatment.—When Tobacco has been taken into the stomach, it must be evacuated by emetics, composed of the sulphate of zinc or of copper; or vomiting may be excited as practiced in the first case, narrated under *poisonous effects*. Frictions must be generally employed, but more particularly to the region of the heart; and if ever acupuncture of this organ be advisable in asphyxia,* it must be so when produced by Tobacco; for independently of the proofs which Mr. Brodie has furnished of the direct effects of the infusion upon the heart, he has narrated a case, which we have already adverted to, in which a scalpel accidentally applied to it, while opening the pericardium, excited its reaction. Stimulating the rectum by warm purgatives; preventing the failure of respiration, or exciting it, if necessary, artificially; and keeping up the natural temperature, are important indications, that will suggest themselves to the mind of every well informed practitioner.

Medical Properties and Uses.—Dr. Fowler, in a distinct treatise, has adduced many cases in which an infusion of Tobacco was advantageously administered in dropsy: but as digitalis is more easily managed, and appears to exert the same kind of effects, it is generally preferred. He also recommends

* For some interesting experiments on this subject, see "Saggio sul Agopuntura &c. by Dr. Antonio Carraro, Physician of Piove di Sacco."—*Annali Universali di Medicina, Luglio,* 1825.

it in *dysuria*, and as that disease is sometimes connected with spasmodic action, Tobacco frequently proves useful; acting both as a diuretic and antispasmodic. The direct power which it exerts on the muscular system has led to its advantageous adoption in other spasmodic diseases, as colic, ileus, total suppression of urine, and strangulated hernia: in all these diseases the smoke has been thrown into the rectum by bellows suited to the purpose; but an injection of its infusion is more readily and generally employed, and as death has been produced by two, and even one drachm infused in a pint of water, Sir A. Cooper recommends half the latter quantity to be administered first, and to be repeated at intervals till its depressing effects are experienced. It has been occasionally employed as an emetic, but its operation is harsh and dangerous: and as it exerts its effects when externally applied to the region of the stomach, it has been employed where emetics cannot be easily administered by the mouth. Its watery extract, in the dose of two or three grains, has been recommended for chronic catarrh and humoral asthma, and Tobacco, when smoked, has relieved the paroxysm of spasmodic asthma, and painful affections of the face, teeth, and ear. Its employment in *asphyxia* from drowning is now abandoned, and we are only surprised at the ignorance which could have led to such an irrational practice. The Rev. W. Massie, who is just arrived from the Mysore, informs us that the native practitioners in India, use the leaf as a suppository to provoke the action of the bowels of children.

Snuff possesses all the power of Tobacco, and is useful as an errhine: and although much prejudice has been excited against it, from its supposed deterious effects, most people can take it, in moderate quantities, without experiencing any untoward symptoms. Some people suppose that because Tobacco when chewed lessons the appetite, it possesses nutritious qualities in an eminent degree; it is quite the reverse, for it paralyses the stomach, diminishes its nervous sensibility, and allays hunger alone by its sedative effects. Nor is the habit of smoking always to be persisted in with impunity, for independently of the deleterious effects of Tobacco on many constitutions, Sir A. Cooper remarks

that most of the cases of cancer of the lip that fall under his care, are occasioned by the use of tobacco-pipes. The adhesive nature of the clay, of which the pipe is made, causes it to stick to the lip, and when separated, pulls the lip in some degree with it: this being repeated over and over again by the constant practice of smoking, the thin tender skin of that part of the under lip on which the pipe rests, is torn off, and the end of the pipe now coming in contact with a raw surface, frets and irritates it, until at length it becomes a truly cancerous sore: pipes should therefore be waxed, or used with an ivory covering.

Externally, Tobacco has been applied to scabies, tinea-capitis, prurigo, &c. with considerable advantage, but has even in those cases produced its general effects on the system.

Off: prep.—Infusum Tabaci. *L.*
Vinum Nicotianæ. *E.*

Form for Dr. Fowler's infusion:—

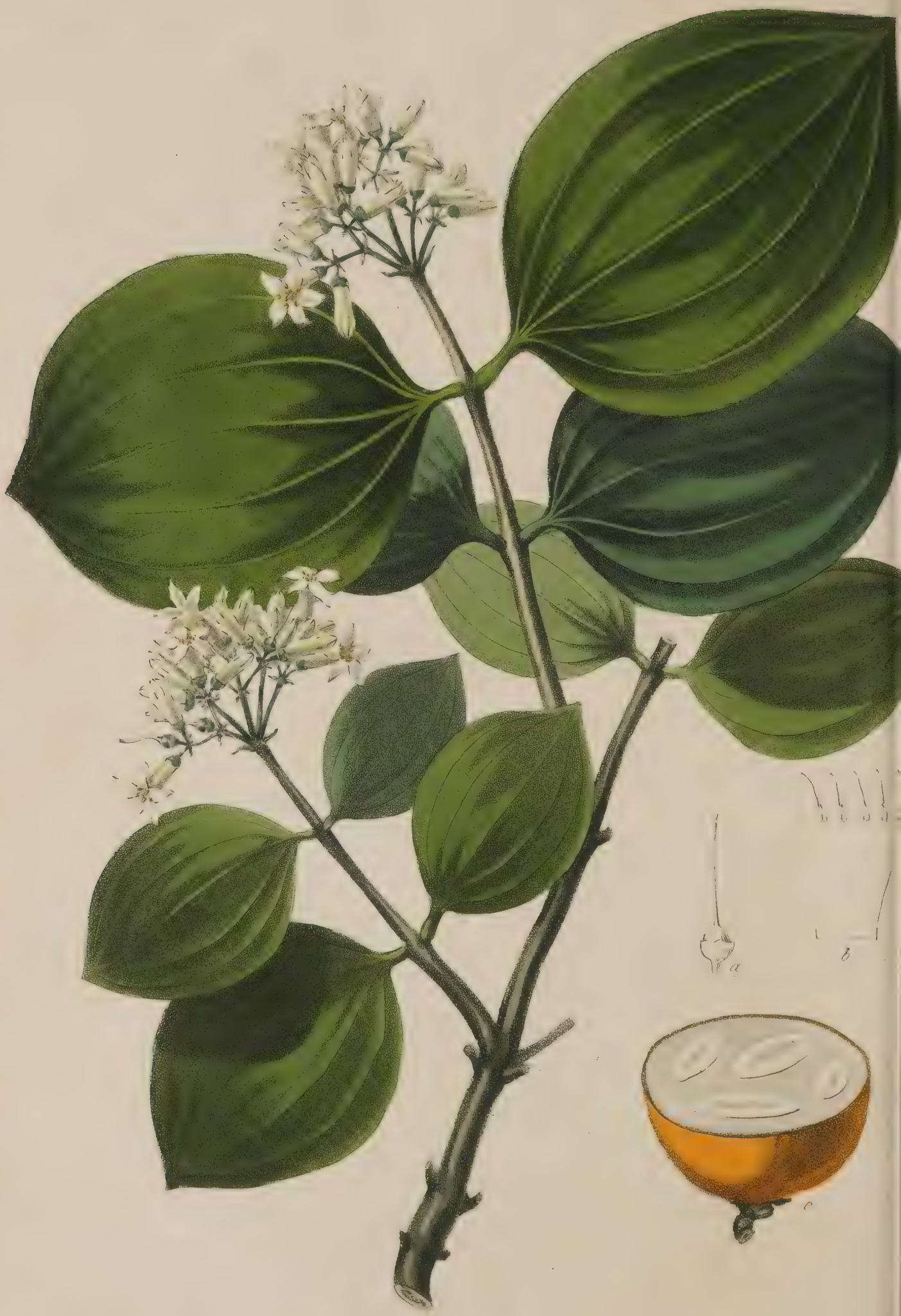
℞ Foliorum siccatorum Nicotianæ Virginiensis unciam unam.
Aquæ bullientis libram unam.

Macera per horam unam in vase clauso, in balneo mariæ posito, deinde, hujus infusi unicas quatuordecim exprime, et colaturæ adde spiritus vinosi rectificati uncias duas, ut melius conservetur.

Dose.—From 80 to 200 drops.

Adulterations.—"When it exhales a fœtid odour, we may infer that it has been badly prepared, and not deprived of all its mucus; when pungent, the presence of some deleterious drug is indicated; Cascarilla is very usually added to impart a peculiar flavour; Nitre is also employed for the sake of making it kindle more rapidly, and to impress a lively sensation on the tongue; its vapour is of course very injurious to the lungs: its presence may be detected by heating a sample with hot water, and after filtering the solution through charcoal, setting it aside, in order that it may yield its crystals by evaporation. Traces of *Lead*, *Copper*, or *Antimony*, may be discovered by boiling Tobacco in strong vinegar, and after filtering it as before, by assaying it with appropriate tests. *Black Hellebore*, *Alum*, *Sugar*, and *Corrosive Sublimate* are amongst the more usual sophistications. *Dried Dock* leaves are also sometimes substituted."—(Paris.)

We believe that what has been supposed to be ground glass in snuff, is nothing more than an adventitious admixture of dirt or sand.



Strychnos. Nux-vomica.

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

STRYCHNOS NUX VOMICA.

Poison Nut.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

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

GEN. CHAR. *Corolla* 5-cleft. *Berry* 1-celled, with from 1 to 5 seeds, with a hard rind. *Stigma* capitate.

SPEC. CHAR. *Leaves* ovate. *Stem* unarmed.

Syn.—Nux Vomica officinarum, *Bauh. Pin.* 511; *Raii Hist.* 1814; *Ger. Em.* 1546; *Burm. Zeyl.* 171.

Solanum arboreum indicum maximum, *Breyn. Prodr.* 97.

Caniram, *Rheede Hort. Malab.* 1. 67. *t.* 37.

Strychnos Nux vomica, *Lin. Sp. Pl.* 271; *Willd. v.* 1. 1052; *Fl. Zeyl. n.* 91; *Roxb. Coromand.* 1. 8. *t.* 4; *Gærtn. Fruct.* 2. 427; *Stokes* 1. 412.

FOREIGN.—*Noix vomique*, Fr.; *Noce vomica*, It.; *Mataperros*, Sp.; *Noz vomica*, Port; *Kraehenaugen; Brechnuss*, Ger.; *Braaknooten*, Dut.; *Broœknoed*, Dan.; *Rafkaka*, Swed.; *Leuz alke; Kanekulkelb*, Arab.; *Yettie cottay*, Tam.; *Moostighenza; Musadi*, Tel.; *Culaka; Kutaka; Veshamoostibeejum*, Sans.; *Koochla*, Duk. and Hind.; *Ma-tseen*, Chin.

THE Strychnos Nux Vomica, is a native of the East Indies, and is very common on the coast of Coromandel, where it flowers during the cold season. It is the tree called, by Plunknet, *Cucurbitifera Malabarensis aenopliæ foliis rotundis, fructu orbiculari rubro, cujus grana sunt nuces vomicæ officinarum;* described and figured in the Hortus Malabaricus, under the name of *Caniram.*

This species of Strychnos is a middle, sized tree, with a short, crooked, thickish trunk, irregularly branched, and covered with a smooth ash-coloured bark. The leaves are opposite, short, petioled, ovate, shining, smooth on both sides, entire, three to five nerved, differing in size from one inch and a half to four

inches long, and from three to four inches broad. The flowers are small, greenish-white, and collected into small terminal umbels; they are said to exhale a strong disagreeable odour. The calyx is five-cleft, and deciduous: the corolla is monopetallous, of a pale green colour, and divided at the border into five segments: the filaments are five, very short, with roundish anthers; the germen is superior, roundish, and crowned with a single style, the length of the tube of the corolla. The fruit is a berry about the size of a pretty large apple, globular, covered with a smooth, somewhat hard shell, of a rich orange colour when ripe, and filled with a soft jelly-like pulp. The seeds are generally five in number, and immersed in the pulp of the fruit. They are round and flat, about an inch in diameter, and a quarter of an inch thick, with a prominence in the middle, of a grey colour externally, and covered with a woolly matter, but internally hard and tough, like horn. Fig. (*a*) represents the germen, pistil and calyx; (*b*) the corolla spread, showing the anthers magnified; (*c*) a section of the fruit of the natural size.*

The systematic name, Strychnos, which occurs in Pliny and Dioscorides, is derived from *στρωννυμί*, to *overthrow*, in allusion to the powerful effects of the plant to which it was assigned; *Στρυχνος* of the Greeks being a kind of *nightshade*. It was Linnæus who adopted this name for the present genus, on account of the analogy of its poisonous qualities with the plant of the ancients.

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* There is a tree, but exceeding rare on this coast, which the Telingas call Naga Musadie (Naga, or Tansoo Paum in the Telinga language means the Cobra de Capella, or *Coluber Naja* of Linnæus: tansoo means dancing, and paum snake, this sort being famous for erecting its head, and moving it from side to side at the sound of music,) *i. e.* Cobra de Capella Musadie. I have only once met with it, and then it was pointed out by a Telinga physician. The tree had been cut down, and carried away some time before; most of the roots were also dug up and carried away; from the only remaining one that I could find, some shoots had sprung up. The leaves upon these were opposite, short petioled, obtuse, lanced, three-curved, about two, or two and a half inches long, by three quarters broad; the petioles were very short, and connected at their insertions by a membrane, as in the natural order of Rubiaceæ. I took up the root with the greatest care, cut off the upper part, from whence the shoots grew, and planted it in my garden; but it soon perished. From the above circumstance, I am inclined to think there is a species different from the Nux Vomica tree, which yields the real Lignum Colubrinum. The wood of the root of this sort is esteemed by the Telinga physicians an infallible remedy for the bite of the naja, as well as for that of every other venomous snake: it is applied externally, and at the same time given internally: it is also given in substance for the cure of intermitting fevers.—*Roxburgh's Plants of Coromandel*, p. 8.

Qualities and Chemical Properties.—The taste of the vomic nut which is the seed of the fruit or berry, is intensely bitter; it has little or no smell, and is so hard that it cannot be reduced into powder by beating, but requires to be filed down. According to an analysis by M. Chevereul, it consists of acidulous malate of lime, gum, vegeto-animal matter, bitter matter, fixed oil, colouring matter, (which was yellow, and propably starch, which could not be directly extracted on account of its dessiccation;) earthy and alkaline salts, woody hairs, and wax, which appears to preserve the perisperm from humidity. Messrs. Pelletier and Caventou have since discovered two peculiar vegetable alkalies, *strychnine* and *brucine*, which are fully adverted to under the head of medical properties, and for the account of which we are indebted to an excellent translation of Majendie, by Joseph Houlton, Esq. F.L.S.

Poisonous Effects.—It is very generally believed amongst the lower class of people in this country, that nux vomica (by them called *rat's-bane,*) is capable of poisoning animals only; and on a coroner's inquest held during the last year, a juryman observed, that the vulgar imagine it will not produce death to those persons who are born blind. So strongly, he said, was he impressed with this idea, that he should have had no hesitation in taking a quantity of it, before he had heard, on the present occasion, of its baneful effects on the human constitution. Nux vomica is one of the narcotico-acrid class of poisons, and seems to have a direct power over the spinal cord. It produces laborious respiration, which is followed by torpor, trembling, coma, convulsions and death. It is fatal to dogs, hares, wolves, foxes, cats, rabbits, rats, ducks, crows, and other birds; and Loureiro poisoned a horse by an infusion made of the seeds in a half-roasted state.

"Hoffman reports that a young girl, ten years of age, labouring under an obstinate quartan fever, took, at two doses, fifteen grains of nux vomica: she died in a short time, after having experienced extreme anxieties, and having made some efforts to vomit."

"A person swallowed in the morning, a scruple of nux vomica in powder, and drank afterwards a few glasses of cold water, in order to diminish the bitterness occasioned by this substance. Half an hour after, he appeared to be drunk; his limbs, especially his knees, were stiff, and tense; his walk was staggering, and he was afraid of falling. He took some food, and the symptoms disappeared without his having had either stools, or vomiting."—(*Orfila.*)

"The administration of nux vomica, and of the root of gentian, to a woman affected with ague, was followed by convulsions, cold and stupor, and almost every part of the body was torpid."—(*Scutter's Dissert.*)

Dissections of those who have died, show no organic lesions; proving that it acts directly on the nervous system: and those who are anxious to see the result of numerous experiments on dogs, and other animals, must consult Orfila's Toxicology; Wepfer's Historia Cicutæ Aquaticæ, p. 248, and Dr. Chapman's American Medical Journal.

TREATMENT.—In the treatment of poisoning by nux vomica, keeping up artificial respiration is of the utmost importance; and for further information the reader may consult our article "Nicotiana Tabacum." The subjoined information is interesting.

"M. Drapiez has ascertained, by numerous experiments, that the fruit of the Feuillea *cordifolia* is a powerful antidote against vegetable poisons. This opinion has been long entertained by naturalists, but it appears, that M. Drapiez has verified the fact by numerous experiments. He poisoned dogs with the rhus toxicodendron, hemlock, and *nux vomica*. All those that were left to the effect of the poison, died; but those to whom the fruit of this plant was administered, recovered completely, after a short illness. To see whether this antidote would act in the same way, when applied externally to wounds into which vegetable poisons had been introduced, he took two arrows which had been dipped in the juice of manchenille, and slightly wounded with them two young cats. To one of these he applied a poultice, composed of the fruit of the Feuillea *cordifolia*,

while the other was left without any application. The former suffered no other inconvenience except from the wound, which speedily healed; while the other, in a short time, fell into convulsions, and died. It would appear from these experiments that the opinion entertained of the virtues of this fruit, in the countries where it is produced, is well founded. It loses its virtues, if kept longer than two years after it has been gathered." —*Annals of Philosophy*, v. 15, p. 389.

Medical Properties and Uses.—For a century, nux vomica has been known as a powerful medicine, and employed in a vast variety of diseases, with different degrees of success. Linnæus, who could know but little of pathology, attributed dysentery to irritation of the mucous membrane of the intestines, produced by worms, and recommended these seeds for that disease, in consequence of their intense bitter, and narcotic powers. Hagstrom considered, that a scruple dose, given in the morning, was a specific for dysentery; and Bergius narrates a case, in which the evacuations were stopped for twelve hours, but afterwards returned; he also says, " Inter hos ægros fœmina fuit 32 annorum, quæ scrup. I sumsit mane et vesperi per biduum; ipsi incesserunt, post singulum pulverem, pandiculationes summe convulsivæ, cum vertigine, omnibus evacuationibus suppressis, neque vomiut; nec a morbo curata fuit, sed rediere symptomata dysenterica post relictam nucem, quare aliis remediis curanda erat; hæc dolorem ventriculi et regionis epigastricæ per longum tempus sensit." Roxburg says: " the wood is hard and durable, and is used by the natives for many purposes. It is exceeding bitter, particularly the root, which is used to cure intermittent fevers and the bites of venomous snakes. The seeds are employed in the distillation of spirits to render them intoxicating. The pulp of the fruit seems perfectly innocent, as it is eat greedily by many sorts of birds." Nux vomica is also occasionally employed by brewers in this country to impart an intoxicating effect to beer.

Dr. Good was never able to give more than seven grains of the powdered nut for a dose, without the head becoming stupid and

vertiginous. From his "Study of Medicine" we make the following extract, explanatory of its effects on paralysis:—

"Dr. Fouquier, of the Hospital de la Charité at Paris, has tried it upon a very extensive scale, and apparently with a perfect restoration of health in many cases. He gives it in the form of powder, or alcoholic extract: four grains of the first, and two of the last are a dose, and may be taken from two to six times a day. He also employs it in injections. In half an hour after administration the paralyzed muscles have, in various cases, begun to evince contraction: and what is peculiarly singular, while a spastic contraction is determined to these, the sound parts remain unimplicated in the action. A frequent effect, unquestionably dependent on the bitter principle of the plant, is that of increasing the appetite, and diminishing the number of the alvine evacuations when in excess. Sometimes it produces a temulent effect, and occasions stupor, and a sense of intoxication, and, when rashly administered, general tetanus, with all its train of distressing and frightful symptoms.

"Like all other powerful medicines in their first and indiscriminate use, the nux vomica appears sometimes to have been highly beneficial, sometimes mischievous, and sometimes to have produced violent effects on the nervous system without an important change of any kind. Dr. Cooke has collected a variety of cases in which it has been tried in our own country as well as in France, and this seems to be the general result. The present author has tried it in various instances, but has never been able, from its tendency to termulency, to proceed much more than half as far as some practitoners have gone, who have gradully advanced it from four grains of the powder to twenty-four, three or four times a-day. In the case of the late E. Sheffield, Esq., of the Polygon, Somers-Town, Mineralogist to the estates of the Duke of Devonshire, and who is well known to have been one of the best practical geologists of his day, the author commenced with two grains alone of the powder given three times daily, as this was a hemiplegia following upon a second fit of atonic apoplexy, with a general debility both of the mental and corporeal powers, the patient being, at the time, rather upwards of sixty years of age. This dose occasioned no manifest effect, and on the third day, August 21, 1819, it was gradually increased to six grains. It now produced a powerful sense of intoxication, but with clonic agitation instead of a tetanic spasm, of the paralyzed leg and arm, and great heat down the whole of the affected side. The powder was continued in this proportion for three or four days, but the stupor and vertigo were so considerable, and afflictive, that the patient could not be persuaded to proceed with it any longer, and it was in consequence suspended. On the ensuing September 1, he was evidently weaker, and recommenced the medicine at his own desire; the dose was gradually raised from four to six grains three times a-day: the same clonic effect was produced with the same sensation of heat through the whole of the affected side, but without a sense of intoxication. The dose was advanced to eight grains, when the head again became affected, but without any permanent re-

turn of muscular power or sensation in the palsied limbs, or any other effect, than a few occasional twitches, and involuntary movements. Mr. Sheffield could not be persuaded to persevere any farther, and the medicine was abandoned. He continued in the same feeble state for about three months, when he fell a sacrifice to a third apopletic attack apparently of a much slighter kind.

"I have stated that this was a case of atonic affection, and hence, there was no opportunity of giving full play to the power of the nux vomica. But so far as I have seen, I think we may come to the following conclusion: First, that when only small doses can be given without seriously affecting the head, as in cases of great general or nervous debility, the effect is a clonic instead of an entastic or tetanic spasm. Secondly, that under this effect it is not calculated to do any permanent good, and often produces mischief. And thirdly, that it is most serviceable in entonic hemiplegia, after the patient has been sufficiently reduced from a state of high energetic health, and especially energetic plethora, to a subdued and temperate state of pulse; in which state it may very frequently be employed in doses sufficient to excite strong, or entonic, instead of weak or clonic spasm."

In 1809, M. Majendie presented to the Institute of France some account of a course of experiments, which led to an unexpected result, viz. that an entire family of plants (the Strychni-Amari) possessed the singular property of strongly exciting the spinal marrow, without affecting, except indirectly, the function of the brain; and it was remarked at the close of this report, that such a result might be turned to advantage in the treatment of diseases. This conjecture has since been amply confirmed at the bedside of the patient. M. Majendie, ignorant of Dr. Fouquier's published cases, succeeded in curing a person of paralysis, and has since given the alcoholic extract of nux vomica, not merely to palsies, both partial and general, but also in various other kinds of local and general debility.

Preparation of the Alcoholic Extract of Nux Vomica.

Treat a given quantity of rasped nux vomica with alcohol at 40° * and at the lowest possible temperature; let it be renewed until nothing further is taken up from the rasping; then evaporate gently to the consistence of an extract. The activity of the matter obtained will be in proportion to the strength of the alcohol. The alcoholic extract may be obtained dry, by filtering a saturated tincture, (made with alcohol at 36°) and evaporating in the common way.

* By the déromèter of Baumé.

Action on the Animal System.

One grain of this substance absorbed in any part of the body, or taken into the stomach with food, will destroy a large dog in a very short time, by producing paroxysms of tetanus which interrupt respiration, until complete asphyxia ensues; and when a large quantity has been administered, the animal has been destroyed by its direct action on the nervous system. A contraction of the spleen has been observed in animals which have been poisoned by this substance. *On touching an animal under the action of the resin, a sensation similar to a strong electric shock is felt.* The division of the spinal marrow, and even complete decollation, do not interfere with the peculiar action of this substance. Its effects on the human subject are exactly the same; and no indication of the nature of its action, or of its exhibition, is traceable in the body after death.

The effects, in cases of paralysis, are similar to those described; but they are exerted in a remarkable manner upon the parts affected. These are the seat of tetanic shocks, of a prickly sensation, and of a perspiration, which is not observed elsewhere. In hemiplegia the sound side of the body remains tranquil, while the affected one is the seat of extreme agitation: the tetanic attacks succeed each other rapidly, and an abundant exudation takes place. Even an anomalous eruption has been observed, while the healthy side has been perfectly free. One side of the tongue is sometimes sensible of a decidedly bitter taste, which is not perceptible on the other. If the dose be augmented, both sides become the seat of tetanic action, though not equally so. Sometimes the effect is so violent as to throw the patient out of bed. In a very small quantity, this extract has no immediate action, at least of a perceptible kind; and it is not until after several days that its good or bad effects display themselves.

Practical Employment of the Alcoholic Extract of Nux Vomica.

It may be given in all diseases of debility, whether local or general—and in palsies of every description. It has been administered with perfect success in amaurosis accompanied with paralysis of the upper eye-lid:* and very good effects have followed its exhibition in weakness of the genital organs, and of the stomach, incontinence of urine, and extreme general debility, accompanied with an irresistible disposition to somnolency. It has been recently tried with advantage in partial atrophy of the extremities, both superior and inferior.† The medicine, however, must not be exhibited immediately after the apopletic attack which has caused the paralytic affection; nor is a cure to be expected from it where there is a lesion of the brain.

It has been given to the extent of twenty grains in a case where paralysis supervened to an attack of apoplexy, without benefit,‡ although the tetanic affection of the parts involved was considerable. Many physicians have borne testimony, however, to the efficacy of the medicine in all the varieties of nervous debility; and since the publication of the former edition of the Formulary, several cases of suc-

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* By Mr. Edwards. † Experience of M. Magendie.
‡ By M. Chauffart. Journ. Gen. de Med. Oct. 1824.

cess, in paralysis more especially, have been recorded. M. Chauffart, in particular, has reported the cure of a case of palsied rectum.*

Method of Employing this Remedy.

The preferable form is that of pills, each containing one grain of the extract; we may commence with one or two daily, increasing the dose until the desired effect be produced. The pills should be given in the evening, as the night time is the most proper for observing the phenomena. In general from 4 to 6 grains per diem will be sufficient to produce tetanic action; but sometimes it has required as much as 24 or 30 grains in the day. If it should be found necessary to suspend the medicine for a time, it must be recommenced with small doses, and gradually increased. When it is intended to produce but slight effects, one grain, or even half a grain per diem will be sufficient. A tincture may also be employed according to the following formula:—

Tincture of Nux Vomica.

Take of	Alcohol at 36°	1 once.†
Dissolve.	Dry extract of Nux Vomica .	3 grains.

Of this a few drops may be given in any simple vehicle. In this form it may also be used by friction upon the parts affected; it is a mode much employed in Italy, and from which M. Magendie has seen great benefit result in his own practice.

Mode of Preparing Strychnine.

Dissolve the alcoholic extract of nux vomica in water, and add to the solution subacetate of lead in a fluid form, until precipitation ceases. The superfluous bodies being separated in this manner, the strychnine remains in solution, with a portion of colouring matter, and sometimes with an excess of acetate of lead. The lead is to be separated by sulphuretted hydrogen: then filter, and boil the liquid with magnesia; which, combining with the acid, yields a precipitate of strychnine and brucine. This is to be washed with cold water, and re-dissolved in alcohol, in order to separate the access of magnesia, and then by evaporating the alcohol we get a mixture of strychnine, brucine, and colouring matter. The whole is macerated in a small quantity of weak alcohol, which readily dissolves the two latter bodies, while the strychnine remains in the form of a powder. It is taken up again by boiling in rectified alcohol; which, being evaporated, deposits the strychnine in a crystalline form. We must take care to leave a little alcoholized water, in order to retain what remains there may be of the brucine. The strychnine may be obtained still purer, by renewing the crystallization. The sign of its purity is its not reddening with nitric acid, a degree almost unattainable in strychnine procured from nux vomica. That obtained from St. Ignatius' bean is purer; but the purest, and most easily obtained, is furnished by the upas.‡

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* Dr. Baxter, (New York Med. Repos. vol. 8.) records a case of hemiplegia in a child, which was cured by this medicine. A very satisfactory one is reported by M. Gendron in the Journ. General for November, 1824. It has been given with success too in a case of chorea sancti viti.

† An *once* is 7 drachms 52½ grains, by Troy weight. See the scale for reducing the French Weights and Measures to the English standard, at the end of Majendie's "Formulary," translated by Mr. Houlton.

‡ For other methods of preparing Strychnine, see Majendie's Formulary, or the Journal of the Royal Institution.

Sensible and Chemical Properties.

Strychnine obtained in this way presents itself under the form of minute crystals, which, by the aid of the microscope, are found to consist of four-sided prisms, terminated by pyramids with four depressed faces. When rapidly crystallized, it is white and granular, intolerably bitter, and leaving an impression on the organs of taste like that of some metalic salts; it has no smell, and undergoes no alteration by exposure to the air; it is neither fusible, nor volatile; suffering decomposition and carbonization at the point of fusion, which is at a degree of heat below that required for the destruction of most vegeto-animal matters.

Exposed to the naked fire, it swells, blackens, and gives out an empyreumatic oil, a small portion of water and acetic acid, some indications of carbonic acid gas, carbonated hydrogen, and carbonate of ammonia. Distilled with the deutoxide of copper, it yields a large quantity of carbonic acid and azote.

According to Messrs. Dumas and Pelletier, the mean of two analyses of strychnine is, per hundred parts,*

Carbon	78.22
Azote	8.92
Hydrogen.	6.54
Oxygen	6.38
	100.06

Strychnine is of all vegetable principles that which contains the most azote. It is nearly insoluble in water, requiring 6.667 times its weight at a temperature of 10°, but of boiling water half the quantity will dissolve it. This will appear remarkable, if we consider the intense bitterness of its taste, which will be still distinctly perceptible, if a solution of strychnine made in cold water, and consequently not containing above $\frac{1}{6000}$ part of its volume, be diluted in a hundred times the quantity of the same fluid. Its principal chemical characteristic is its readiness to form neutral salts by uniting with acids.

According to recent experiments of Pelletier and Caventou, the above-mentioned process indicates, in nux vomica, the presence of two alkaline principles, the one *strychnine*, the other *brucine*, which had already been found by the same chemists in the Brucea Antidysenterica. To obtain strychnine pure, it is necessary to crystallize it repeatedly in alcohol; the other principle, the brucine namely, being more soluble in this menstruum, and crystallizable with difficulty, remains in the alcoholic mother water. The presence of brucine with the strychnine is, however, of no great importance, as it possesses the same properties, though less energetic.

It is unfortunate that the bean of St. Ignatius is so rare an article in commerce, as the strychnine contained in it is nearly free from brucine, and would be readily obtained from it in a state of purity.

Action of Strychnine on the Animal System.

The action of strychnine on man and the lower animals, is exactly

* See Recherches sur la composition élémentaire des bases salifiable organique, par M. M. Dumas et Pelletier.

like that of the alcoholic extract of nux vomica, though more powerful. One eighth of a grain is sufficient to kill a large dog, and a quarter of a grain has often produced very great effect upon man in health.

Medicinal Employment.

As a remedy, it is applicable in the same cases as the resin of nux vomica; and it might never be necessary to have recourse to strychnine, if the extracts of the nux were always prepared in the same manner, and exempt from those variations in their effects, which result from peculiarities in their mode of preparation. In consequence of its greater uniformity in this respect, it is in general preferable. Both in Germany, and Italy, accounts have been published of its successful employment.*

Mode of employing Strychnine.

Pills of Strychnine.

Take of,	Very pure strychnine . .	2 grains.
	Conserve of roses . . .	½ gros.

Mix accurately and divide into 24 equal pills.

Tincture of Strychnine.

Take of,	Alcohol at 36°	1 once.
	Strychnine	3 grains.

Dose from 6 to 24 drops in draughts, or common drink.

The following mixture has frequently been used.

Mixture of Strychnine.

Take of,	Distilled water	2 onces.
	Very pure strychnine . .	1 grain.
	White sugar	2 gros.
	Acetic acid	2 drops.

Five *grammes* to be taken morning and evening.

Salts of Strychnine.

United with acids, this substance forms salts, which are crystallizable, and for the most part soluble. This latter property must therefore be borne in mind, when giving strychnine in common drink, for lemonade and all acids very much increase its activity. The subcarbonate of strychnine is sparingly soluble.

The SULPHATE is soluble in less than ten parts of cold water; it crystallizes in small transparent cubes if neutral, and in needles if there be a preponderance of acid. Its taste is extremely bitter. It is decomposed by every soluble salifiable basis. It undergoes no alteration by exposure to the air. Heated at a temperature of 100° it loses no part of its weight, but becomes opaque. At a higher temperature it fuses, and resolves itself into a mass, after suffering a loss of 3 per cent. If the heat be further augmented it decomposes. It consists of

Sulphuric acid	9.5
Strychnine	90.5
	100.

* By Cramer of Bonn, and Diffenbach of Germany—and particularly by Cattaneo, who has published his observations in Omodei's *Annali Universali.*

According to M. M. Dumas and Pelletier 100 parts of the base saturate 10.486 of acid.

The HYDROCHLORATE is still more soluble than the sulphate; it crystallizes in needles, which viewed through a lens, appear to be quadrangular prisms; when exposed to a temperature at which the base is decomposable, it gives off muriatic acid.

The PHOSPHATE can be obtained in a perfectly neutral state, only by double decomposition. It crystallizes in four-sided prisms.

The NITRATE is easily obtained, by dissolving strychnine in acid highly diluted. Upon evaporation, it crystallizes in needles, of a pearly aspect.

This salt is much more soluble in hot than in cold water, and its action is more violent than that of the strychnine itself.

It forms very soluble salts also with the acetic, oxalic, and tartaric acids, susceptible of crystallization, especially if the acid be in excess. The neutral acetate is very soluble and does not readily crystallize. The hydrocyanic acid forms with this base a crystallizable salt.

The SUBCARBONATE is obtained in the form of white flakes.

Boiled with iodine it forms an IODATE and HYDRIODATE.

A large proportion of acid combined with a very small quantity of strychnine, would form a medicine possessing the double property of acting on the nutrition of the organs, and of exciting the nervous system.

Action of the Salts of Strychnine.

The salts of strychnine, in consequence of their greater solubility, are more active, and consequently more intensely poisonous than their base.

Mode of Employment.

When the patient is habituated to the action of strychnine, it may sometimes be advantageous, to substitute the salts for the strychnine itself, without increasing the dose. M. Magendie has used none of the salts except the sulphate, which has produced most decided relief in a case of paraplegia given in a dose of a twelfth of a grain.

MODE OF PREPARING BRUCINE.

In order to obtain BRUCINE, the inner bark of the brucea antidysenterica is subjected to a process similar to that directed for the preparation of strychnine, with this difference, that in the present case the magnesian precipitate must not be so elaborately washed, brucine being much more soluble in water than strychnine, on account of the greater quantity of colouring matter it contains. By evaporating the alcoholic liquors employed for the treatment of the magnesian precipipate, the brucine is readily obtained in a resinous form, not being yet sufficiently pure to crystallize. In its purification it must be combined with oxalic acid, and this oxalate is to be treated with a mixture of alcohol at 40°, and ether at 60°. In this way the colouring matter will be dissolved, and the oxalate of brucine will remain under the form of a white powder: it may be decomposed by magnesia, and the brucine separated by alcohol. In evaporating the alcoholic solution in the open air, brucine will be obtained in a crystallized form: if heat be employed it will be obtained fused, but not less pure.

Properties of Brucine.

Its taste is intensely bitter; it is sparingly soluble in water, although more so than strychnine. It dissolves in 500 times its weight of boiling water, and in about 850 of cold water. When regularly crystallized it presents itself under the form of oblique prisms, with parallelogrammic bases. This form of brucine is a true hydrate, its affinity for water being considerable; whereas pure strychnine can never pass to this state. Brucine loses a considerable quantity of water by fusion.

Two hundred parts of brucine thus crystallized yield of

Water	37 parts.
Residue	163

One hundred and sixty-one parts crystallized in alcohol, give of

Water	27 parts.
Residue	134

which establishes the constitution of the hydrate, taking the mean to be

Water	21.65 parts.
Brucine	100.

It fuses at a temperature nearly equal to that of boiling water, and in cooling assumes the consistence of wax. It combines with acids, and forms with them neutral salts, of which the greater part are susceptible of regular crystallization. On applying concentrated nitric acid, it acquires an intense crimson colour, which passes into a yellow, by the application of heat. If, while in this state, a solution of the proto-hydrochlorate of tin be added, we have a magnificent violet-coloured precipitate, which phenomenon is peculiarly characteristic of brucine; so that if strychnine obtained from nux vomica exhibits a similar appearance, on the addition of the proto-hydrochlorate, we may be assured that it is owing to the presence of brucine.

The mean result of two analyses of this substance obtained from the brucea antidysenterica and fused in vacuo, gave as its composition,

Carbon	75.04
Azote	7.22
Hydrogen	6.52
Oxygen	11.21
	100

Action on the Animal System.

This is analogous to that of the strychnine, but less intense, being in the proportion to that of pure strychnine as 1 : 12. Or, according to M. Andral, jun. 6 grains of brucine are equal to one of impure, and a quarter of a grain of pure strychnine. Four grains of brucine were required to kill a rabbit: and a strong dog having taken the same quantity experienced severe attacks of tetanus, but recovered. It may, therefore, be a convenient substitute for strychnine, as it will not act with so much energy.

Manner of Administration.

It may be given either in pills or tincture, increasing the dose gradually. In medical use that which is obtained from the bark of the brucea antidysenterica should be preferred; as that furnished by the nux vomica is rather apt to be mixed with a portion of strychnine,

which increases its power, and deranges our calculation as to the effects.

Cases for the Exhibition of Brucine.

As it possesses the properties of strychnine, in a milder degree, it may be given to the extent of one, two, or even three grains, without apprehension as to the consequences, in the same cases as the preparations of nux vomica are found to benefit. It is probable that much larger doses may be given, but we must be attentively upon our guard. M. Andral, jun. has given it in cases of palsy with advantage from half a grain to five grains. M. Magendie has administered it successfully in two cases of atrophy, one of the arm and the other of the leg. The patients took six pills daily of one eighth of a grain.

Mode of prescribing Brucine.

Pills of Brucine.

Take of, Pure brucine . . . 12 grains.
Conserve of roses . . ½ gros.

Mix accurately and divide into 24 equal pills.

Tincture of Brucine.

Take of, Alcohol at 36° . . . 1 once.
Brucine . . . . . 18 grains.

From 6 to 24 drops may be given in ordinary drink.

Stimulating Mixture.

Take of, Distilled water . . . 4 onces.
Very pure brucine . . 6 grains.
White sugar . . . 2 gros.

Mix.—Five *gros* to be taken night and morning.

Salts of Brucine.

Sulphate. This salt crystallizes in long needles, resembling four-sided prisms, terminated by extremely delicate pyramids. It is very soluble in water and in alcohol: its taste is exceedingly bitter. It is decomposed by potash, soda, ammonia, baryta, strontian, lime, magnesia, morphine, and strychnine. The supersulphate crystallizes more readily than the neutral salt, and is formed of

Sulphuric acid . . . 8. 84 .. 5.
Brucine . . . . . 91. 16 .. 51. 582.

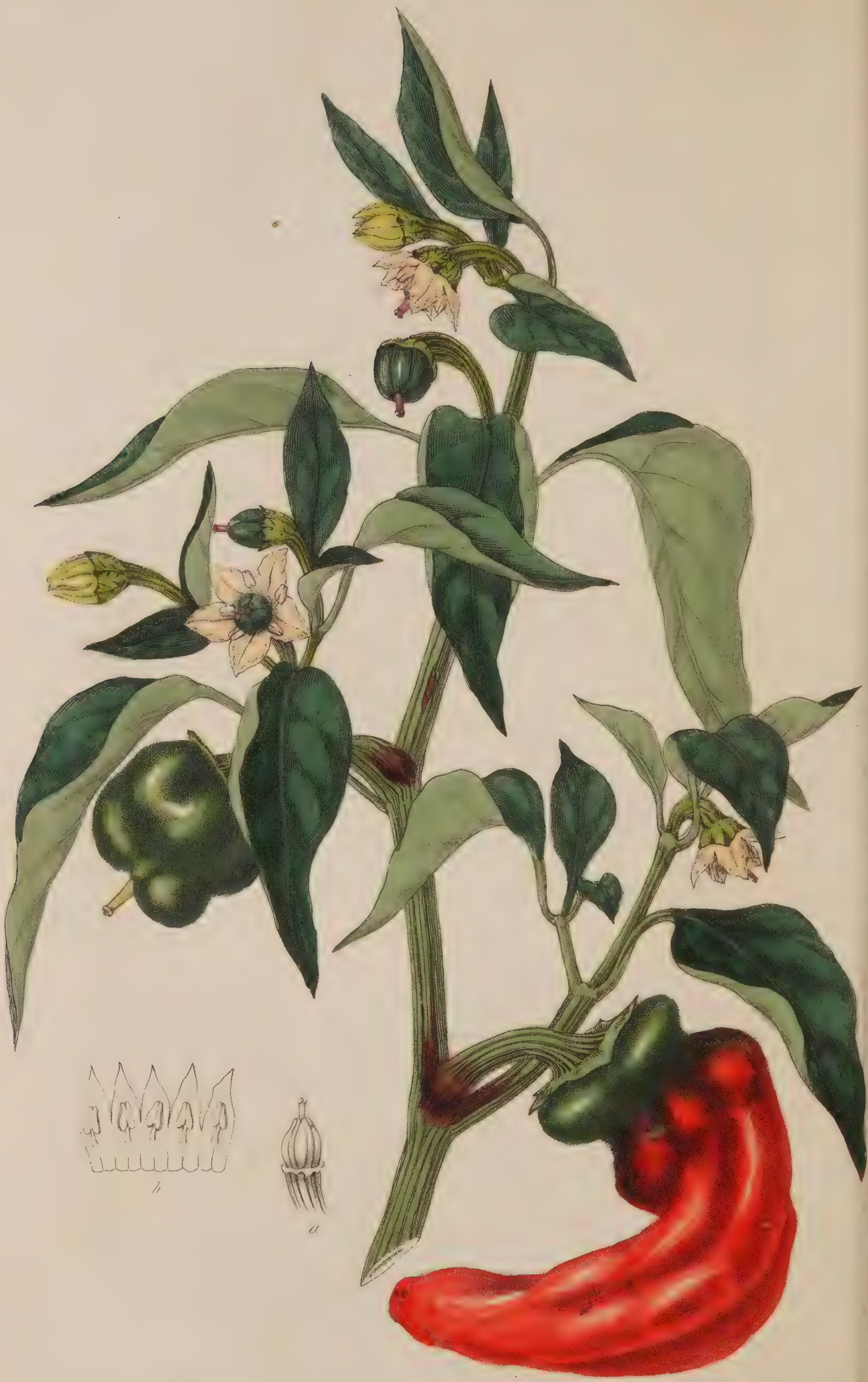
Hydro chlorate. This salt crystallizes in four-sided prisms terminated by an oblique surface. It is not acted upon by the air, and is very soluble in water. It is decomposed by sulphuric acid, while the nitric acts on and even destroys the brucine. It consists of

Acid . . . . . 5.953 .. 4.575
Brucine . . . . . 94.046 .. 72. 5

The phosphate is also crystallizable, very soluble, and slightly efflorescent: the acetate, tartrate, and oxalate may also be crystallized.

The nitrate is a mass bearing some resemblance to gum.

The sulphate and muriate of brucine being more soluble than brucine itself, probably possess certain advantages, and have in all likelihood greater activity: they may therefore be employed instead of the preparations above described.



Capsicum annuum.

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

CAPSICUM ANNUUM.

Annual Capsicum, or Guinea Pepper.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

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

GEN. CHAR. *Corolla* wheel-shaped. *Berry* juiceless, with 2-cells.

SPEC. CHAR. *Stem* herbaceous, peduncles solitary: fruit oblong.

Syn.—Piper Indicum vulgatissimem. *Bauh. Pin.* 102; *Raii. Hist.* 676.
Piper Calecutium sive Capsicum oblongius, *Bauh. Hist.* v. 2. 943.
Capsicum longioribus siliquis, *Ger. Em.* 364.
Capsicum majus vulgatius, oblongis siliqus, *Park. Theatr.* 355.
Vallia-capo-molago, *Rheede Malab.* ii. t. 35.
Piper Indicum vulgatissimum, *Murr, App. Med.* i. 475.
Capsicum annuum, *Lin. Sp. Pl.* 270; *Willd.* i. 1050; *Hort. Kew.* i. 253; *Woodv.* 391. *t.* 144; *Stokes,* i. 408.

FOREIGN.—*Poivre d'Inde,* Fr.; *Pepperone,* It.; *Pimienton,* Sp.; *Spaaisdier oderturkircher pfiffer,* Ger.; *L'ul Mirch* , Hind.

GUINEA PEPPER grows naturally in both the Indies. It appears to have been long known in this country, being mentioned by Gerarde; but the date of its introduction has not been precisely ascertained. It is frequently cultivated in our gardens as an ornamental plant, and also for the sake of the young pods or berries, which make a favourite pickle. The flowers appear at the same time with the fruit, and are produced from July to September.

The plant rises two feet high; is herbaceous, crooked, much branched, and has a smooth striated, somewhat angular stem.

The leaves are ovate, acuminate, smooth, entire, of a dark green colour, and stand irregularly on long foot-stalks. The flowers are solitary, petioled, proceed from the axillæ of the leaves, and of a dirty white colour: the calyx is persistent, tubular, and divided into five short segments; the corolla is monopetallous, wheel-shaped, consisting of a short tube, divided at the limb into five segments, which are spreading, pointed, and bent inwards at the margin: the filaments are five, shorter than the corolla, with oblong anthers; the germen is ovate, surmounted by a slender style, which is longer than the filaments, and terminated by a blunt stigma. The fruit is a long pendulous inflated pod or berry, smooth, shining, of a crimson or yellow colour, two-celled, containing a whitish spongy pulp, and numerous flat kidney-shaped seeds. Fig. (*a*) represents the germen and pistil; (*b*) the corolla spread open to shew the insertion of the stamens into the corolla.

This species of capsicum varies greatly in the size, form, and colour of its berries. In some instances they are long and conical, or short and obtuse; in others, heart-shaped, bell-shaped, or angular; they vary also in colour, being generally of a bright red, but sometimes orange or yellow.

The generic name, Capsicum, is supposed to be derived from *καπτω*, to bite, on account of the pungency of the fruit; or from *capsa*, a chest, in allusion to the form and structure of the pericarp.

Economical Uses.—All the species yield a spice of the most pungent quality, but the well known condiment sold under the name of Cayenne Pepper is prepared from the fruit of the Capsicum baccatum, or Bird-pepper, which is a shrubby plant, of humble growth, not unlike the present species, but producing small ovate berries. These are gathered when ripe, are dried in the sun, pounded, and mixed with salt. The composition is then put into stopped bottles, and is commonly known by the name of "Cayan Butter."

A mixture of sliced cucumbers, eschalots or onions, cut very small; a little lime juice, or madeira wine; with a few pods of Bird-pepper well mashed and mixed with the liquor, seldom fails

to excite the most languid appetite, where, in the West Indies, it is called *man-dram*. A useful, and elegant condiment, is made by dissolving common salt in a strong infusion of capsicum, previously strained, and afterwards allowing it to crystallize.

Culture.—The annual capsicums are propagated by seeds, which must be sown upon a hot-bed in the spring; and when the plants have six leaves, they should be transplanted on another hot-bed, at four or five inches distance, shading them in the daytime from the sun until they have taken root, after which they must have air freely admitted to them in warm weather, to prevent their running up weak. Towards the end of May, the plants must be hardened, by degrees, to bear the open air; and in June must be carefully taken up; preserving as much earth about their roots as possible; planting them into borders of rich earth; observing to water them well, and shading them till they have taken root; after which time, they will require no other management, but to be kept free from weeds, and in very dry seasons to refresh them three or four times a week with water. They will flower the end of June and July, and their fruit ripens in autumn.

Qualities and Chemical Properties.—Capsicum is of a fiery hot, somewhat aromatic taste, and has an extremely pungent odour. These properties are partially yielded to water, but more completely to æther and spirit. It contains cinchonin, resin, mucilage, and an alkaline principle discovered by M. Forchhammer, which is extremely acrid, more soluble in water, and has a greater capacity of saturation than the other vegetable alkalies. It forms a triple salt with the protoxide of lead and muriatic acid, which is as acrid as the alkali itself.* Precipitates are produced in the infusion of capsicum, by infusion of galls; nitrate of silver; oxymuriate of mercury; acetate of lead; the sulphates of iron, copper, and zinc; ammonia, carbonate of potass, and alum: but not by sulphuric, nitric, or muriatic acid.

Adulterations.—Red lead, which is sometimes mixed with powdered capsicum, may be detected by digesting it in acetic acid, and adding to the solution sulphuret of ammonia, which will produce, if any lead be present, a dark-coloured precipitate; or the fraud may be discovered by boiling some of the suspected pepper in vinegar, and after filtering the solution, adding to it sulphate of soda, when a white precipitate will be formed, which, after being dried and exposed to heat, and mixed with a little charcoal, will yield a metallic globule of lead.†

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* Journal de Physique, 1820, p. 173.

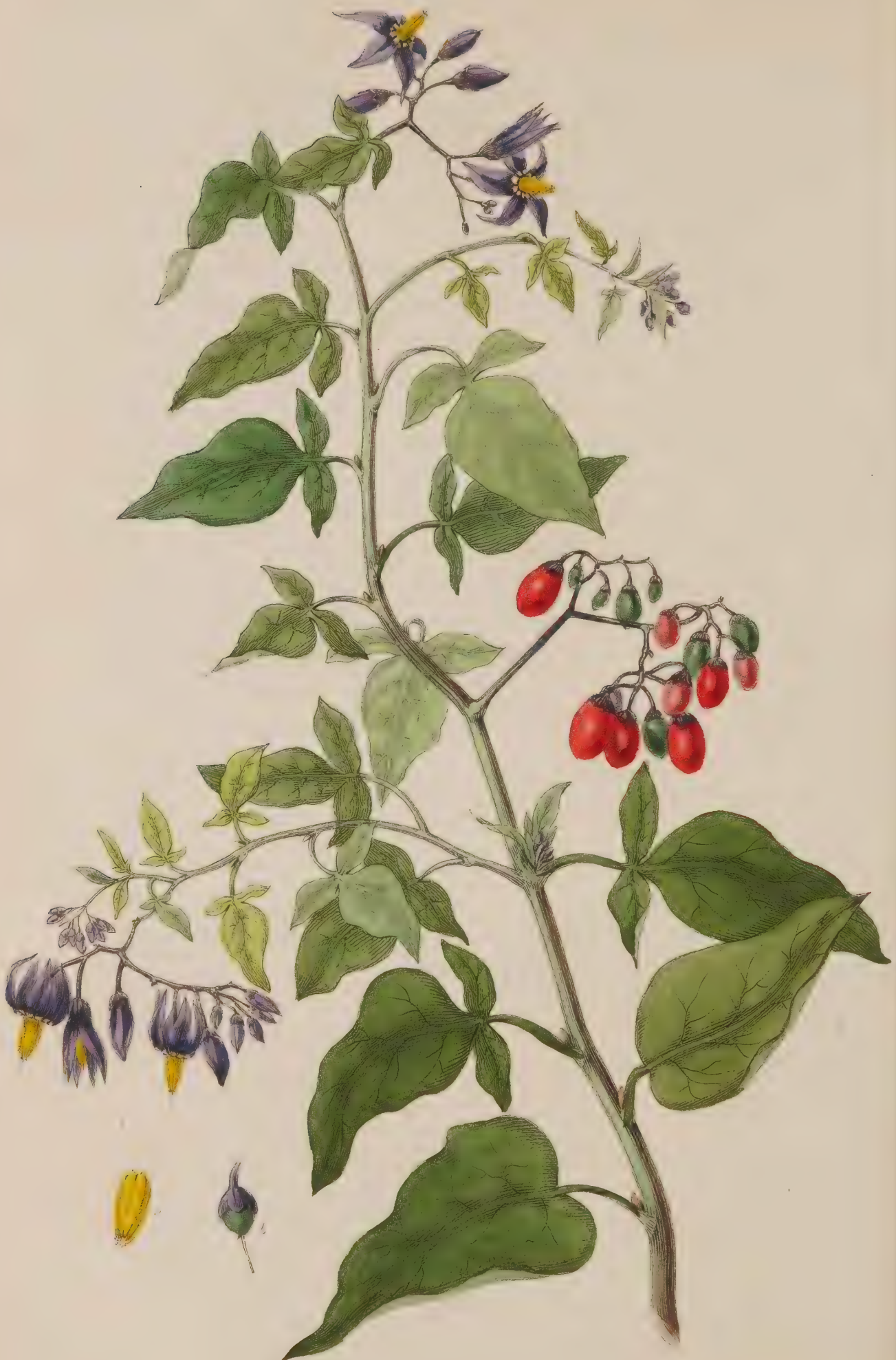
† Accum; Thompson.

Medical Properties and Uses.—Capsicum is a powerful stimulant, and is most advantageously given in atonic gout, in palsy, tympanites, dropsy, and in the debilitated stages of fever. From five to ten grains, in a pill, is the usual mode of administration; and although it is the hottest of all peppers, it has but little tendency to affect the head: it is therefore a useful stimulant in dyspepsia, and is an admirable carminative for flatulency from vegetable food. It may be advantageously combined with steel in scrofulous constitutions, and is much used as an adjunct to cinchona bark for intermittents. "Its sensible effects are heat in the stomach, and a general glow all over the body, without much affecting the pulse; and as a gargle it cleans, without impeding the healing of the ulcers of the fauces." A weak infusion is a useful stimulant to scrofulous and fistulous ulcerations: the pods are sometimes employed as an ingredient in rubefacient cataplasms for the feet, to relieve the coma of fever; chronic ophthalmia is sometimes benefited by a weak infusion; but the gargle, when applied to cynanche, has occasionally produced violent inflammation, not easy to be controlled.

Dose.—From twelve drops to half a drachm: and ʒij, to half a pint of water, form a good gargle.

Off. Prep.—Tinctura Capsici. *L. D.*

*** Rymer's Cardiac Tincture, is said to be composed of an infusion of capsicum, camphor, cardamon seeds, rhubarb, aloes, and castor in proof spirit, with a very small quantity of sulphuric acid.



Solanum Dulcamara.

C. Spratt del. W. Clark sculp.

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

SOLANUM DULCAMARA.

Woody Nightshade, or Bitter-sweet.

Class V. PENTANDRIA.—*Ord.* I. MONOGYNIA.

Nat. Ord. LURIDÆ, *Lin.* SOLANEÆ, *Jus.*

GEN. CHAR. *Corolla* wheel-shaped. *Anthers* opening with two pores at the apex. *Berry* 2-celled.

SPEC. CHAR. *Stem* shrubby, zigzag, without thorns. *Upper leaves* irregularly hastate. *Corymbs* drooping.

Syn.—Solanum lignosum, seu Dulcamara. *Raii. Syn.* 265, 1; *Park.* 350.
Amara dulcis. *Ger. Em.* 350. *f.*
Solanum. n. 575, *Hall. Hist. v.* 1. 248.
Dulcamara flexuosa. *Moench. Meth.* 514.
Vitis sylvestris. *Matth. Valgr. v.* 2. 619. *f.*; *Camer. Epit.* 986. *f.*
Solanum Dulcamara. *Lin. Sp. Pl.* 264; *Willd. v.* 1. 1028; *Fl. Brit.* 256; *Curt. Lond. fasc.* 1. *t.* 14; *Woodv. t.* 33; *Hook. Scot.* 79; *Bull. Fr. t.* 23.
FOREIGN.—*Douce-amere*, Fr.; *Dulcamara*, Ital.; *Amara-dulcis*, Sp.; *Docamarga*, Port; *Bittersuss*, Ger. *Bittersöde*, Dan.; *Solotucha*, Russ.

WOODY NIGHTSHADE, called also Bitter-sweet, from the flavour of the herb when chewed, and in Cumberland, *Fellon-wood*, is an indigenous shrub, very common in moist hedges, on the banks of ditches, and sometimes on old walls; flowering from June to September. It grows also in similar situations in most parts of Europe, occurring in Greece, and even as far north as Norway.

This well-known species of Solanum, has several long, slender, roundish, winding stems, divided into a few erect, alternate branches, and rising, when supported, to the height of eight or ten feet. The stalks are covered with a greyish-green bark, on the lower part, but of a purple hue on the upper side, towards the ends of the branches. The root is small, creeping, and woody. The leaves are alternate, acute, mostly smooth, though sometimes hairy, soft, of a dull green colour, and supported on

footstalks. They are cordate towards the bottom; more or less perfectly halbert-shaped at the top. The flowers are in very elegant, branched corymbs, opposite to the leaves, or terminal; drooping, divaricate, and alternately subdivided. The calyx is small, 5-cleft, with blunt segments: corolla wheel-shaped, consisting of five, reflected, equally divided, acute, violet coloured segments, with two round pale green, or whitish spots at the base, and large yellow anthers, longer than the filaments, united into a sort of cone. The germen is roundish, having a thread-shaped style projecting beyond the anthers. The berries, which ripen in autumn, are oval, scarlet, full of a nauseous juice, and contain several whitish, plano-convex seeds. A variety with white flowers is mentioned by Merret; and the leaves are sometimes found variegated.—Fig. (*a*) represents the stamens; (*b*) the pistil, germen, and calyx.

Qualities and Chemical Properties.—The dried herb is inodorous; but the smell of the recent plant is heavy and disagreeable. The stalks, whether fresh or dried, have a slightly bitter taste, followed by a remarkable sweetness somewhat resembling liquorice, a peculiarity which, no doubt, suggested the name *Glycipicros* and Dulcamara, of which the English trivial name is a just translation. The twigs, which for medicinal use should be gathered in the autumn, are the only parts employed, though the roots are said to possess similar qualities. Water appears to be a perfect solvent of their active properties; but much boiling destroys their powers. The chief soluble portion seems to be a kind of mucous extractive, which is taken up both by water and alcohol, though most by the former: and the nitrate of mercury and muriate of tin, gave precipitates from both, though most from the water: an ounce of the twigs, according to Hartmann and Kuhn, when treated with alcohol, afforded two drachms and two scruples of extract. The same quantity treated with water, gave three drachms and thirty-five grains. Scheele discovered citric acid in this plant.

Poisonous Effects.—Given in an overdose, a decoction of the twigs of Solanum *Dulcamara* produces on the human subject the ordinary symptoms of narcotic poisons. The crimson berries, which with those of the white and black Briony, (Bryonia *dioica*, and Tamus *communis*,) ornament our hedges at the approach of winter, are known to the peasantry by the name of "Poison berries." They have a disagreeable, bitter, nauseous taste; and the subjoined extract of a letter from Mr. Wheeler, Surgeon of Bayswater, attests, in a striking manner, their deleterious effects.

"On the 23rd of September, 1824, I was sent for, in great haste, to see two children belonging to Mr. Hebbut, of Kensington Gravel Pits. The elder was five years old, the younger three and a half. While playing in a field, close by their home, they were attracted at

the sight of the beautiful red berries of the Dulcamara, and each ate a few. On their return home, about an hour after partaking of them, they were seized with the most excruciating pains in the whole course of the intestines; attended with great heat in the throat and chest. They could not bear the slightest pressure on the abdomen; and suffered much from nausea, thirst, and prostration of strength. It immediately occurred to my mind that these were the effects of some vegetable poison, and on questioning the mother, she ascertained where they had been, and that they had partaken of some berries. The pulsations at the wrist had now become exceedingly frequent, and the breathing painful and hurried. Hot water being at hand, I had them put into a bath, and administered a strong solution of sulphate of zinc, every five minutes; which soon dislodged the contents of the stomach; and I had the satisfaction to see several berries rejected, which were partially masticated, and appeared as though they were undergoing the process of digestion. After coming out of the bath, leeches were applied to the abdomen, and the bleeding was encouraged by poultices. I also ordered twelve grains of calomel for the elder, and ten to the younger, which were followed by a mixture of castor oil, manna, and laudanum, in proper proportions. Injections of beef broth were also frequently administered. In the evening, I found that the bowels had been freely acted on, and the evacuations were green, slimy, and extremely offensive. The tongue of each was red and dry.

"(Sept. 24th.) The tongues continued in the same condition. The bowels had been freely opened in the night. The breathing was but little improved. The bowels were not so much distended, nor was the pain produced by pressure, so great. The pulses were still hard and quick; I therefore ordered the calomel, castor oil, and leeches to be repeated.

"(25th.) Pulses soft and reduced in velocity. A gentle moisture pervaded their skins; the breathing was better, and their bowels much relieved; the evacuations had been plentiful, and were not so green. Calomel and castor oil to be persisted in.

"(26th.) Are much better and free from pain, but extremely debilitated. Ordered them beef tea and mucilaginous drink. After this they gradually recovered, and on the 30th I took leave of them."

"In 1825, a child of Mr. Simmons, four years old, residing in Camden's Place, swallowed some of the berries. He was a fine, stout, healthy boy. The symptoms were exactly the same as those already described, but attended with violent vomiting and purging, with contraction of the abdominal muscles. *There was also a profuse secretion of saliva.* I took five ounces of blood from the arm; gave twelve grains of calomel in a little sugar, and ordered the oily mixture with four drops of laudanum in each dose. Leeches were also applied to the abdomen. In the evening, I found that the bowels had been freely acted on, and the breathing was much improved. I continued my attendance for several days, and consider that his recovery was probably protracted from my not having seen him till three hours after he had taken the berries.

"I have had the pain to be called to the Harrow Road, on two

occasions, where the little sufferers died, from my visits being protracted to ten and twelve hours after the poisonous repast. In neither case could I obtain leave to inspect the bodies."

On animals, the berries of Solanum *Dulcamara* produce but little, or no effect, as we have ascertained by experiments; the results of which, support the accuracy of those which are detailed in a work by M. Duval, entitled *Histoire Naturelle, Médicale, et Economique des Solanum.*

Medical Properties and Uses.—The effects of the Solanum *Dulcamara* are those of a narcotic, diaphoretic and diuretic; in large doses it produces nausea, vertigo, syncope, diarrhœa, and even death. Chronic rheumatism, gout, incipient phthisis, humoral asthma, jaundice, and several other diseases, are said to have been benefited by the use of this plant; and although it is now but little employed, it has been highly recommended by Linneus, Carrere, and others, for its efficacy in herpetic diseases, scabies, and the eruptive, or secondary symptoms of syphilis. Murray, in his "Apparatus Medicaminum," says it promotes all the secretions; and Bergius recommends its use in rheumatism, uterine obstructions, and suppression of the lochia. According to a letter from Sir Alexander Crichton, which is published in Dr. Willan's celebrated work on Diseases of the Skin, only two cases of Lepra Græcorum, out of twenty-three, resisted its action. Psoriasis and pityriasis, appeared also to be benefited by it. His mode of employing it, is the following: Take of stalks of Dulcamara, one ounce; water a pound and a half; boil to a pound and strain, when cold. Of this decoction, the patient is recommended to take two ounces, morning, noon, and evening, and to increase the doses, till a pint is consumed a day. Where the skin is not in an inflamed or very irritable state, a strong decoction may be applied, as a useful auxiliary. Dr. Crichton found that in delicate people, and hysterical women, it frequently produced syncope and slight palpitation of the heart, attended occasionally by nausea and giddiness. Our own experience confirms these remarks; but if the dose is somewhat diminished, and an aromatic added, these symptoms cease. Professors Bigelow and Murray, and Dr. Bateman, confirm the utility of this medicine; and the latter considers that "one of the most effectual remedies for lepra, under all its varieties, is the decoction of the leaves and twigs of the Solanum *Dulcamara.*" We have often given it to patients afflicted with the different varieties of lepra, and sometimes with success; but as lepra is a disease, which, in this country, may be generally traced to a want of tone or vigour in the whole system, we prefer a general mode of treatment, to a specific one; and believe, that experience will confirm the propriety of this view of the subject. By some, it is averred to be a valuable auxiliary to mercury, and as it is a medicine indigenous to our own country, we should strongly recommend it to be employed on an extensive scale, in our hospitals, that its real powers may be ascertained. Dr. Cullen found different parcels of the herb to exhibit very different degrees of strength: but as we think with Professor Bigelow, that "the appearance of slight narcotic symptoms is an evidence of the goodness of the medicine," we can regulate the dose by its effects. As it is an

active medicine, it is proper to begin with small doses. Dr. R. Pearson, in his Practical Synopsis of the Materia Medica, observes, that an infusion or decoction of the stalks or twigs is a powerful diuretic, and has been given with good effect in humoral asthma and dropsy. He recommends two drachms of the fresh stalks, chopped small, to be infused in eight ounces of boiling water. Of this infusion, which is a more certain preparation than the decoction, since by long boiling the active properties of the plant are mostly dissipated, two ounces may be given three or four times a day. Of the powder, which is rarely employed, the dose may be from one scruple to a drachm or more, gradually increased.

Off. Prep.—Decoctum Dulcamaræ. *L.*

SOLANUM NIGRUM.

Common, or Garden Nightshade.

Spec. Char. *Stem* herbaceous, without thorns. *Leaves* ovate, bluntly toothed, or wavy. *Umbels* lateral, drooping.

Syn.—Solanum vulgare. *Raii Syn.* 265.

S. hortense. *Ger. Em.* 339. *f.*; *Matth. Valgr. v.* 2. 415. *f.*

S. nigrum. *Lin. Sp. Pl.* 266; *Willd. v.* 1. 1035; *Eng. Bot. v.* 8. *t.* 566; *Woodv. Suppl. p.* 37. *t.* 226.

Foreign.—*Morelle de Jardins*, Fr.; *Solatro nero*; *Morella*, It.; *Hierba mora*, Sp.; *Garten—Nachtschatten*, Ger.; *Svineurt*, Dan.; *Hansletegräs*, Swed.

Garden Nightshade is an annual plant, common on waste, as well as cultivated grounds, in all parts of Europe; flowering from June to September. The root is fibrous. The stem rises about a foot and a half in height, with numerous angular, or winged, leafy branches, rough, and of a purple colour. The leaves are alternate, slightly downy, sinuated, or indented, and placed on short footstalks. The flowers are in small umbels from the intermediate spaces between the leaves; they are white, with yellow

anthers, and stand on simple downy pedicles. The berries are about the size of currants, globular, usually black, but occasionally yellow, according to Hudson.

Qualities and Chemical Properties.—Garden Nightshade has a fœtid odour, but the taste is merely herbaceous, without any peculiar flavour. A new alkaline principle was discovered in the fruit of this and in the preceding species by M. Desfosses, in combination with malic acid, which he has denominated *solanine*.* It is obtained simply by adding ammonia to the filtered juice of the ripe berries, digesting the precipitate in alcohol, and evaporating the solution. Solanine has a very bitter, nauseous taste, but it appears from recent experiments to possess little or no medicinal properties.

Poisonous Effects.—Every part of the plant is poisonous. According to Wepfer, three children, upon eating the berries, were suddenly seized with cardialgia, sickness, and delirium, accompanied with spasms and remarkable distortions of the limbs.

Medical Properties.—The results of experiments to ascertain the real virtues of this plant are very discordant. According to Mr. Gataker, who in the year 1757 published "Observations on the internal use of the Solanum," it is a powerful narcotic, sudorific, cathartic, and diuretic. Lately, it has been made the subject of experiment, by Orfila, who found its extract to possess nearly the power and energy of lettuce-opium.† Internally, it has been found serviceable in cancerous and scrofulous ulcers, in some cutaneous affections, and in dropsies. Externally, used as a fomentation, it is advantageously employed as a discutient and anodyne, in various affections of the skin, tumours, glandular swellings, and scrofulous and ill-conditioned sores The *dose* of the powdered leaves is from one to three grains.

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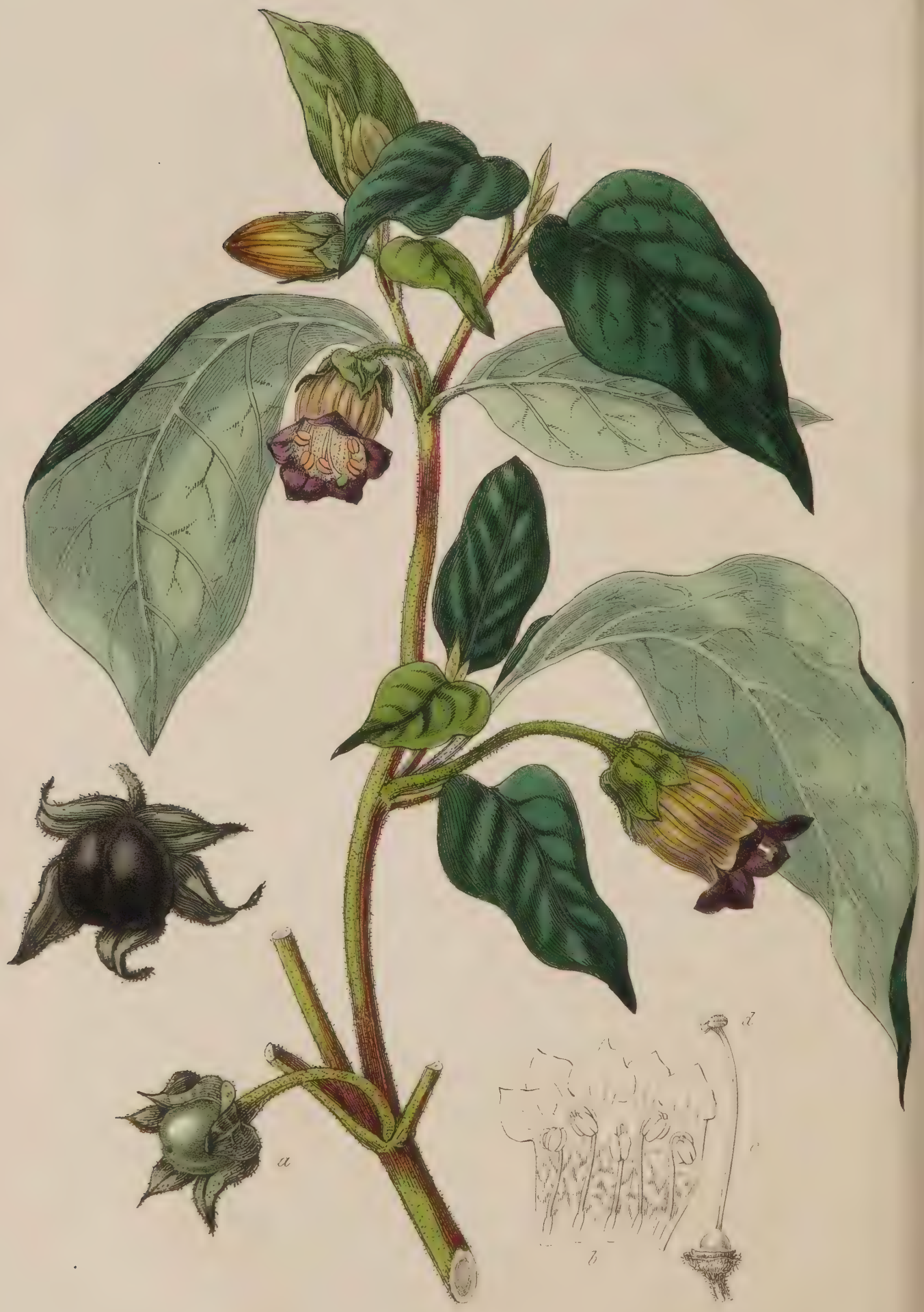
* *Bulletin de la Scient. Med. d'Emul.* Mars. 1821.

† *Toxicologie Generale*, ii. *p.* 190.



Atropa Belladonna

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ATROPA BELLADONNA.

Deadly Nightshade.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

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

GEN. CHAR. *Corolla* bell-shaped. *Stamens* distant. *Berry*, globular, 2-celled.

SPEC. CHAR. *Stem* herbaceous. *Leaves* ovate, entire.

Syn.—Belladonna, *Raii. Syn.* 265; *Mill. Ic. t.* 62.
Solanum lethale, *Ger. Em.* 340; *Park*, 346; *Clus. Hist. p.* 86.
Solanum Melanoceros, *Bauh. Pin.* 166.
Solanum somniferum, *Buch. Hist. Scotica. l.* vii. *c.* vi.
Belladonna, trichotoma, *Scop. Carn.* 1. *p.* 160; *Moench. Meth.* 179.
Atropa lethalis, *Salisb. Prodr.* 132.
Atropa Belladonna, *Lin. Sp. Pl.* 260; *Willd. v.* 1. 1017; *Fl. Brit.* 255; *Eng. Bot. v.* 9. *t.* 592; *Curt. Lond. fasc.* 5. *t.* 16; *Woodv. Med. Bot. t.* 1; *Hook. Scot.* 78; *Stoke's Bot. Mat. Med.* 1. 394.

PROVINCIALLY.—*Dwale, Deadly Dwale, Black-cherry Nightshade.*

FOREIGN.—*Belladone vulgaire*, Fr.; *Belladonna*, Ital.; *Bella-dona, bella-dama*, Sp.; *die gemeiner Wolfskirsche, Tollkraut*, Ger.; *Belladonna, Skiönheden*, Dan.; *Besiedraagend Doodkruid*, Dut.; *Beschenaja wischnja*, Russ.

DEADLY NIGHTSHADE, or as it is termed in the Pharmacopœias, Belladonna, is a native of the south of Europe, Austria, and England; and has long been cultivated in our gardens. It is a perennial plant, flowering in June, and July; and ripening its berries in September. It grows in many parts of Britain, on a calcareous soil; but is scarce. It is generally found in shady lanes, and hedges; in the neighbourhood of villages, and ancient ruins. Belladonna is rarely met with in the neighbourhood of London; but we learn, on the authority of Dr. Milne and others, that it grows in the greatest abundance at Cuxstone, near Rochester, in Kent; also at Wisbeach, in the isle of Ely; in that part of the south-east of Lincolnshire, which is called Holland; near Royston, in Hertfordshire; in Windsor park; about Box-hill, near Dorking, in Surrey; and very luxuriantly amongst the ruins of Furness Abbey, in consequence of which, the valley is called the Vale of Nightshade. It was observed by Mr. Neill on

Inchcolm, and among the ruins of Borthwick Castle, near Edinburgh.*

Belladonna rises to the height of three or four feet, from a root, which is thick, fleshy, creeping, and much branched. The stem is erect, cylindrical, herbaceous, annual, branching, and generally covered with short hairs. The branches are dichotomous, tinged with purple, and crowded with leaves; which are lateral, ovate, entire, somewhat soft, pointed at both ends, of a dull green colour, and grow in pairs, of unequal size, on short petioles. The flowers are solitary, somewhat drooping, and supported on rather short, one-flowered, axillary peduncles; the calyx (*a*) is green, persistent, and deeply divided into five ovate segments; the corolla, monopetalous, bell-shaped, of a lurid purple externally, within paler, dusky, with a yellowish variegated base; and contains five stamens (*b*) shorter than the corolla, arched, and supporting roundish anthers, with a spheroidal germen, bearing a long, simple style (*c*), and a two-lobed stigma (*d*). The fruit is a berry, the size of a small cherry, seated within the calyx; it is depressed with a transverse furrow, shining, smooth, of a deep violet black colour, and inclosing, within its pulp, a number of kidney-shaped seeds.

Atropa is said to be derived from Atropos, one of the evil Destinies. Belladonna, in the Italian language, signifies a beautiful woman; and was bestowed on this plant, in consequence of the ladies using its fruit in the composition of their *fucus*, or face-paint. These names, however, were not given until it was ascertained that it did not belong to the genus Solanum.

Qualities.—The leaves of Belladonna have scarcely any smell, but a slightly nauseous, sub-acrid taste. When dried, and carefully excluded from air, and moisture, they retain their active properties for a long time. The juice of the ripe berries has a sweetish taste, and, according to Withering, it stains paper of a beautiful and durable purple.

Chemical Properties.—From the recent discoveries of *Brandes*, the active properties of Belladonna appear to reside in a salifiable base, termed *Atropia*, or *Atropine*, and on it the poisonous qualities of the plant depend.* To obtain this

* Greville's *Flora Edinensis*, p. 53.

principle, M. Brandes boiled two pounds of the dried leaves of the Atropa *Belladonna* in a sufficient quantity of water, pressed out the decoction, and boiled the leaves again in some more water. The decoctions were mixed, and some sulphuric acid was added in order to throw down the albumen, and similar bodies: the solution was thus rendered thinner, and passed more readily through the filter. The decoction was next super-saturated with potass; by which he obtained a precipitate, weighing, after having been washed with pure water, and dried, 89 grains. It consisted of small crystals, from which, by solution in acids, and precipitation by alkalies, *Atropine* was obtained in a state of purity.† Or, *Atropine* may be obtained by digesting the decoction of the herb of the Atropa *Belladonna* with magnesia; boiling the precipitate in alcohol, and filtering: the *Atropine* crystallizes, on cooling, in needles, or colourless translucent prisms.‡

Properties of Atropine.—Atropine, as stated by *Brandes*, varies in appearance, according to the method by which it is obtained. It crystallizes only, when rendered perfectly pure, by repeated solution in muriatic acid; and precipitated by ammonia. It is much more soluble in hot, than cold alcohol; almost insoluble in water; and entirely so in ether, and the oils. It forms with acids, neutral crystallizable salts.

Action of Atropine on the Animal Economy.—When M. Brandes was experimenting on this alkali, he was obliged to desist, in consequence of the violent headaches, pains in the back, and giddiness, with frequent nausea, which the vapour of the salt occasioned: it had, indeed, so injurious an effect upon his health, that he has entirely abstained from further experiments, and no one has hitherto repeated them. He once tasted a small quantity of the sulphate of Atropine; it was merely saline. He was quickly attacked with violent headache, shaking in the limbs, alternate sensations of heat, and cold;

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* The Atropa *Belladonna* yields on analysis the following constituents: wax 0.7; resinous chlorophylle 5.84; acid malate of *atropine* 1.51; gum 8.03; fecula 1.25 woody fibre 13.7; phyteumacolle 6.9; a matter analagous to osmagome, with malate of atropine, oxalate, hydrochlorate, and sulphate of potass 16.05; soluble albumen 4.7; hard albumen 6; ammoniacal salts and acetates, malate of *atropine*, oxalate, malate, sulphate, hydrochlorate, and nitrate of potass; oxalate, malate,(?) and phosphate of lime, and phosphate of magnesia 7.47; water 25.8; loss 2.05 The ashes contain oxide of copper.—*Brandes* and *Vauquelin*.

† Ure's *Chemical Dictionary*, art. *Atropia*.

‡ *Chimie Organique*, par Leopold Gmelin: edition de Virey. p. 398.

oppression of the chest, difficulty of breathing, and diminished circulation of the blood. The violence of these symptoms ceased in half an hour. The vapour, even of the various salts of Atropine, produces vertigo. When exposed for a long time to the vapours from a solution of nitrate, phosphate, or sulphate of Atropine, the pupil of the eye becomes dilated. This occurred frequently to M. Brandes; and when he tasted the salt of Atropine, the dilatation followed to so great a degree, that it continued for twelve hours, and was not influenced by the different shades of light, which were thrown on the eye.* M. Runge ascertained that alkaline solutions completely destroy the properties of Atropine, or, at least, affect it so much that it loses the power of causing dilatation of the pupil; he also found that lime-water produces the same effect.

Poisonous Effects of Belladonna.—Dr. Paris, in his Synoptical Table of Poisons, remarks, that Belladonna is one of the narcotico-acrid class, which not only exerts a local action, but poisons by entering the circulation: and thereby acting through that medium, with different degrees of energy on the heart, brain, and alimentary canal. When taken in an overdose, it produces symptoms of intoxication,—a fact too obvious to have escaped the penetrating genius of Shakspeare, for in the speech of Banquo to Macbeth, we read,

> " Or have we eaten of the insane root,
> That takes the reason prisoner?"—

Dryness of the mouth, thirst, trembling of the tongue, vertigo, sickness, and difficulty of deglutition, with great anxiety about the precordia ensue; the pulse becomes low and feeble; the face swelled, and red; the pupils are dilated; the jaws are fixed; vision is impaired; and these symptoms terminate in convulsions, coma, paralysis, and death.

Above a hundred and fifty soldiers were poisoned by the berries of Belladonna, which they gathered at Pirna, near Dresden: and the following are the symptoms, as copied from Orfila, and enumerated in the *Journal de Sedillot*, December 1813, by M. E. Gautier de Claubry. Dilatation and immobility of the pupil; insensibility, almost complete,

* *Schweigger's Journal*, 28. 1; *Repert. de Buchaner*, ix. 71; *Ure's Chemical Dictionary; Formulary of several new Remedies*, by T. Haden, fol. 119.

of the eye to the presence of external objects; or at least confused vision: injection of the conjunctiva by bluish blood; protrusion of the eye, which in some appeared as if it were dull, and in others ardent, and furious; dryness of the lips, tongue, palate, and throat; difficult deglutition, or total incapacity to swallow; nausea unattended by vomiting; sense of weakness, lipothymia, syncope; frequent bending forward of the trunk; continual motion of the hands, and fingers; gay delirium, with a vacant smile; aphonia, or confused sounds uttered with pain; apparently ineffectual desires to evacuate the rectum, insensible restoration to health and reason, without any recollection of the preceding state.

Buchanan, the Scottish historian, states that the Danes were defeated by the troops of Macbeth, who, during a truce, sent bread, and a mixture of wine and ale, to Sweno, containing poison. In the subjoined passage it will be seen that the botanical description of the plant, proves it to have been Belladonna.

"Missa magna vis panis et vini,* tum e vite, tum ex hordeo confecti, ac succo infecti† herbæ cujusdam veneficæ, cujus magna copia passim in Scotia nascitur. Vulgo solanum ‡ somniferum vocant. Caulis ei major bipedali in ramos superne diffunditur: folia latiuscula acuminata exteriore parte, ac languide virentia, acini § prægrandes, ac nigri, cum maturuerunt, coloris, qui e caule, sub axilla foliorum exeunt; sapor eis dulcis et propemodum fatuus. Semen habent perexiguum velut fici grana, vis fructui, radici, ac maxime semini somnifera, et quæ in amentiam si largius sumantur, agat. Hac herba cum omnia infecta essent, qui commeatus in castra vehebant, ne qua doli subesset suspitio prægustabant, Danosque magnis poculis invitabant ad bibendum. Idem quoque Sueno ipse benevolentiæ significandæ causa, ut illis nationibus mos est, faciebat."—*Rerum Scoticarum Hist.* jib. vii. cap. 6, p. 162.

When Mark Antony, the triumvir, was engaged in the Parthian war, his troops became greatly distressed for provisions, and Belladonna is supposed to be the plant referred to by Plutarch in the following passage:—

"Those who sought for herbs, and pot-herbs, obtained few that

* Wine and ale. † Poisonous herbs. ‡ Nightshade. § Berries.

they had been accustomed to eat, and in tasting unknown herbs they found one that brought on madness, and death. He that had eaten of it, immediately lost all memory, and knowledge; but at the same time would busy himself in turning and moving every stone he met with, as if he was upon some very important pursuit. The camp was full of unhappy men, bending to the ground; and thus digging up, and removing stones, till at last they were carried off by a bilious vomiting, when wine, the only remedy, was not to be found."

Morbid Appearances.—Upon examining the bodies of those who have died from the effects of Belladonna, we shall find that they soon putrefy; swell remarkably, and are covered with livid spots: blood flows from the mouth, nose, and eyes; and the stench is intolerable. If the berries have been taken, they are found to be but partially digested, owing to the extreme torpor of the stomach, produced by them: and the blood is in a dissolved state. Ulcers are likewise to be found, occasionally, on the internal surface of the stomach. The heart and lungs appear livid, and the latter are usually gorged with venous blood, and studded with black spots. In one case, the pericardium contained no serum.

When the quantity of the plant found in the stomach is sufficient, we may proceed to identify it by obtaining Atropine, as recommended by Dr. Paris. Dr. Runces, of Berlin, proposes a new method; which consists in boiling the stomach, or intestines of the animal poisoned, and evaporating the aqueous solution, to the consistence of an extract; and applying it with a camel-hair pencil to the eye of an animal, by which dilatation of the pupil is produced. He prefers a cat for the experiment, the shape of its pupil, affording the best opportunity of witnessing the phenomenon.

Treatment of Poisoning by Belladonna.—A patient labouring under the effects of this poison, should have his head and shoulders raised nearly to the erect position, and pressure from the neck removed. If the extract, or a solution of it, has been taken, Read's stomach pump may be advantageously employed. The berries, however, are generally the cause of mischief; and the sulphate of zinc, or copper,

must be administered in small and repeated doses, to excite vomiting : but we should be careful that no great accumulation of these agents takes place, or inflammation may be produced.

hould the stupor be very alarming, we must unload the vessels of the brain by bleeding from the jugular vein, and by cold affusions : whereby the torpor of the stomach may be relieved, and the action of the emetic frequently induced. Stimuli may likewise be applied to the eye, or the nose ; frictions to the regions of the heart ; and sinapisms to the feet. After the stomach has been evacuated of its contents, the vegetable acids, especially *vinegar ;* diluents ; and saline purgatives, must be administered.

Medical Properties and Uses.—The poisonous qualities of Belladonna reside in every part of the plant ; but chiefly predominate in the fruit : and we possess but too many well-attested narratives of the fatal effect of its berries ; which in appearance are very alluring to children. They are said, however, to be less pernicious than the leaves ; and although one, or even half of one, has produced death, Haller informs us that he has seen a fellow-student, eat three, or four, with impunity. To the most active of the vegetable kingdom, we naturally look for valuable remedial agents : and Belladonna is one which has been frequently administered : but its great power renders it an intractable medicine ; and we generally have recourse to it when unsuccessful by other means. It possesses anodyne and antispasmodic virtues ; in small doses relieving pain ; and has a direct action on the brain and nervous system : but in larger doses, according to Dr. Bostock, it exerts its influence on the alimentary canal. Like Digitalis, Nicotiana, and some other narcotics, it sometimes operates as a diuretic ; and in a few rare instances, has been known to excite the action of the salivary glands, and to produce salivation.*

Gesner, in his medical epistles, recommends a syrup made with the expressed juice of the berries, to be given in *dysentery*, in every case where opium is indicated, and speaks of its efficacy. Cases of its successful use in chorea, epilepsy, and convulsions, are recorded. Asthma, paralysis, pertussis, neuralgia-facialis,

* See *Greeding apud Ludwigii Adversar. Medico-Pract.* vol. i. part 4. and vol. ii. part 2.

chronic rheumatism, and the pain attendant on scirrhus, sometimes yield to its influence: but in mania and hydrophobia, it has been most indiscriminately used, and consequently with various results. From its diminishing the velocity of the pulse, it has been given to persons the subjects of aneurism. The *Archives Generales* for 1823 contains a long article on the employment of Belladonna as a prophylactic in scarlatina.* Dr. Hufeland assures us, on the authority of several of the most eminent practitioners in Germany, that this plant has been found, on experiment, to render persons insusceptible of the infection of the fever, in places where it may be raging.

As a topical remedy, the powder, and decoction, have been successfully applied to cancerous, and ill-conditioned painful sores: and we have found sciatica, lumbago, the pain of venereal nodes, and anomalous muscular pains, readily yield to the influence of its extract, when used as a plaster. By some, a bougie armed with it has been applied to spasmodic strictures; and if rubbed on the under surface of the urethra in similar cases, it will often afford relief, and likewise alleviate the pain of chordee: but even here its great power cannot be easily controlled; as in some instances the muscles of the perinæum and penis have been so paralysed for a time that the urine has flowed away involuntarily.

From its acting on the radiated fibres of the iris, whereby dilatation of the pupil is produced, some dissolved extract is applied to the *brow*, or some infusion dropped into the eye, prior to the operation for cataract:—"A practice," says Dr. Murray, in his Materia Medica, "which is hazardous, as the pupil, though much dilated by the application, instantly contracts when the instrument is introduced." It is also applied externally after the operation, to prevent the edge of the iris from becoming adherent to the edges of the torn capsule; and in like manner, when adhesive matter is deposited on the iris through inflammation. And as its effects endure for many hours, the rays of light are extensively admitted on the retina, so that persons suffering from incipient cataract, enjoy from its use a considerable, though temporary, improvement of vision.

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* See *Lancet*, vol. i. p. 403.

Dr. Ley, an eminent accoucheur in London, has been in the habit of using this medicine, in the form of injection, in cancer and ulceration of the womb, and in leucorrhæa, with great success: and Dr. Conquest writes—"In a few of those perplexing and wearisome cases of protracted labour, arising from rigidity of the os and cervix uteri, and which often harasses both patient and practitioner through successive nights and days, I have seen decided benefit result from the introduction of about half a dram of the *Extractum Belladonnæ*, by gently rubbing it about the mouth, and neck of the womb. It has suspended unproductive uterine action, and produced relaxation of parts, so that on the recurrence of expulsatory pains the os uteri has readily yielded, and permitted the head to pass."

During puerperal convulsions, M. Chaussier has been constantly in the habit, since the year 1811, of applying an ointment to the uterus, composed of two drachms of the extract of Belladonna, and six of simple cerate; and many other French practitioners have also used it with benefit. Mr. Blackett, however, has recorded a case, in which the os uteri became so paralyzed, as to threaten very serious consequences for several hours: a circumstance which renders it very questionable how far we are justified in producing a condition of parts, from which uncontrollable uterine hæmorrhage might ensue.

Preparations. The *officinal* preparations of Belladonna are the Extr. Belladonnæ *Lond.*, and the Succ. Spiss. Atrop. Bellad. of the Edin. Phar., made of the expressed juice inspissated.

Mr. Blackett, in an erudite Essay on the use of Atropa *Belladonna*, says, "The particular preparation of this medicine, which I have been in the habit of using, is a very strong tincture, made from the extract in the following proportions: Take ten drachms of the most carefully prepared extract of the Belladonna, and one pound of proof spirit, macerate for fourteen days, and then filter. I endeavour to procure the extract in a state of its greatest activity, and possessing the virtues of the plants undiminished in the preparation; and I consequently find a single drop of the tincture which is made from it, to be more efficacious than a quarter-of-a-grain dose of the extract, as it is usually obtained from druggists

"I have frequently employed this tincture in cases of mania, in various instances of convulsions, in hysteria, and in pertussis, with decided efficacy. In all cases of its internal use, I have commenced with small doses, generally with two or three minims in a day. I have been led to embrace this cautious mode of commencing the remedy, because I have found that when given, at first, in a large dose, owing to peculiar states of the constitution, especially in old subjects, it sometimes depresses the powers of life to a greater extent than was wished. In several forms of cutaneous and superficial inflammation, I have experienced the greatest service from the external use of this tincture, either when added to a lotion, or to any ointment, which appeared most suitable, in other respects, to the particular nature of the case. When I have employed it in a lotion, a drachm of the tincture, to eight ounces of the liquid, has been the proportion adopted: and in this form I have found it very beneficial in external inflammation, and in irritable ulcers. I have used the extract either alone, or combined with some ointment, with decided advantage, in spasmodic stricture of the rectum; and I have found it useful in gonorrhæa, especially when chordee was present, conjoined with double the quantity of mercurial ointment, and rubbed along the course of the urethra."

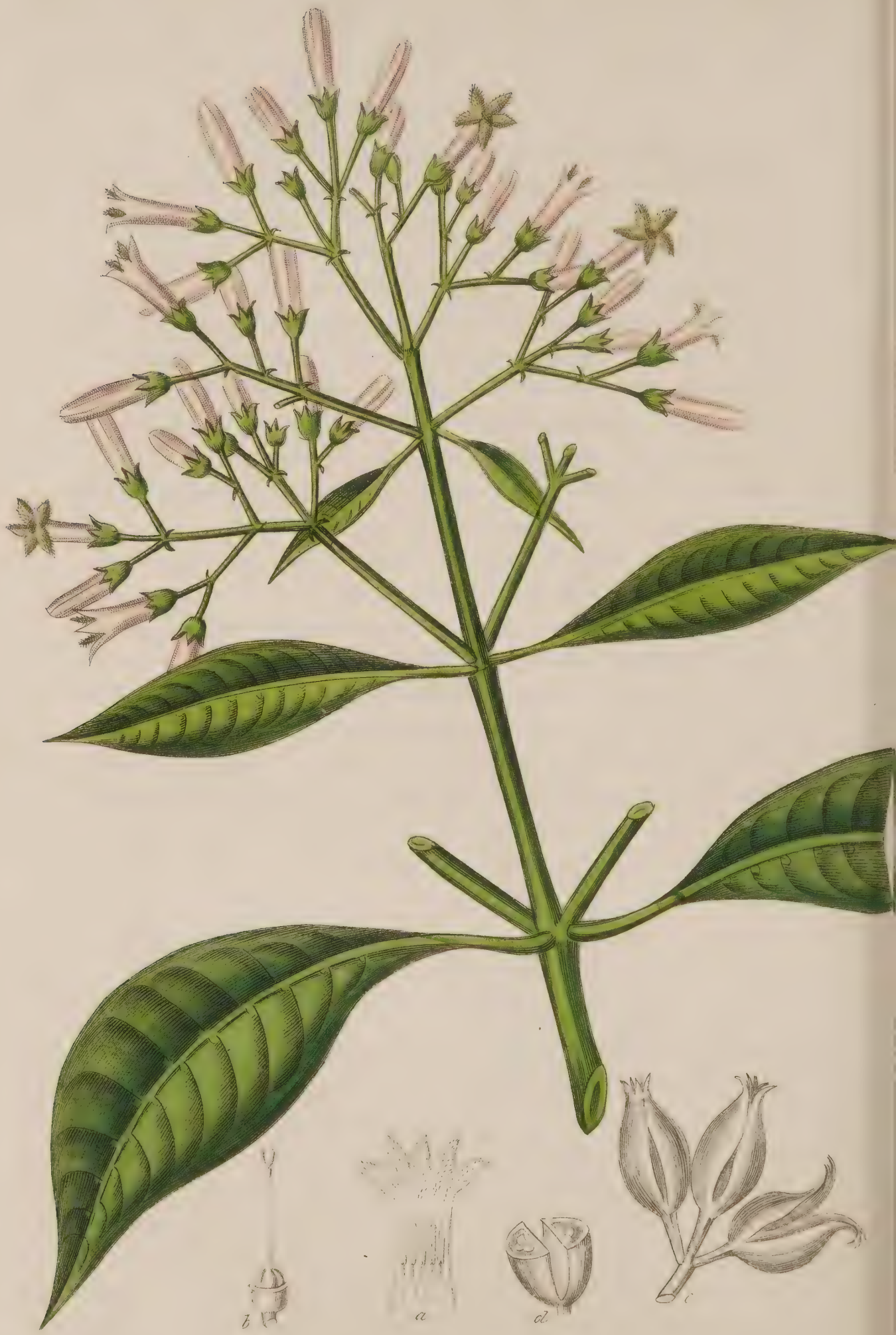
Empl. Hydrarg. et Belladonnæ.

℞. Ung. Hydrargyri fort. ℥j.
Gummi Ammoniaci ʒvj.
Extracti Belladonnæ ʒiv.
Acidi Hydrocyanici ʒß.

Reduce the gum ammoniacum to a fine powder, and with the extract, and a little water, form a thick mass. Then rub with them the mercurial ointment and prussic acid (previously mixed) so as to form a uniform mass. This composition, thickly spread on leather, is highly useful as a topical application to scirrhous and scrofulous tumours.—*New Medico-Chirurgical Pharmacopœia.*

A plaster composed of one part of carbonate of ammonia to three of extract of Belladonna, and spread on soft leather, is an excellent combination, for painful muscular affections.

Dose.—The dose is from one to five grains of the dried leaves; or of the extract, which may be gradually increased.



Cinchona condaminea.

G. Reid. del. Wed del. et sc.

London. Reeve, Brown & Co. 1847. Vol. V. Pl. 183.

CINCHONA CONDAMINEA.

Laurel-leaved Cinchona.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. allied to CONTORTÆ, *Lin.* RUBIACEÆ, *Juss.*

GEN. CHAR. *Corolla* funnel-shaped. *Capsule* inferior, 2-celled, bipartite with a parallel partition. *Seed* winged.

SPEC. CHAR. *Leaves* ovate-lanceolate, smooth, shining, with a little pit in the axillas of the nerves on the under surface. *Segments* of the calyx ovate-acuminate; *limb* of the corolla woolly. *Stamens* included. *Capsules* ovate.

Syn.—Cinchona officinalis. *Lin. Syst. Veg.* ed. 10. p. 924; *Condamine in Mém. de l'Acad. de Paris* 1738, *p.* 114; *Lamarck Ill. t.* 146, *f.* 1; *Vahl. Skrist af. Natur. Selfkab.* 1. *t.* 1.

Cinchona lanceolata. *Fl. Peruv.* 3. *p.* 1. *t.* 223.

Cinchona lancifolia. *Mutis Papel Periodici de Santa Fe, p.* 465; *ejud. Fl. Bogot. MSS.*

Cinchona nitida. *Fl. Peruv.* 2. *p.* 50. *t.* 191.

Cinchona augustifolia. *Ruiz. et Pavon, Quinol. Suppl. p.* 14. *c. tab. f. a.*

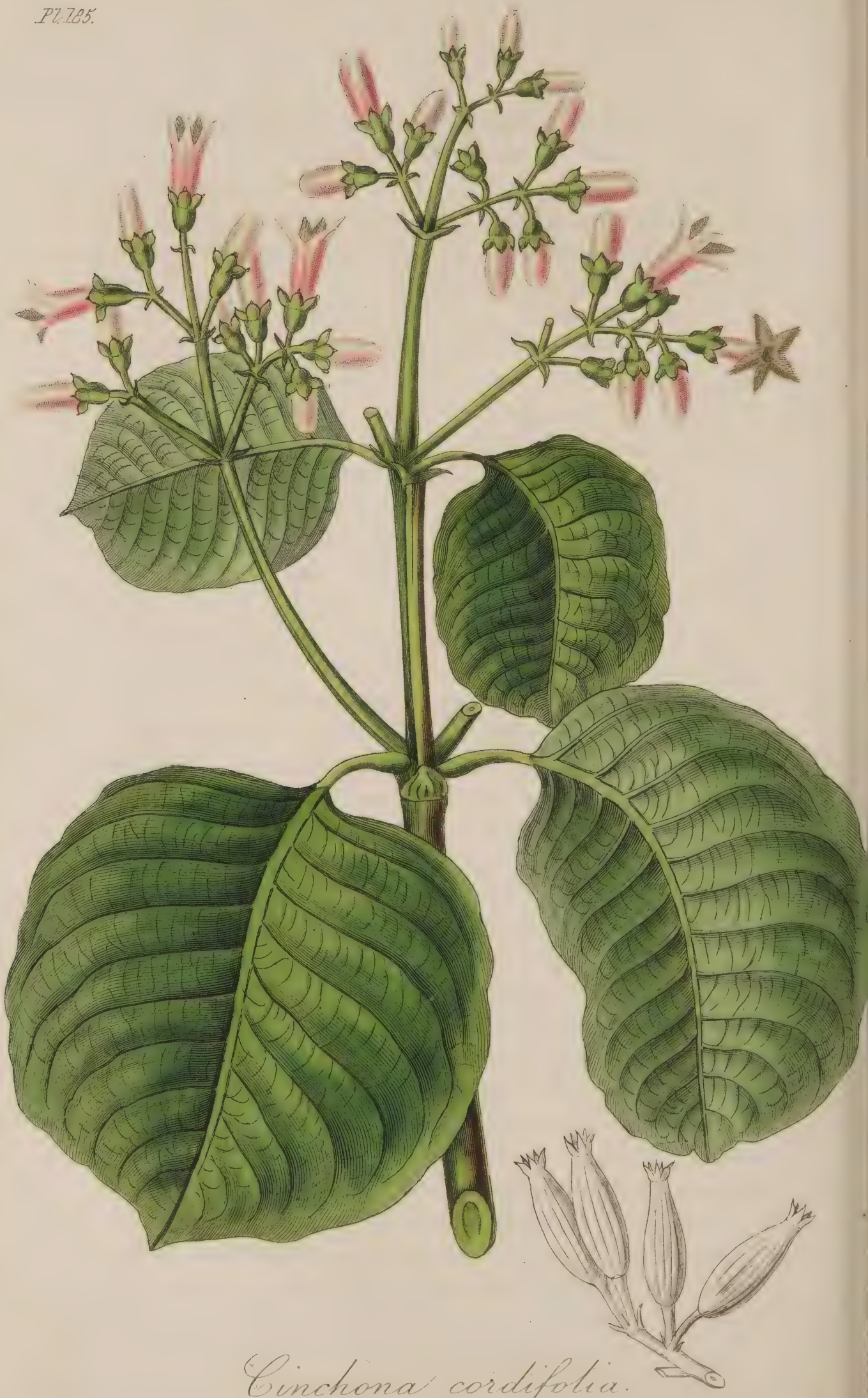
Cinchona glabra. *Ruiz. Quinol.* 2. *p.* 64.

Cinchona Condaminea. *Humboldt Pl. Æquinoct.* 133. *t.* 10; *Lambert Cinchon. t.* 1.

ALTHOUGH it is probable that several species of this important genus afford the Peruvian bark of the shops, of these three only are admitted into our national pharmacopœias, to which the specific names of *lancifolia,* (the *condaminea* of Humboldt and Bonpland,) *oblongifolia,* and *cordifolia,* have been applied, designating respectively, the pale, the red, and the yellow bark. Twenty-seven species have been described by botanists as natives of South America, the Phillipine, the West India, and the South Sea Islands.

The Cinchona *condaminea,* first described and figured by the astronomer Condamine, in 1738, in the Mem. de l'Academie, and

named by Linneus *officinalis*, is found on the mountainous forests, at heights from 6,000 to 8,300 feet, where the mean temperature varies between 59 and 62 degrees, on a soil of micaceous schistus, in the neighbourhood of Loxa and Ayvaca, in the kingdom of Quito; also, in New Granada, between Guaduas and Santa Fe de Bogota. It is described by Baron Humboldt as a lofty, handsome, evergreen tree, from thirty to forty feet in height, and standing generally single, and exuding, wherever it is wounded, a yellow, astringent juice. The trunk is about eighteen feet in height, and fifteen inches in diameter, erect, with a cracked ash-coloured bark. The branches are round, in opposite pairs, erect, brachiated, with the younger ones obscurely quadrangular at the sides. The leaves are of a bright green, shining, ovate-lanceolate, about three inches long, petiolate, with a little pit in the axillas of the nerves, or the under surface, which is filled with an astringent aqueous fluid, and having the orifice shut with minute hairs; they stand on short footstalks, one-sixth of their length, flat above, and convex below; but the form of the leaf varies extremely, so that no specific distinction can be derived from their figure alone. The stipules are two, acute, sericeous, contiguous, and caducous. The panicles are terminal, branched, leafy, and trichotomous. The flowers are of a pale rose-colour, furnished with little bracteas, and are produced in terminal, brachiated, leafy, trichotomous panicles, supported on round peduncles and pedicels, that are powdered and silky. The calyx is bell-shaped, globular, five-toothed, powdered, and silky, like the peduncles, with the teeth ovate, acute, very short, and contiguous. The corolla is somewhat salver-shaped, longer than the calyx, with the tube obscnrely five-angled, silky, frequently of a rose-colour; the limb wheel-shaped, with linear-lanceolate segments, much shorter than the tube, white, and woolly above. The anthers are twice the length of the free portion of the filaments. The germen is globular, with an erect style, and bifid stigma. The capsule is ovate, woody, striated longitudinally, crowned with the calycinal teeth, two-celled, many seeded, oppositely twice furrowed, and opening from the base to the apex with two valves.—Fig. (*a*) exhibits a flower cut open; (*b*) germen and pistil; (*c*) capsule; (*d*) section of the same.



Cinchona cordifolia.

Weddell sc.

London Published for the Author's by Longman & Co.

CLXXXV

CINCHONA CORDIFOLIA.

Heart-leaved Cinchona.

Spec. Char. *Leaves* roundish-ovate, acute, heart-shaped at the base. *Panicles* brachiated, spreading, pubescent. *Calyx* 5-toothed; segments broad, roundish, terminating in short spines. *Stigma* 2-lobed. *Capsules* smooth, without ribs.

Syn.—Cinchona species nova, vulgo palo blanco. *Pavon MSS.*
Quina amarilla. *Bogotensium.*
Cinchona cordifolia. *Mutis MSS.; Humboldt in Magazin der Gessel. Naturf. Freunde. Berl.* 1807, *p.* 112; *Rohde Monogr. p.* 58; *Humb. Bonpl. et Kunth, Nova Gen. et Spec. Plant.* 3. *p.* 401; *Lambert Illustr. p.* 4.

This tree, the bark of which is known to the natives by the name of *Quina amarilla, Cascarilla de Loxa,* and *Cascarilla amarilla,* and is the yellow, or orange bark of the shops, is found on the mountains of Loxa, in the kingdom of Quito, and those of Santa Fe de Bogota, at heights from 900 to 1,440 toises; flowering from May to September. It is described as a middling-sized spreading tree, having a single, round, erect stem, of moderate thickness, and covered with a smooth, brownish grey bark. The younger branches are quadrangular, smooth, leafy, sulcated, and tomentose. The leaves are large, opposite, spreading, somewhat roundish-ovate, pointed, or cordate, and attenuated at the base, entire, shining on the upper surface, ribbed, and pubescent on the under; with the petioles flat on one side, and roundish on the other, about an inch in length, and of a purple colour. The flowers appear in large, brachiated, leafy panicles, supported on long, compressed, tetragonous, downy peduncles. The calyx is five-toothed, downy, and of a dull purple colour, with the segments broad, roundish, and terminating in minute, awl-shaped spines. The corolla is hairy within;

the tube of a diluted red colour; the limb shaggy, white above and purplish below, and the segments spreading, with reflexed tips. The filaments are short, supporting linear anthers, bifid at the base. The germen is tomentose, with a two-lobed stigma. The capsules are oblong, ovate, cylindrical, smooth, and without ribs. Our figure was made from a specimen in the cabinet of Aylmer Bourke Lambert, Esq. F.R.S., and Vice-President of the Linnean Society, in whose magnificent herbarium, nearly the whole of the plants collected by the authors of the "Flora Peruviana," and their pupils, in Peru, Chili, and Mexico, consisting of five thousand seven hundred species, are now preserved. The specimens of this species were examined and named by M. Bonpland while in England. It differs from the Cinchona *purpurea*, *hirsuta*, and *ovata*, of the Flora Peruviana, and from the C. *pubescens* of Vahl, with which it has the greatest affinity; it is distinguished by its shorter petioles, by the broader round teeth of its calyx, by the filaments being twice longer, and by its capsules being smooth and without ribs.

All the species of the genus Cinchona vary very much in the shape and smoothness of their leaves, according to the altitude in which they grow, to the severity or mildness of the climate, to the trees standing singly, or being closely surrounded by other plants, to the luxuriance of growth, and greater or less humidity of the soil. "Whoever," says Humboldt, "determines single specimens of dried collections, and has had no opportunity to examine or observe them in their native forests, will, as is the case with the Bronzonettia *papyrifera*, be led to discover different species by leaves which are of one and the same branch. The yellow bark, C. *pubescens*, Vahl, we have found at one and the same time with *fol. ovato-oblongis*, *ovato-lanceolatis*, and *ovato-cordatis*. Mutis calls it C. *cordifolia*, because it is the only kind on which sometimes cordate leaves are found. The same species varies like the white Cinchona C. *ovalifolia*, Mut. (C. *macrocarpa*, Vahl,) *foliis utrinque levibus*, and *foliis utrinque pubescentibus*. Even the laurel-leaved C. *condaminea*, the finest bark from Uritusinga, has very diversified leaves, according to the altitude at which it grows, and which equals that of

Saint Gothard's, or Mount Ætna." In the shoots and very young trees, we frequently find the leaves broad, ovate, and ovate-lanceolate. The older the tree is, the narrower are its leaves. In great luxuriance of growth, the little grooves frequently vanish, which appear on the upper surface of the leaf as convex glands. On very broad leaves, in which the parenchyma is considerably extended, they are almost entirely wanting. C. *cordifolia* has two varieties. Var. *β foliis vix cordatis utrinque glabris; γ foliis utrinque hirsutis.* By the common people in the kingdom of New Granada, it is called velvet bark. It grows under the fourth degree north latitude, in heights between 900 and 1,440 toises. Cordate leaves occur but seldom: however, almost every branch exhibits some of them.

Cinchona bark appears to have been long known as a medicine in Peru; but we have no satisfactory account at what period, nor by what means, the febrifuge virtues of this valuable remedy were first discovered. Some say, a patient had been cured of an intermittent fever by having drank the waters of a lake, which had acquired a bitter taste from Cinchona trees which had lain in them; others, that a lion had cured himself of the ague by instinctively chewing Cinchona bark, and had directed the attention of the Indians to this tree. "That animals," observes Humboldt, in his "Dissertation on the Cinchona Forests of South America," "have taught men, is a very common form of the traditions of nations. The valuable antidote *Bijuco del guaco,* a plant described by Mutis, which is related to the *Mikania,* and has been erroneously confounded with the *Ayapana* of Brasil, is also said to have attracted the notice of the Indians, as is affirmed of the Falco *serpentarius,* by the Falco *guaco* of New Granada fighting with serpents. However, that the great American lion, without mane, Felis *concolor,* should be subject to the ague, is just as bold an hypothesis as the assertion of the inhabitants of the pestilential valley, Gualla Bamba, (near to the town of Quito,) than even the vultures, Vultur *aura,* in their neighbourhood were subject to that disorder. Indeed, in the regions of the Cinchona forests, there is not even a Felis *concolor* so fond of warmth to be found; but

at the most, the cat *Puma*, not yet properly described, and which we have met with in heights of 2,500 toises."

"The story, so often copied, respecting the Countess Chinchon, vice-queen of Peru, is probably still more doubtful than it is generally supposed to be. There certainly was a Count Chinchon, Don Geronimo Fernandez de Cabrera Bobadella y Mendoza, who was Viceroy of Lima, from 1629 to 1639. It is very probable that his wife, after her return to Spain, in 1640, was the first who introduced the Cinchona bark into Europe. The name of Pulvis *Comittissa* appears even more ancient than that of *Pulvis Jesuiticus*, or *Pulvis Patrum*. But I do not believe (and M. Olmedo, in "Loxa," is of the same opinion with me) that the corregidor of Loxa, Don Juan Lopez de Cannizares,* who is said to have cured the Countess of the ague, received this remedy from the Indians. In Loxa, there is no tradition whatever of this kind; nor is it probable that the discovery of the medicinal power of the Cinchona belongs to the primitive nations of America, if it is considered that these nations (like the Hindoos) adhere with unalterable pertinacity to their customs, to their food, and to their nostrums; and that, notwithstanding all this, the use of the Cinchona bark is entirely unknown to them in Loxa, Guancabamba, and far around. In the deep and hot valleys of the mountains of Catamango, Rio Calvas, and Macara, agues are extremely common. But the natives there, as well as in Loxa, of whatever cast, would die rather than have recourse to Cinchona bark, which, together with opiates, they place in the class of poisons exciting mortification. The Indians cure themselves by lemonades, by the oleaginous aromatic peel of the small, green, wild lemon, by infusions of Scoparia *dulcis*, and by strong coffee. In Malacatis only, where many bark-peelers live, they begin to put confidence in the Cinchona bark. In Loxa, there is no document to be found which can elucidate the history of the discovery of the Cinchona: an old tradition, however, is current there, that

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* *Flora Peruviana, tom.* ii. *p.* 2.

the Jesuits, at the felling of the wood, had distinguished, according to the custom of the country, the different kinds of trees by chewing their barks, and that on such occasions they had taken notice of the considerable bitterness of the cinchona. There being always medical practitioners among the missionaries, it is said they had tried an infusion of the cinchona in the tertian ague, a complaint which is very common in that part of the country. This tradition is less improbable than the assertion of European authors, and among them the late writers, Ruiz and Pavon, who ascribe the discovery to the Indians. The medicinal powers of the cinchona was likewise entirely unknown to the inhabitants of the kingdom of New Granada."

Cinchona bark is stripped from the trunk and branches in the dry season, from September to November; it is dried by exposure to the sun, and after being imported into Europe is sorted for sale. It is brought to this couutry in chests, each of which contains from one hundred to two hundred pounds weight of bark, mixed with dust, and other impurities. According to Humboldt, the quantity of this drug annually exported from America is 12,000 or 14,000 quintals. The kingdom of Santa Fé furnishes 2000 of these, which are sent from Carthagena; 110 are furnished by Loxa; and the provinces of Huamanga, Cuenca, and Jean de Bracamoros, with the thick forests of Guacabamba and Ayavaca furnish the rest, which is shipped from Lima, Guayaquil, Payta, and other ports on the south sea.

The *pale bark* of the shops, the *Quina Naranjada*, and *Cascarilla fina de Uritusinga* of the Spaniards, which is obtained from the C. *Condaminea*, is preferred in South America to all the other species of bark. It is in pieces, five or six inches long, singly or doubly convoluted, externally of a greyish-brown colour, to which a crust of lichens often adheres, and is internally, when fresh broken, of a bright cinnamon hue. There are often intermixed with this, others of a coarser texture, thicker, and nearly flat, which appear to be obtained from the trunk and larger branches. The fracture is smooth and even; its powder is of a pale colour. Its taste is bitter and astringent; its smell peculiar, but aromatic. The *yellow bark*, named *Quina*

amarilla, Cascarilla de Loxa, and *Cascarilla amarilla,* is less rolled than the pale bark, and the pieces are larger and thicker. Externally it is of a greyish-brown colour, and covered with lichens; internally of a much deeper orange than the pale bark. It has a more bitter taste, with a less aromatic odour, and with scarcely any sensible degree of astringency. The *red bark* is sometimes rolled, but more commonly in flat thick pieces, covered with a rough, entire, reddish-brown epidermis. It has a smooth fracture. It is composed of three layers, the inner one being of a dark ferruginous colour. It is more bitter and astringent than the pale and yellow bark.

M. von Bergen, a drug-broker at Hamburgh, who has written a valuable monograph on the Cinchonas, enumerates eight kinds of bark as distinguished in commerce:*—1. *China rubra* red bark. This is almost universally regarded as the bark of the C. *oblongifolia;* but M. Von Bergen is decidedly of opinion that the species which furnishes it is not yet ascertained, and that C. *oblongifolia* yields the *China nova* of Santa Fé. 2. C. *Huanuco,* silver Huanuco. This is said by Hayne to be the bark of C. cordifolia, but it is doubtful whether it does not belong to a new species. 3. C. *regia,* yellow bark, which M. von Bergen refers to an undescribed species. 4. C. *flava dura,* hard Carthagena bark. This Von Bergen considers, without doubt, as the bark of the C. *cordifolia.* 5. C. *flava fibrosa,* woody Carthagena bark, from an unknown species. 6. C. *Huamalies,* rusty bark, also derived from an unknown source. 7. C. *Loxa,* crown bark, so called from its having been destined for the Spanish court, and has only been in use since 1804. This is obtained principally from the C. *condaminea.* 8. *China jaen,* ash-coloured bark. 9. *China Pseudo-Loxa,* the bark of the C. *lancifolia,* or of the C. *nitida,* and *lanceolata* associated with it. The first of these, the *China rubra* contains both the alkaloids, with an excess of cinchonine. The *China Huanuco* contains only cinchonine; the *China regia,* C. *Loxa,* and C. *Huamalies*

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* *Versuche iner Monographie der China.* Von Henrich von Bergen. Ham. 1826.

contain only quinine, and the *flava* contains both alkaloids, with a superabundance of cinchonine.

Qualities and Chemical Properties.—Few vegetable substances have undergone so many analyses, by the most eminent chemists, as the different varieties of Peruvian bark. The basis of all of them is woody fibre, combined with which are various principles capable of being extracted by different solvents. The taste of all is more or less bitter and astringent. Boiling water extracts all their active principles, affording a solution of a pale brown colour; this infusion is transparent when hot, but on cooling becomes turbid, and a precipitate is deposited, which is soluble in alcohol. The decoction has a very astringent taste, and a deep brown colour. By long boiling, the virtues of the bark are nearly destroyed, owing to the chemical change and precipitation of its active matter. Alcohol, in all its modifications, is a powerful solvent of the active principles of cinchona. A saturated solution of ammonia is also a solvent of them, but acetic acid acts less imperfectly than even water. Vauquelin found that an infusion of the *pale bark* reddened litmus paper; was copiously precipitated by solution of galls, and in a smaller degree in yellowish flocculent flakes by solution of isinglass. A solution of tartar emetic was rendered turbid and slowly precipitated by it; solution of superacetate of lead produces quickly a copious precipitate. The addition of a solution of the sulphate of iron to the infusion, changed the colour to a bright olive-green, but was scarcely precipitated. The powder macerated in sulphuric acid afforded a golden-yellow tincture, which reddened litmus paper, and left a pellicle of bitter resin when evaporated on the surface of water, to which it gave the colour of the tincture. This coloured water did not precipitate the solution of galls and of tartar emetic, and occasioned no precipitate on the addition of the solution of sulphate of iron. With alcohol, it produced a deep orange-coloured tincture, which precipitated sulphate of iron, tartarized antimony, aud tannin. The agency of the different menstrua on the red and yellow varieties of the cinchona, produce nearly the same results as on the com-

mon or pale bark. The filtered solution of yellow bark has a pale golden hue, with a shade of red; it is bitter, reddens litmus paper, and precipitates solution of galls. On adding a solution of isinglass, a pinkish yellow precipitate is produced; superacetate throws down a precipitate; tartarized antimony gives a precipitate in pale yellowish flakes. A solution of the sulphate of iron changes its colour to a bluish green, and slowly lets fall a precipitate of the same colour. The alcoholic tincture appears to be in every respect the same as that afforded by the pale bark. The *red bark* has a more nauseous taste than the barks of the other species. The aqueous infusion is of a pale ruby colour; its action on the solutions of galls and of isinglass, are nearly the same as those of the two former species, but it is not altered by tartarized antimony, nor by the superacetate of lead; and the solution of iron occasions a dirty yellow colour only, little being precipitated. The alcoholic tincture is of a deep brownish-red colour, and precipitates the solution of the sulphates of iron, and of tartarized antimony, the former of a black colour, and the latter red. From the experiments of Vauquelin, Fabroni, and others, it appears that the active principles of cinchonas consist chiefly of cinchonin, resin, extractive, gluten, a very small portion of volatile oil, and tannin. Vauquelin has determined the presence of a peculiar acid, to which he gives the name of *kinic* acid, in some varieties of the bark. The following are the most important results that have been obtained by M.M. Pelletier and Caventou, respecting the composition of the three officinal species:—1. In *pale bark*, they found acidulous kinate of cinchonine, a green fatty matter which they term red cinchonine, tannin, a yellow colouring matter, kinate of lime, gum, starch, and woody fibre. 2. In *yellow bark* they found that the alkaline base differs from cinchonine, in being uncrystallizable, very soluble in ether, and forming salts with the acids different from those formed by cinchonine. The chemical constituents of *yellow bark* are, an acidulous kinate of this salt, which they have named *quinine*, a deep yellow, fatty matter, red cinchonine, tannin, yellow colouring matter, kinate of lime, starch, and woody fibre. 3. *Red bark*

contains acidulous kinate of cinchonin, kinate of quinine, reddish fatty matter, red cinchonin, tannin, kinate of lime, yellow colouring matter, starch, and woody fibre. The difference between the pale, the red, and the yellow barks, depends principally on the quantity of the two alkaline bodies, *cinchonin* and *quinine*, found in them. The pale bark contains cinchonine, but a very small portion of quinine; the alkali, again, which predominates in the yellow bark, is quinine, while in the red bark, and some spurious kinds, there is a combination of both these substances. The presence of cinchonine, as a distinct vegetable principle, was first discovered in Peruvian bark by Dr. Duncan, of Edinburgh.

The separation of the *cinchonine* from the pale bark, and of the *quinine* from the yellow, is a very simple operation. It consists in digesting the bark, coarsely powdered in weak sulphuric acid, and then to repeat this digestion with about half the quantity of liquid, till all the soluble matter is extracted. To this decoction a small quantity of powdered slacked lime is added, somewhat greater than is necessary to saturate the acid; the precipitate that ensues (a mixture of cinchonine and the sulphate of lime) is collected, dried, and boiled for a few minutes in alcohol, which takes up the cinchonine, but will not dissolve the sulphate of lime; the solution is decanted off *while still hot*, and fresh portions successively added for the repetition of the same operation, until it ceases to act on the residuum, which is then merely sulphate of lime. The different alcoholic solutions are then put into a retort, and considerably evaporated, during which, and on cooling, acicular crystals of cinchonine are deposited. By repeating the solution once or twice, in boiling alcohol, and again crystallizing, the cinchonine will be obtained in a perfectly pure state. Its crystals are semi-transparent, have a pearly lustre, and are usually obtained in the form of small needles. It has but little taste, and requires 700 parts of water for its solution, but boiling alcohol dissolves it much more abundantly; it is sparingly soluble in oils, and sulphuric ether. At a moderate heat it is partly volatalized, and partly decomposed. It combines with different acids, forming neutral salts. Mr.

Brande found that it contains no oxygen, 100 parts consisting of about 86 parts of carbon + 13 of nitrogen + 7 hydrogen. It has an intensely bitter taste, and exerts the same action on the animal economy as the bark itself, but it is less generally used in medicine than the other active principle of bark, quinine, because the yellow bark from which it is procured is more plentiful; the quinine, therefore, is cheaper than cinchonine, and equally efficacious.

Quinine may be obtained from the yellow bark in the same manner as cinchonine is prepared from the pale bark, or by adding an alkali to a solution of the sulphate of quinine. Quinine is not crystallizable like cinchonine, but on the application of heat it melts into a kind of paste. It has a much more bitter taste than the other, and is very sparingly soluble in water. They differ also remarkably in their chemical composition, cinchonine containing no oxygen, while in quinine there is a notable proportion of this element. According to Mr. Brande, it consists of about 5·55 parts of oxygen + 7·65 hydrogen + 13 nitrogen + 73·80 carbon. By digesting quinine in a weak solution of sulphuric acid, we obtain the *sulphate of quinine*, which is the salt now generally used for medicinal purposes. The most approved process for preparing this salt was pointed out by M. Henry. A kilogramme of bark (2 lbs., 3 oz., 5 dr.,) is reduced to a coarse powder, and boiled twice for about a quarter of an hour in fourteen or fifteen pints of water, two ounces of sulphuric acid being added to it each time. The decoctions containing the sulphate of quinine are of a reddish colour, which gradually acquire a yellow tint, and have a very strong bitter taste. They are to be filtered through a linen cloth, and about half a pound of powdered quicklime added to the solution. The sulphate of quinine is decomposed in this manner, the alkali being precipitated along with the sulphate of lime. This is digested repeatedly in alcohol, till it no longer imparts any bitter taste to this fluid: the alcoholic solutions are then evaporated till a very bitter viscid substance is obtained, which becomes brittle as it cools. This is the quinine separated from almost all the other ingredients of the bark; and by digest-

ing it in dilute sulphuric acid, a solution of the sulphate of quinine is obtained, which crystallizes on evaporation. It is a white pulverulent substance; it crystallizes in small white 4-sided prisms, which are distinguished by their pearly lustre. It is not very soluble, therefore not affording a very bitter taste; but by adding a drop or two of acid to the solution, its solubility is increased, and it then becomes intensely bitter. It is decomposed by the alkalies and earths; it volatalizes at a moderate heat, and it can unite with an excess of acid, forming a *bisulphate of quinine.*

The sulphate of quinine is frequently adulterated with starch, pipe-clay, and various other substances. To determine its purity, the simple process of heating it is sufficient: if it evaporate entirely, without charring and melting, it is pure; but if it should turn black, or smell sweetish, it is probable that sugar or starch is present.

Pure quinine is seldom used in medicine, but the sulphate possesses, in a very eminent degree, the medicinal properties of Peruvian bark, one grain, or one grain and a half, being equivalent to a drachm of the bark in substance. In Paris, it has superseded in a great measure the Peruvian bark, and is now extensively used in this country in all cases where that valuable medicine is indicated, in doses of from two to five grains.

Medical Properties and Uses.—Peruvian bark has been long known as one of the most powerful and valuable tonics we possess, and may be administered with great freedom in all cases where that class of remedies is indicated. The only effects of an overdose, are headach and nausea. It also possesses antiseptic and astringent powers in a very eminent degree, and is universally employed as a febrifuge in the cure of intermittent and remittent fever, in diseases of debility, such as typhus, cynanche maligna, in passive hæmorrhagies, confluent small-pox, in dysentery, in some cutaneous diseases, as lichen agrius and livida, in purpura, in some varieties of erysipelas, in gangrene, in dyspepsia, and even in acute rheumatism and gout. The decoction of yellow cinchona bark given in large quantities, is the best antidote to the poison of tartar emetic.

" The effects" says Dr. Murray, " of Peruvian bark are those of a powerful and permanent tonic, so slow in its operation as to be scarcely perceptible by any alteration in the state of the pulse, or of the temperature of the body. Its tonic power is inferred, therefore, principally from obviating states of debility; and it is one of those medicines, the efficacy of which in removing disease, is much greater than could be expected, *à priori*, from its effects on the system in a healthy state. The only effects arising from too large a dose are nausea and headach.

" Intermittent fever is the disease for the cure of which bark was introduced into practice, and there is still no remedy which equals it in power,—a superiority of which, from its known operation, it is difficult to give any explanation. Little diversity of opinion now exists with regard to the rules regulating its administration. It is given freely in the earliest stage of the disease, and without any previous preparation, farther than the exhibition of an emetic to evacuate the stomach. And it may be employed with safety and advantage in every period of the fever. It has been supposed rather more effectual when given before the recurrence of the paroxysm, and that, from this mode of employing it, less is required for the cure. The usual practice, however, is to give it in doses of a scruple or half a drachm every fifth or sixth hour during the interval of the paroxysm; it may be even given with safety during the hot fit, but is then more apt to excite nausea. It requires to be given for some time, and continued after the fever has been removed, in order more effectually to guard against a relapse.

" In remittent fever it is given with equal freedom, even though the remission of the fever may be obscure, and frequently with advantage. The remissions become more distinct, and the febrile state is at length subdued.

" In those forms of continued fever which are connected with debility, as in typhus, cynanche maligna, and confluent small-pox, &c. Peruvian bark has been regarded as one of the most valuable remedies. It is difficult, however, to give it in such quantities as to obtain much sensible effect from it, as from the weakened state of the organs of digestion, it remains in the stomach unaltered, and is liable to produce nausea and irritation. In modern practice, therefore, bark is less employed in typhus, preference being given to the more powerful exciting operation of opium and wine. It has been regarded as even hurtful in those forms of fever, where the brain or its membranes are inflamed, or where there is much irritation, marked by subsultus tendinum, and convulsive motions of the extremities. Advantage is sometimes derived from it in the convalescent stage of the disease.

" Even in fevers of an opposite type, where there are marks of inflammatory action, particularly in acute rheumatism, bark has been found useful, blood-letting being generally previously employed.

" In erysipelas, in gangrene, in extensive suppuration, and in scrofulous and venereal ulceration, the free use of cinchona has been regarded as of the greatest advantage. In some of these diseases, however, the slowness of its operation renders it less effectual, and

this is not easily obviated by any increase which can be made in the dose.

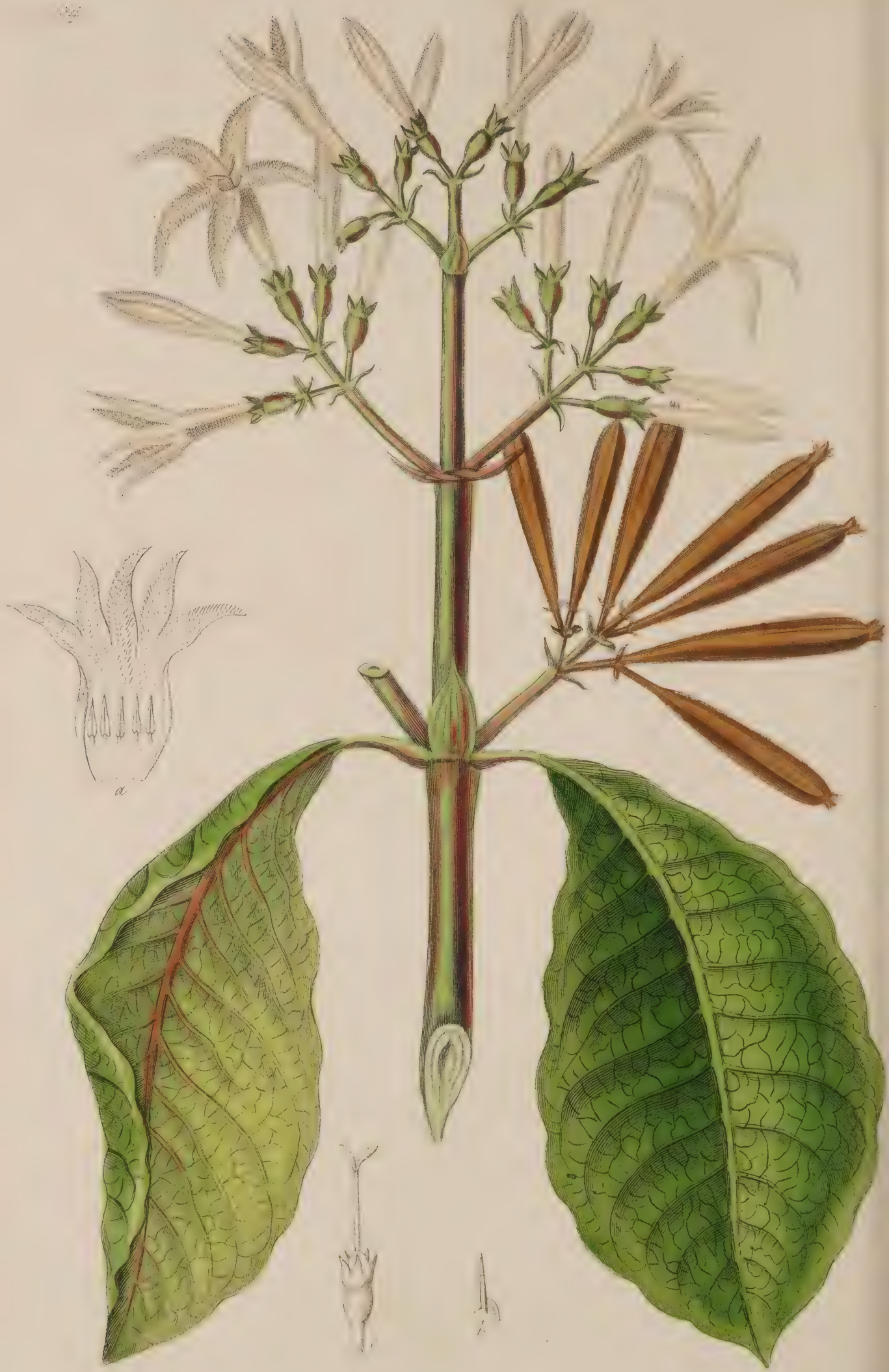
" In the various forms of passive hæmorrhagy, in many other diseases of chronic debility, dyspepsia, hypochondriasis, paralysis, rickets, scrofula, dropsy, and in a variety of spasmodic affections, epilepsy, chorea, and hysteria, cinchona is administered as a powerful and permanent tonic, either alone, or combined with other remedies suited to the particular case. The more common combinations of it are with sulphuric acid as an astringent, with preparations of iron as a tonic, with mercury in syphilis, in spasmodic diseases with valerian, and with cicuta in scrofula and extensive ulceration.

" Its usual *dose* is half a drachm. The only inconvenience of a larger dose is its sitting uneasy on the stomach. It may, therefore, if necessary, be frequently repeated, and in urgent cases may be taken to the extent of an ounce or even two ounces in twenty-four hours, though from such large doses probably no adequate advantage is derived. If it excite nausea, smaller doses may be taken and repeated more frequently, and may be reconciled to the stomach by the addition of any grateful aromatic."

Off. Prep.—Decoctum Cinchonæ, L. E. D.
Infusum Cinchonæ, L. E. D.
Extractum Cinchonæ, L. E. D.
Ext. Cinchonæ resinosum, L. D.
Tinctura Cinchonæ, L. E. D.
Tinctura Cinchonæ, Comp. L. D.
Vinum Gentianæ, Comp. E.

It is very agreeable to us, to close the concluding article of our Medical Botany, with an intimation, the subject of which we trust may prove a valuable acquisition to the materia medica. We have had information that Sir Robert Kerr Porter, the British Resident at Caraccas, in South America, and who first introduced the knowledge of the *Guaco* plant (a nondescript species of Mikania) with some of its seeds and extract, into this country,—has liberally shipped off a large quantity of the plant

from that country, entirely at his own expense, for England, so prepared, as to enable our medical men to give full experiment to its alleged virtue, as an antidote to the poison of venomous reptiles, and as a preventive or cure of that terrific malady the hydrophobia.



Cinchona oblongifolia

London. Published for the Authors Nov. 1.

CLXXXIV

CINCHONA OBLONGIFOLIA.

Oblong-leaved Cinchona.

Spec. Char. *Leaves* broad, oblong, ovate, smooth and shining above, tomentose beneath. *Panicles* brachiate, corymbose, woolly. *Calyx* with short, acute teeth. *Segments* of the *corolla* lanceolate, spreading, hairy within. *Capsules* linear, cylindrical.

Syn.—Cinchona magnifolia. *Flor. Peruv. 2. p. 52. t. 196* (non Humboldt et Bonpl.)
Cascarilla amarilla. *Ruiz Quinologia, p. 71.*
Cinchona oblongifolia (non Mutisii). *Humboldt Magaz. der Gessell Naturf. Freunde, Berl. 1807, p. 118.*

MM. Ruiz and Pavon, in their celebrated work, the "Flora Peruviana et Chilensis," inform us that this species of Cinchona, which is regarded as yielding the red bark of the shops, is found on the Andes, growing in woods on the banks of the mountain streams in great abundance, at Chinchao, Cuchero, and Chacahuassi; flowering in May, June, and July. As we have taken our figure of this plant from the above-mentioned work, we shall here also avail ourselves of the author's accurate description.

The tree is spreading, much branched, and rises to the height of about forty feet. The trunk is single, erect, round, and covered with a somewhat smooth, brownish ash-coloured bark, internally yellow, and having a bitter, acidulous, not ungrateful taste. The older branches are round, smooth, and of a rusty colour; the younger are obtusely quadrangular, leafy, and of a diluted reddish hue. The leaves are opposite, large, the full-sized ones being one or two feet in length, of an oblong oval shape, and supported on short, roundish, purple petioles. They are entire, pale, and shining, on the upper surface; on the

under, transversed with several inflexed purplish veins; at the base of each are numerous bundles of white bristles; the stipules are supra-axillary, interfoliaceous, opposite, contiguous, united at the base, obovate, acuminate, and caducous. The flowers are produced in large, erect, compound, terminal panicles, somewhat branched, on long, brachiated, many-flowered peduncles. At the base of each flower-stalk are a pair of small ovate, pointed, deciduous bracteas. The calyx is small, five-toothed, and of a purple colour; the corolla scarcely an inch long, white, and fragrant, with the limb spreading, and hairy within. The filaments are very short, and inserted below the middle of the tube of the corolla, with oblong anthers, bifid at the base. The capsules are large, oblong, obscurely striated, slightly curved, and crowned with the calyx. The seeds are ovate, and surrounded with a rough, unequal, yellow margin.—Fig. (*a*) represents a flower cut open; (*b*) an anther detached; (*c*) the calyx, germen, and pistil.

Mr. Lambert, in his valuable "Illustration of the Genus Cinchona," p. 11, says, "The celebrated authors of the "Flora Peruviana," have, in that work, confounded this species with that called by the natives, *Flor de Azahar*, the C. *oblongifolia* of Mutis, a very different plant, the bark of which had been first sent to Spain by Don Sebastian Joseph Ruiz, a physician of Santa Fe de Bogota.* M. Bonpland has confounded it with his C. *caduciflora*, which he at first described under the name of C. *magnifolia* of the Flora Peruviana; but he very properly altered his opinion afterwards in his note to C. *scrobiculata*, *Plantæ Æquinoct*, i. *p.* 167. The present species differs from Bonpland's plant by the form of its leaves, by the acute teeth of its calyx, by its larger corolla, whose lanceolate laciniæ are equal to the length of the tube; by the anthers being included in the tube, by the style being exserted, and especially, by its linear cylindrical capsules."

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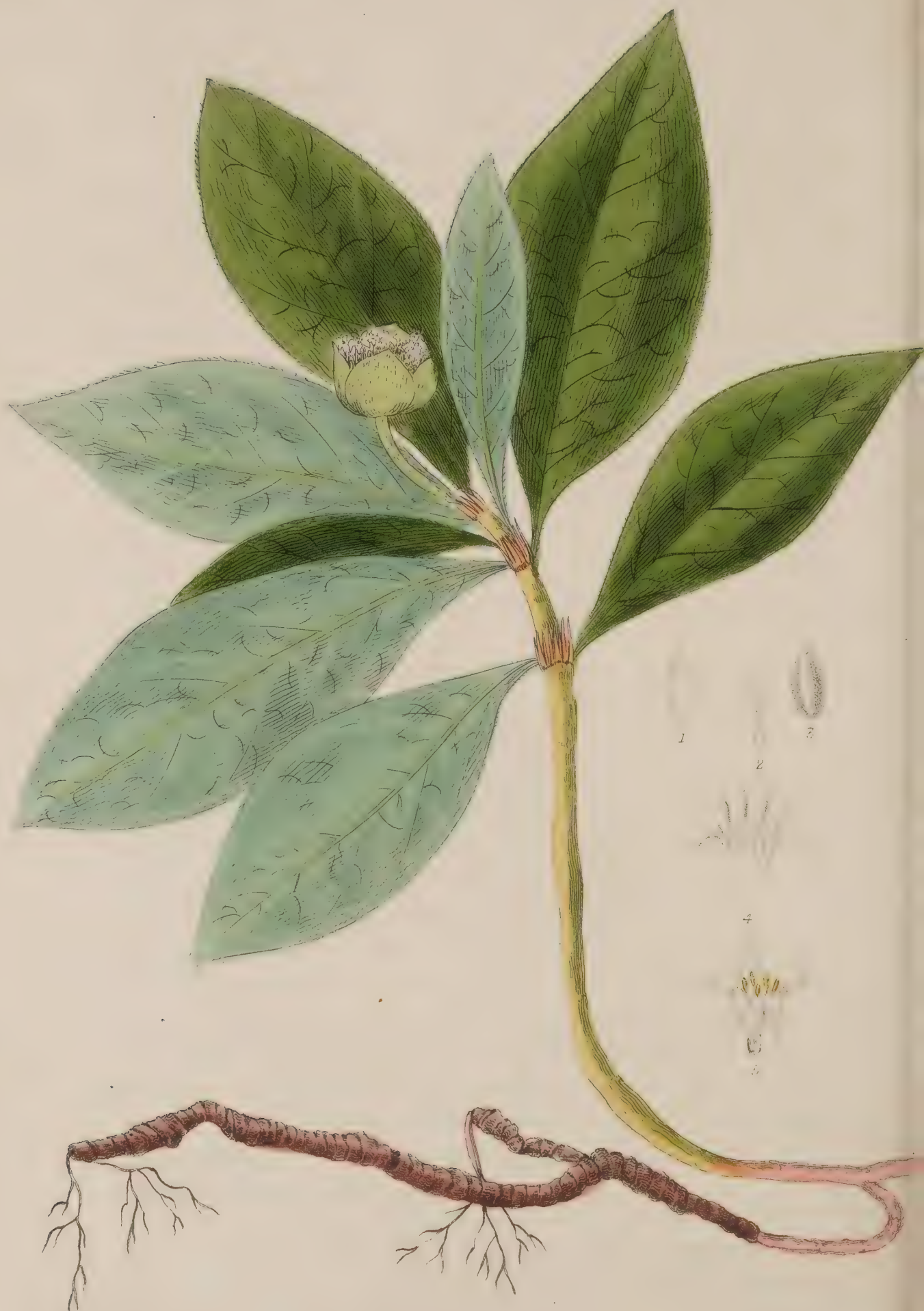
* Vernaculæ Flor de Azahar propter corolla odorem Citri florum odori simillimum. Hujus corticem D. Sebastianus Josephus Lopez Ruiz primus e Regno novo Granatensi in Hispaniam attulit, unde cum Galliæ, Italiæ, et Angliæ Academiis per clar. Casimirum Ortega communicatus est, ejusque usus variis experimentis institutis ubique propagatus. *Flora Peruv. v. 2. p.* 53.



Cephaëlis Ipecacuanha.

CEPHAËLIS IPECACUANHA.

Ipecacuan.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. AGGREGATÆ, *Lin.* RUBIACEÆ, *Juss.*

GEN. CHAR. *Flowers* in an involucred head. *Corolla* tubular. *Stigma* 2-parted. *Berry* 2-seeded. *Receptacle* chaffy.

SPEC. CHAR. *Stem* ascending, somewhat shrubby, sarmentous. *Leaves* ovate, lanceolate, a little pubescent; leaflets a little heart-shaped; *corolla* 5-cleft, chaffy; *bracteas* large.

Syn.—Herba Paris Brasiliana, Polycoccos, *Raii. Hist.* 669.
Ipecacuanha fusca, *Piso Bras. p.* 101; *It. Margr. Bras. p.* 17.
Psychotria Ipecacuanha, *Stokes, Bot. Mat. Med. v.* 1. 364.
Callicocca Ipecacuanha, *Brotero, Lin. Trans. v.* 6. *t.* 2.
Cephaëlis Ipecacuanha, *Willd. Spec. Pl.* 1. 977.
FOREIGN.—*Ipecacuanne*, Fr.; *Ipecacuana*, It.; *Ipecacuanha*, Sp.; *Brechwerzel*, Ger.

ALTHOUGH the root of Ipecacuan has been long employed as a valuable article of the materia medica, yet the botanical character of the plant which produced it, remained unknown till Professor Brotero, of Coimbra, determined the genus to which it ought to be referred, with the assistance of observations made in Brazil, on living plants, by Bernardo Gomez, a resident medical botanist. From his description and figure, published in the sixth volume of the Linnean Transactions, which we have

taken the liberty to copy, we learn that it belongs to the genus Calicocca; or, as Linneus has since arranged the same individuals, to that of Cephaëlis. The plant is perennial, a native of moist woods, near Pernambucco, Bahia, Rio Janeiro, and other provinces of Brazil; flowering from November to March, and ripening its berries in May. It is called Ipecacuanha by the natives of some parts of Brazil; *poaia do matto* by those of the southern provinces; and *cipo* by others, which is the name often given it by the Portuguese settlers.

The root is simple, or somewhat branched, and furnished with a few short radicles; it is roundish, most frequently perpendicular, but rarely slightly oblique; from two to four inches in length, or more, and two or three lines in thickness: irregularly bent, externally brown, and divided into numerous prominent, unequal, somewhat wrinkled rings. The stem is somewhat shrubby, procumbent or creeping at the base, then erect, and rising from five to nine inches in height; it is round, about the thickness of a common quill, smooth, and without leaves; below, brown and knotty, with the scars of fallen leaves, the internodes upwards gradually increasing in length; near the top, it is pubescent, green, leafy, for a year or two simple, then throwing out a few rather crooked, knotty runners, taking roots irregularly at the knots, and producing one or two new stems, about half a foot apart. The leaves are from four to eight, near the summit of the stem; they are almost sessile, opposite, spreading, ovate, pointed at both ends, three or four inches long, one or two broad, and perfectly entire; of a deep green above, besprinkled with roughish points, smooth, or rarely beset with a few scattered hairs; underneath, pale green, and somewhat pubescent, with a rather elevated rib, and alternate, nearly parallel lateral veins, curved at the ends. The petioles are short, channelled, and somewhat hairy. At the base of each pair of leaves are a pair of stipules, deeply cut into awl-shaped divisions, sessile, shrivelling, equal to the petioles in length, and with them embracing the stem. The flowers are aggregated in a solitary head, a little drooping, on a round downy foot-stalk, terminating the stem, and encompassed by a four-leaved in-

volucre. The florets are sessile, from fifteen to twenty-four in number, and separated by chaffy bractes, the length of the florets. The bractes are pubescent, very entire, sessile, green, varying in form, sometimes longish egg-shaped, sometimes rather obtusely lanceolate, and sometimes, but rarely, in size and figure resembling the leaflets of the involucre. The leaflets of the involucre are a little heart-shaped, acute, entire, almost sessile, slightly waved, hairy; the two outer ones largest, and all a little longer than the florets. The calyx is very small, superior, membranous, persistent, white, with five blunt teeth. The corolla is monopetalous, the border shorter than the tube, woolly about the throat, swelling upwards, and divided into five ovate, acute, spreading segments. The filaments are short, capillary, inserted into the upper part of the tube, and bearing oblong, linear, erect anthers. The germen is ovate, surmounted by a thread-shaped style, the length of the tube, surrounded at the base with a short nectariferous rim, and terminated by two obtuse stigmas the length of the anthers. The fruit is a 1-celled berry, of a reddish-purple colour, becoming wrinkled and black, and containing two smooth, oval seeds. Fig. (*a*)

Fig. 1. the interfloral bracteas; 2. the germen calyx, styles and stigmas somewhat magnified; 3. berry of the natural size; 4. Corolla laid open to show the anthers; 5. corolla, calyx and germen, a little magnified.

It appears that the first European who brought Ipecacuanha into use, was a native of Brazil, whose name was Michael Tristam. He speaks of it as a remedy for dysentery; the subjoined passage, being a translation from his work, is to be met with in Purchas' Pilgrims, vol. iv. fol. 1311: "*Igpecaya*, or *Pigaya*, is profitable for the bloodie fluxe, the stalke is a quarter long, and the roots of another, or more; it hath onely foure or five leaves; it smelleth much wheresoever it is, but the smell is strong and terrible. This root is beaten, and put in water all night at the deaw, and in the morning, if this water, with the same root beaten and strained, be drunke, (onely the water,) it causeth presently to purge in such sort, that the laske ceaseth altogether." A distinguished writer in

Rees's Cyclopædia infers from this passage, that the method of using the plant induced operations by stool; but if the plant referred to, be the ipecacuanha now in use, (and the description seems to confirm this,) we do not see how far that construction is warranted; for the nature of the medicine is not altered by water: and as we know that an infusion of ipecacuanha produces vomiting in our day, we believe that that effect is referred to by the Brazilian; and this will readily be conceded, if it be remembered that the word purge was frequently used by our old English authors synonymously with vomiting.

Piso afterwards describes it,* and speaks of two sorts, the white and brown, which he says were given for fluxes, and as vomits. But we are indebted to Helvetius for bringing it into general use, under the patronage of Louis XIV, from whom he received a thousand pounds, to reveal the secret medicine with which he so successfully treated dysentery. Besides the brown ipecacuanha, there is another sort, brought from Brazil, which varies in appearance from the former; and some have supposed that these differences are owing to accidental circumstances, such as the place of growth, the kind of soil, &c.; but on the authority of M. Gomez, the common *brown* ipecacuanha of the shops is yielded by the Cephaëlis *Ipecacuanha,* while the *white* is the root of the Richardsonia *Brasiliensis,* which is exported largely to Portugal. Besides these, the name of *ipecacuan,* which in the language of South America, means *vomiting root,* is given to various species of Cynanchum, Asclepias, Euphorbia, Dorstenia, and Ruellia, and with regard to their comparative power, De Candolle says, that vomiting is produced by twenty-two grains of the Cynanchum *I;* by twenty-four of the Psycotria *emetica;* by, from sixty to seventy-two of the Viola *calceolaria;* and by, from one drachm to three of N. *Ipecacuanha.*

Linneus, in a paper published in the third volume of " Ame-

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* Historia Naturalis Brasiliæ, p. 101. It has been asserted that Piso was the first to advert to ipecacuanha, but his work was published several years after Tristam's.

nitates Academicæ," gave Ipecacuanha as a trivial name to a species of Euphorbia, a native of Virginia and Carolina; the root of which is there used as an emetic. But this was soon discovered not to be the real ipecacuanha. In his second "Mantissa," he gave the trivial name to a species of *Viola*, a native of Brazil; the root of which he supposed to be the white ipecacuanha of the shops. De Candolle, in a paper published in the "Bulletin des Sciences par la Societé Philomatique," and republished entire in the "Nouveau Dictionnaire d'Histoire Naturelle," says, there are three species of Viola which produce the white ipecacuanha; the *calceolaria* of the "Species Plantarum," a native of Guiana, and the Antilles; the *ipecacuanha* of the Mantissa, and the *parviflora* of the "Supplementum Plantarum," both natives of Brazil. The roots of these, and especially the last, are sometimes mingled in common with the true or brown ipecacuanha; but they are a fraudulent adulteration, and do not possess its active properties. They may be distinguished by their colour, but most certainly by the size of the woody part, which in these is always considerably thicker than the bark; whereas, in the true ipecacuanha it is much less; and, as described by Brotero, is only a fibre *(filum)*.

The *black* or *striated ipecacuanha*, (*Psycotria emetica**) is exported from Carthagena to Cadiz. It is black within and without, fusiform, articulated, striated, and not annulated. The *white*, in contradiction to De Candolle, already quoted, is described by Gomez, to be the root of Richardsonia *Brasiliensis*: "it is of a dirty white, and turns brown by drying; it is simple, or little branched, often five or six lines thick, three inches long and upwards, attenuated at its extremities, variously contorted, with transverse annular rugosities larger than those of the brown ipecacuanha; bark thick, white internally; softer than the other; wood white, hard, fine as a thread;

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* We have had no opportunity of consulting Mutis; who, according to Dr. Todd Thompson, says that the Psycotria *emetica* yields the Peruvian grey ipecacuan; which is at variance not only with Dr. Duncan's account, but with the *Pharmacopée Française*, edited by Ratier, fol. 52.

when fresh, its taste is acrid; when dry, farinaceous; smell, nauseous when recent.

The common brown (Cephaëlis *Ipecacuanha*) is exported from Rio to Portugal. Its colour varies from different degrees of grey to brown; but it is characterized by being contorted, wrinkled, and unequal in thickness; having a thick, brittle bark, deeply fissured transversely, covering a central very small white wood, so as to give the idea of a number of rings strung upon a thread.

The descriptions of these three varieties we have copied from Dr. Duncan's Dispensatory. The whole subject is, however, involved in considerable difficulty from the cause we have already adverted to, viz. the signification of the term *ipecacuan*, being applied so generally to plants that excite vomiting. We are quite sure, however, that the plant we have figured, yields the brown ipecacuanha which is so generally employed; dried specimens being in existence in this country. And by reference to Dr. Woodville's plate, which was copied from a specimen sent home in spirits to Sir Joseph Banks, without its flower, it will be seen that the plants agree.

Qualities and Chemical Properties.—Powdered ipecacuan has a sickly odour, and a bitterish acrid taste; and on those who pulverize it, sometimes excites such powerful effects, as to produce nausea, faintings, and spitting of blood. It has been subjected to various chemical investigations, and Dr. Irvine ascertained that it contains a gum resin. M. M. Pelletier and Majendie have given the following as the result of their analysis:

Oil	2
Emetine	16
Wax	6
Gum	10
Starch	42
Wood	20
Loss	4
	100

Annales de Chimie. iv 180.

While pursuing their investigations they discovered that the power of the various species of ipecacuanha depended on a peculiar principle, to which the name *emetine* has been given; and they think, that it might upon all occasions be substituted with advantage, being much more active than ipecacuanha itself, without possessing its disagreeable taste, and smell. The latter quality resides in a greasy substance, quite distinct from its emetic virtue; for M. Caventou swallowed it with impunity to the extent of six grains. As we have already announced, Art. Viola *odorata*, emetine has also been discovered in that plant by M. Boulay. The mode of preparing emetine, and its employment, are fully detailed under *medical properties.*

Incompatibles.—All vegetable astringents, as infusion of galls and vegetable acids, weaken or destroy the power of Ipecacuanha; and Dr. Irvine found that half a drachm administered in two ounces of vinegar produced loose stools only.

Medical Properties and Uses.—The utility of ipecacuanha is so generally known and properly appreciated, that we shall but briefly advert to it. As an emetic, it operates in doses of from five to thirty grains, surely and efficiently; without depressing the system at large, like many other emetics, or injuring the mucous membrane of the stomach; it is, therefore, to be preferred as a mere evacuant of this organ; and if we wish to induce its speedy operation without exciting much nausea, we can give it in the fullest doses with perfect safety. Its power as an emetic, has been rather undervalued in one particular view; for, if *opium* be taken, recourse is generally had to violent remedies, which by simple contact with the stomach, when in a torpid condition, cannot fail to produce injurious results. We remember to have heard Dr. Currie narrate a case of this kind, when the sulphates of zinc, and of copper, failed to produce their accustomed effects; he therefore poured some boiling water on a quantity of powdered ipecacuanha, and as soon as it was cool enough, caused large doses to be swallowed, which were the speedy means of causing vomiting, and of saving the life of the patient. Since then, we

have borne this in mind; and in two or three similar cases, have found the *unstrained infusion* quite equal to its task.

Ipecacuanha is sometimes employed in a full dose on the accession of the paroxysm of intermittent fever; and by destroying the link which held the chain of diseased sympathies together, it has often succeeded in cutting short the disease. Paroxysms of spasmodic asthma, also, often yield to the same treatment; and in the more chronic form of that disease, small doses advantageously produce both expectoration and perspiration. In chronic dysentery and diarrhœa, it is a most useful medicine, in small doses; and we think, that its power over these diseases may be attributed to the following circumstances. In the first place, it has a tendency to excite *diaphoresis*, by which the circulation is equalized, and a great determination of blood to the diseased parts is taken off: secondly, it sometimes, even in *very* small doses, excites nausea, and gentle vomiting, which not only check arterial action in a very powerful manner, but by this very inversion of the peristaltic motion of the intestines, destroy the harmony of disordered actions: and thirdly, when vomiting is not produced, it appears to promote secretion in the lining membrane of the bowels, whereby a healthy condition is eventually re-established. Given in doses of half a grain even, it produces the last-mentioned effect on the stomach; and is, therefore, frequently prescribed in cases of dyspepsia, attended by a foul tongue. Small nauseating doses are advantageously given to subdue uterine and pulmonary hæmorrhages; and combined with opium, the effects of both appear to be modified, so that under the name of Dover's powder, doses of from five, to ten grains, form one of the most powerful and useful sudorifics that can be employed for acute, or chronic rheumatism, and for eruptive diseases that are disposed to recede. Nauseating doses of ipecacuanha are also useful for hooping cough, epilepsy, and amaurosis.

Preparation of Coloured Emetine.

Reduce ipecacuanha to powder, and digest it in ether at 60° to dissolve the fatty odorous matter. When the powder yields nothing more

to the ether, exhaust it again by means of alcohol. Place the alcoholic tinctures in a water-bath, and re-dissolve the residue in cold water. It thus loses a portion of wax, and a little of the fatty matter, which still remained. It is only necessary farther to macerate it on carbonate of magnesia, by which it loses its gallic acid ; to re-dissolve it in alcohol, and to evaporate it to dryness.

But pure emetine is not obtainable in this way, although it may serve medical purposes. (See the next article). It presents itself in the form of transparent scales, of a reddish brown colour, having scarcely any smell, but a bitter though not disagreeable taste. It supports a temperature equal to that of boiling water, without any change: it is highly deliquescent, soluble in water, and uncrystallizable.

Action of Emetine on the Animal System.

This substance, given to dogs and cats, to the extent of from half a grain, to two or three grains, produced vomiting, followed sometimes by long protracted sleep: but when given to a greater extent, such as ten grains, it produced upon dogs repeated vomiting, accompanied by stupor, in which the animal, instead of recovering, as in the other case, commonly died in the course of twenty-four hours. On opening the body, the cause of death was discovered to be a violent inflammation of the pulmonary tissue, and of the mucous membrane of the intestinal canal, from the cardia to the anus—phenomena very analogous to those described by our author, in a separate memoir on the action of tartar emetic. The same effects are produced whether the emetine be injected into the jugular vein, or simply absorbed from any part of the body.

Two grains taken on an empty stomach, gave rise to protracted vomiting, followed by a marked disposition to sleep. Sometimes a quarter of a grain will be sufficient to excite, nausea and vomiting. In cases of disease, the action of this substance is perfectly analogous. It both vomits, and purges; but acts beneficially in catarrhal affections, particularly those of a chronic kind*.

Medicinal Employment.

The cases in which emetine may be given, are the same as those in which ipecacuanha is indicated.

To procure vomiting, dissolve four grains, and give it in divided doses. If the whole quantity were administered together, the vomiting thereby excited would expel it at once from the stomach, without producing any other effect. The following formula may be used.

Emetine Mixture.

Take of Emetine ..... 4 grains.
Weak orange-flower infusion.... 2 onces.
Syrup of orange-flower..... ½ once.
Mix.
Five *gros* to be taken every half hour.

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* See Recherches Chimiques et Physiologiques sur l'Ipecac. Par M. M. Magendie et Pelletier. Paris, 1807.

In chronic pulmonary catarrhs, hooping cough, obstinate diarrhæas, &c. the following lozenges may be advantageously substituted for the common ipecacuanha preparations of that sort.

Pectoral Lozenges of Emetine.

Take of Sugar..... 4 onces.
Coloured Emetine..... 32 grains.
Mix.

To be made into lozenges of nine grains each. It is customary to give these lozenges a rose colour, by means of a little carmine, in order to distinguish them from similar preparations of ipecacuanha. One may be given every hour; but more frequent exhibition will excite nausea. To excite vomiting by means of similar lozenges, half the quantity of sugar only should be used, and the proportion of emetine being the same, the lozenges should consist of 18 grains. One of these, taken fasting, is commonly an emetic for a child, and three or four will readily excite vomiting in adults.

The following syrup may be substituted for the syrup of ipecacuanha used in France.

Take of Simple Syrup..... 1 pound
Coloured Emetine..... 16 grains.
Make a syrup.

PURE EMETINE.

The emetine of which we have hitherto spoken, is by no means pure. M. Pelletier, during a course of chemical research, upon which he is still employed, has obtained the active matter of the ipecacuanhas in a completely isolated state; and it appears to be a new vegetable alkali—of which we proceed to describe the principal characters.

Mode of Preparation.

To obtain pure emetine, calcined magnesia must be employed, adding a quantity of this base sufficient to take up the free acid which exists in the liquor, and also to attract that which is combined with the emetine. This substance, being thus separated and rendered less soluble, is precipitated and mixed with the excess of magnesia; and the precipitate, washed with a little cold water, (which takes up the colouring matter not combined with the magnesia) must be carefully dried, and treated with alcohol, which dissolves the emetine. This being again obtained, (after evaporating the alcohol,) must be re-dissolved in diluted acid, and treated with purified animal charcoal. After this process, for the purpose of removing the colour, we are to precipitate by means of a salifiable base. The waters in which the magnesian precipitate has been washed, still retain a portion of emetine, which may be obtained by another series of operations.

M. Calloud obtains emetine by the following process:—125 *grammes* of the cortical part of ipecacuanha pulverised, is mixed with 800 grammes of water, sharpened by 16 grains of sulphuric acid, it is brought to the boiling point and kept a little below that temperature for half an hour, stirring it constantly with a wooden spatula; then it is all poured upon a shallow earthen dish so as to extend the surface as much as possible.

This acidulated decoction is left to cool, and to it is added 125 *grammes* of pulverised lime; it is then reduced to the consistence of jelly by the addition of a sufficient quantity of water, and afterwards dried upon a stove at a temperature not above 50° Reaumur.

This mass is then pulverised; it is composed of sulphate of lime, gallate of lime, fatty and colouring matter combined with an excess of lime, free emetine, fecula and woody matter. On submitting this to the action of boiling alcohol at 36°, or 38°, the emetine is dissolved, combined with very little common matter; and is obtained by evaporating the alcohol.

To procure this substance in a pure and white state, dissolve it in water slightly acidulated, treat it by very pure animal charcoal, filter the solution, that it may be more conveniently concentrated; saturate the acid with weak ammonia, filter, wash with a little distilled water, and leave what remains upon the filter to dry at the ordinary temperature, and in the dark: this will be pure emetine.

Emetine may be procured from the mother waters and washings, according to the methods already described.

Physical and Chemical Properties.

Pure emetine is white and pulverulent, not acted on by the air; whereas coloured emetine is deliquescent. This substance is slightly soluble in cold water, rather more so in warm water, but readily so in ether and alcohol. Its taste is slightly bitter. It is very fusible, melting at 50° of the centigrade. It restores the blue colour to turnsol reddened by an acid; and dissolves in all the acids, impairing, without entirely removing, their acidity; and forming with them crystallizable salts, in which the acid predominates. It is precipitated from its combinations by gall nuts, in the manner of the alkalies of cinchona, so that in a case of poisoning by emetine, gall nuts would be the best antidote. M. Caventou swallowed a dose which produced inconvenient consequences, but neutralised its action by a decoction of galls. According to M.M. Dumas and Pelletier, the composition of this substance is:—

Carbon	64,57
Azote	4.00
Hydrogen	7.77
Oxygen	22.95
Emetine	99.29

This emetine was obtained from the Cephaëlis emetica.

Action of the Pure Emetine on the Animal System.

It is the same as that of the coloured, but much more powerful. Two grains are sufficient to kill a large dog. M. Magendie saw vomiting produced by one sixteenth of a grain in a man aged 85, in whom however, vomiting was easily excited.

Medicinal Employment.

For some time M. Magendie has used lozenges, composed of

Sugar	4 onces.
Pure Emetine	8 grains.

made into lozenges of 9 grains each.

But in order to produce vomiting, one grain of pure emetine, previously dissolved either in a little acetic or sulphuric acid, may be mixed in some drink; or the following formula may be adopted;

Emetic Mixture of Pure Emetine.

Take of	Infusion of lime flowers	3 onces.
	Pure Emetine dissolved in a sufficient quantity of acetic acid..	1 grain.
	Syrup of Marshmallow	1 ounce.

Mix.

Dose. Five *gros* every quarter of an hour till vomiting is produced.

Or, a syrup may be prepared in the following manner.

Take of	Simple syrup.....	1 pound
	Pure Emetine	4 grains.

Make a syrup which may be given in doses of 5 grammes*

Off. Prep.—Pulvis Ipecacuanhæ Compositus. L. D.

Vinum Ipecacuanhæ. L. E. D.

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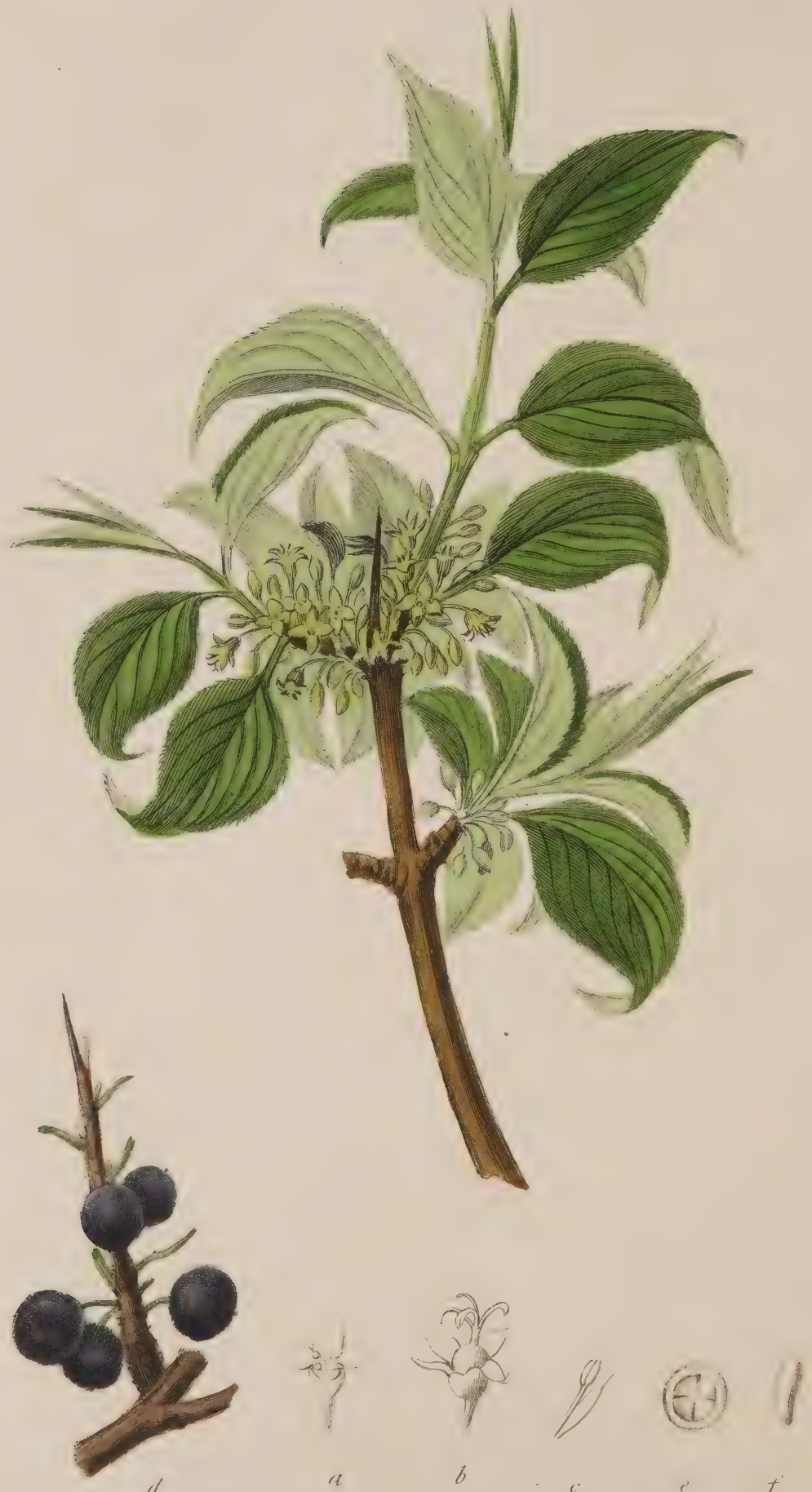
* For a table of French weights reduced to Troy weight in round numbers, we again refer to Mr. Houlton's Translation of Magendie's Formulary.

Pl 118.



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Rhamnus catharticus.

London Published

RHAMNUS CATHARTICUS.

Common Buckthorn.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

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

GEN. CHAR. *Calyx* funnel-shaped, bearing the petals. *Berry* of several cells.

SPEC. CHAR. *Leaves* ovate, serrated. *Flowers* 4-cleft, dicœcious. *Thorns* terminal. *Berry* with four seeds.

Syn.—Rhamnus solutivus, *Ger. Em.* 1337. *f.* 1. 2.; *Dod. Pempt.* 756. *f.*
Rhamnus *n.* 824.; *Hall. Hist. v.* 1. 366.
Cervispina, *Cord. Hist.* 175. *f.*
Spina infectoria, *Matth. Valg. v.* 1. 143. *f*; *Camer. Epit.* 82. *f.*
Rhamnus catharticus, *Lin. Sp. Pl.* 279; *Willd. v.* 1. 1092; *Fl. Brit.* 260; *Eng. Bot. v.* 23. *t.* 1629; *Hook. Scot.* 80; *Raii Syn.* 466; *Bauh. Pin.* 478.; *Woodv. t.* 114.

FOREIGN.—*Nerprun ; nerprun purgatif ordinaire,* Fr.; *Ramno catartico ; Spino cervino, It.; Ramno catartico; espina de ciervo,* Sp.; *Escambrociero,* Port.; *Gemeine Kreuzdorn,* Ger.; *Getappel,* Swed.; *Korsbœrtorn,* Dan.; *Pridoroschnaja igolka,* Russ.

BUCKTHORN is, perhaps, as well known among herbalists and rustic practitioners as any indigenous medicinal plant of Great Britain. It has been long celebrated for the cathartic qualities of its berries, which are gathered by the common people in some places in considerable quantities, and the juice expressed for the use of the apothecaries. It grows wild in hedges, groves, and thickets, flowering in May, and ripening its fruit in September. It is rather uncommon in the neighbourhood of London; but Dr. Milne found it in some lanes betwixt Plumstead and East Wickham; in a chalk-pit betwixt Gravesend and Chatham, and in copses above Purfleet. The specimen from which our figure was designed, grew in the lane leading from the Fox and Hounds public-house to Darenth Wood, two miles beyond Dartford, in Kent. We have also observed it in great abundance in the

hedges near Thames Ditton; and Mr. W. Anderson, of the Botanic Garden, Chelsea, informs us it grows plentifully about Norwood, in Surrey.

Buckthorn is a shrub, which rises to the height of seven or eight feet, with a smooth dark-brown bark, and yellowish wood. The branches are alternate, or nearly opposite, spreading, and each terminating in a strong spine, after the first year. The leaves are simple, entire, ribbed, smooth, finely serrated, and of a bright green colour; the earlier ones downy, and in tufts from the flowering buds; those on the young shoots, opposite, and smooth. The flowers are small, sustained on pedicels, and stand in thick clusters on the extremities of the last year's branches. They are generally of different sexes on distinct plants; the fertile flowers, with the rudiments of stamens, narrow petals, and a deeply four-cleft style; the barren ones with an abortive germen, and broader petals. The anthers are small, roundish, on short awl-shaped filaments, and inserted in the mouth of the four-cleft calyx, opposite to each petal. The berries, which succeed the germen in the female flowers, are black when ripe, globular, of the size of a pea, and contain a green pulp, with *four* cells, and as many seeds, that are smooth, elliptical, convex on one side, and flattened on the other. By this last character they are easily known by druggists, from the fruit of the Rhamnus *frangula*, which has only *two* seeds, and is supposed to be less active. Fig. (*a*) represents a male flower; (*b*) female flower; (*c*) a stamen; (*d*) fruit; (*e*) the section of a berry, showing the four cells; (*f*) the seed.

There are two British species of Buckthorn: Common Buckthorn, already described, and Alder Buckthorn, or Berry-bearing Alder, (R. *Frangula.*) The latter is a shrub, which, like the preceding, grows to a considerable height, with smooth entire leaves, and flowers in May. It is destitute of thorns; and the berries, which ripen in July, are dark purple, each containing two large yellowish seeds. This plant formerly obtained a place in the foreign dispensatories, under the name of *Frangula.* The inner bark, the only part used in medicine, when dried is a drastic purgative; emetic, when green. The berries gathered before

they are ripe dye wool green, and yellow; when ripe, blue-grey, blue, and green. The bark dyes yellow, and with preparations of iron, black.

The species usually cultivated, or introduced as objects of curiosity are,—the Turkey-berry buckthorn, (R. *infectoria*); the shining-leaved buckthorn, or common jujube, (R. *zizyphus*); the common alaternus, (R. *Alaternus*); the pubescent rhamnus, or Bahama red-wood, (R. *colubrinus*); the common Christ's thorn, (R. *paliurus*); the pointed-leaved buckthorn, (R. *anoplia*); and the Syrian Christ's-thorn, (R. *spina Christi*).

The first is a native of the south of Europe. It is frequent in rough, stony places in Greece, and is regarded by Dr. Sibthorp as the Λυκιον, *Lycium*, of Dioscorides. The unripe berries are much used for dyeing, and are imported into England under the name of French berries. They are chiefly used for topical dyeing in calico printing; but the colour which they communicate is very fugitive; and they are also used to give the colour to Turkey leather, or yellow morocco. This shrub is very nearly related to the R. *catharticus*, but grows procumbent, not erect, and the leaves are smaller and narrower.

The fruit of the shining-leaved buckthorn, or common jujube, is sold in the market at Canton during the autumn. It is about the size of an olive, of a yellowish-red colour, sweetish, and clammy. In Italy and Spain it is served up at table, in deserts during the winter season, as a dry sweetmeat. It was formerly kept in the shops, under the name of *jujubes*, and recommended in coughs and other pulmonary complaints, but has now justly fallen into disuse.

The natives of Siberia use the wood of an unarmed species, the Rhamnus *Erythroxylon*, or Siberian Red-wood, to make their images, on account of its hardness and colour. According to Osbeck, the poor in China, where the shrub is a native, use the leaves of the R. *teezans*, as a substitute for the genuine tea, and is called by them *Tia*. Another species (R. *paliurus*) which is affirmed by travellers to be one of the most common shrubs in the country of Judea, is supposed by some to be the plant, from which the crown of thorns put upon the head of

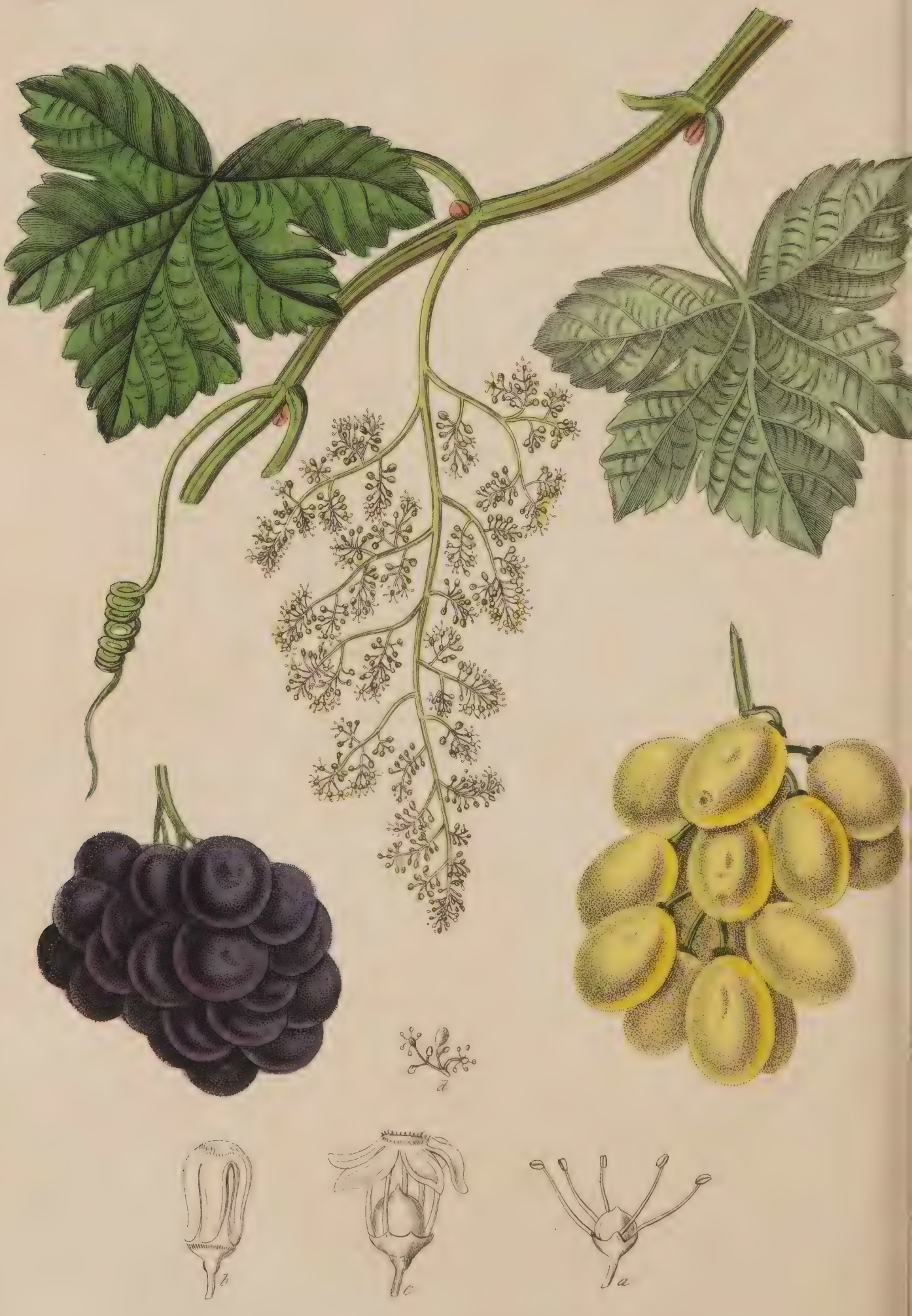
Christ, was composed; but Dr. Hasselquist is rather disposed to think it was the R. *spina Christi* of Linneus. The true Lotus of the Greeks (Rhammus *lotus*) is one of the most common shrubs in many parts of Africa. The fruit is described by Mr. Park, as a small farinaceous berry, of a yellow colour, and delicious taste.

Qualities.—The odour of the buckthorn-berries is faint and unpleasant; and to the taste bitter, acrid, and nauseous. They are said to contain acetic acid, mucilage, sugar, and an azotized substance.

Medical Properties and Uses.—The juice of the berries is a violent griping drastic purgative, capable of exerting very injurious effects; and although still employed as a domestic remedy, is now much more used in the practice of veterinary surgeons than by us. A syrup is still prepared from them, as directed by the London and Edinburgh colleges. The London form is preferred on account of the aromatics which enter into its composition, preventing its griping effects. It is still, however, a violent remedy, and produces most unconquerable dryness of the mouth and throat, and intolerable thirst. The *dose* of this, is from six drachms to an ounce, or two ounces.

From the inspissated juice of the ripe berries, with a very small addition of alum, is obtained that green colour so well known by the name of *vert-de-vessie* or *sap green*. Sometimes it is prepared by adding eight pounds of lime-water to twelve pounds of the expressed juice, and six ounces of gum arabic; which mixture is afterwards evaporated into the consistence of an extract, and dried for use.

Pl. 140.



Vitis vinifera

G. Reid Del

Weddell Sc.

London. Published for the Authors. Nov. 1829.

CXL

VITIS VINIFERA.

Grape Vine.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. HEDERACEÆ, *Lin.* VITIS, *Juss.*

GEN. CHAR. *Calyx* 5-cleft. *Petals* cohering at the apex, shrivelling, deciduous. *Berry* 5-seeded; superior.

SPEC. CHAR. *Leaves* cordate, 5-lobed, sinuated, naked.

Syn.—Vitis sylvestris, Labrusca. *Tourn. Inst.* 613.
Αμπελος αγρια. *Diosc. lib.* 5. *cap.* 2.
Αμπελος οινοφορος. *Ejusd. lib.* 5. *cap.* 1.
Κλῆμα, ἥ Αγριάμπελος, *hodie.*
Vitis vinifera. *Lin. Sp. Pl.* 293; *Willd. v.* 1. 1180; *Ait. Hort. Kew. v.* 2. 51; *Jacq. Ic. Rar. t.* 50; *Matth. Valgr. v.* 2. 655; *Camer. Epit.* 1003; *Ger. Em.* 875; *Bauh. Pin.* 299; *Woodv. t.* 195; *Fl. Græc. Sibth. v.* 3. *t.* 242.

THE early history of the vine is involved in considerable obscurity, for the oldest profane writers that mention it, ascribe to it a fabulous origin. According to Baron Humboldt it grows wild on the coasts of the Caspian sea, in Armenia, and Georgia; and it is naturalized, at least, in most of the temperate regions of the globe. Dr. Sibthorp, to whose splendid work we are indebted for the accompanying plate, and his friend Mr. Hawkins, judged it to be completely wild on the banks of rivers in Greece. It is probable, that the culture of the vine was introduced from the east; for in the sacred writings we are told, that Noah, after coming out of the ark, planted a vineyard, and "drunk of the wine, and was drunken." The tradition of the ancient Egyptians informs us that Osiris first paid attention to the vine, and instructed other men in planting and using it. The inhabitants of Africa ascribe the cultivation of the vine, and the art of making wine from the fermented juice of the grape, to the ancient Bacchus. Dr. Sickler, who regards this useful plant of Persian origin, has given a learned and curious account of its migration to Egypt, Greece, and Sicily.* From Sicily it is

* *Geschichte der Obst. Cult. v.* 1.

supposed to have extended to Italy, Spain, and France; and in the latter country it is believed to have been cultivated in the time of the Antonines, in the second century. The Phoceans are said to have carried it to the south of France, and the Romans planted it on the banks of the Rhine. The vine, which is found wild in America, is very different from our Vitis *vinifera;* it is, therefore, a popular error that the grape was common to both continents.* In very cold regions the vine refuses to grow, and within 25° or even 30° of the equator, it seldom flourishes so as to produce good fruit. In the northern hemisphere its culture forms a branch of rural economy from the 21° to the 51° of northern latitude, or from Schiraz in Persia to Colbentz, on the Rhine. "Some vineyards," says Mr. Loudon, "are found near Dresden and in Moravia, and by means of garden culture, it is made to produce fruit to a considerable degree of perfection in the hot-houses of St. Petersburgh and Stockholm."

The grape vine has a slender, twisted, irregular stem, sending out long, trailing, flexible, leafy furrowed branches, which climb by means of tendrils to a great extent, and when young are clothed with loose shaggy down. The leaves are roundish, heart-shaped, notched, coarsely serrated, veiny; divided into five more or less distinct lobes, and are placed alternately on longish footstalks; when young they are like the branches, especially beneath; but otherwise naked and smooth. The tendrils are opposite to each footstalk; they are solitary, spiral, divided, and about the length of the leaves. The flowers, which appear in Greece in May or June, are very small, of an herbaceous colour, and fragrant like Mignionette, and are produced in clusters. The clusters are drooping, panicled, much branched, with the ultimate stalks somewhat umbellate or corymbose. Each flower consists of five, oblong, erect petals, cohering by their summits, downy at the top, and ultimately forced from their base by the stamens, which elevate them in the form of an umbrella. The calyx is very minute: the stamens are filiform, smooth, with oblong, incumbent anthers. The germen is superior, roundish, with a short style, and simple stigma. The fruit is a succulent globular berry, in the wild state not much larger than a pea, of a black colour, and containing five hard, irregular seeds. In the cultivated varieties the berry is frequently oval, oblong, or finger-shaped, and the principal colours are various shades of green, yellow, amber, and black.—Fig. (*a*) represents a magnified flower, the petals being removed, showing the calyx, with the germen and stamens; (*b*) the unexpanded flower; (*c*) the same, showing the petals fully expanded and cohering at the apex, before they fall, and suffer the anthers to spread and shed their pollen; (*d*) a small cluster of flowers.

* Humboldt, *Geographie des Plantes*, 4*to. p.* 26.

The Grape Vine is generally supposed to have been introduced into this country by the Romans; but from Tacitus we learn, that it was not known when Agricola commanded in the island. At the invasion of the Saxons, however, under Hengist and Horsa, A.D. 449, the vine, it is said, was extensively cultivated; and vineyards are mentioned in the earliest Saxon charters, as well as gardens and orchards. In Domesday Book, vineyards are noticed in several counties. William of Malmesbury, who flourished in the first half of the twelfth century, informs us in his book "De Pontificibus," that the vale of Gloucester used to produce as good wine as many of the provinces of France. From the date of the Conquest to the period of the Reformation, vineyards appear to have been attached to all the abbies and monastic institutions in the southern parts of the island. But about the time of the Reformation, when the ecclesiastical gardens were either neglected or destroyed, ale, which had been known in England for many centuries, seems to have superseded the use of wine as a general beverage. In the "Museum Rusticum," it is stated, that a vineyard was planted at Arundel Castle in Sussex, about the middle of the last century; and that of its produce, there are reported to have been in the Duke of Norfolk's cellars, sixty pipes of wine resembling Burgundy. Bradley informs us, that R. Warner, a gentleman of Rotherhithe, made good wine from his own vineyards; and Barry, in his "History of Wines," gives an account of one formed by the Hon. Charles Hamilton at Pain's Hill, in Miller's time, which succeeded for many years, and produced excellent Champaigne. Although there can be no doubt, as Professor Martyn observes, that vineyards would succeed in the southern and western parts of England in proper soils, and produce wine equal to much that is imported from abroad; yet, in a national point of view, we may conclude with Mr. Loudon, that "the culture of the vine as a branch of rural economy, would not be a profitable concern here, on the broad general principle, that it cannot be worth while to grow any thing at home, which we can get cheaper from abroad."

The *varieties* of the vine are exceedingly numerous; the lists of some of our nurserymen at the present day containing more than 250 names. Of these, the most suitable for making wine in this country are, the Red Frontignac; the large black cluster, a hardy sort, the juice of which has an austere taste, and is said by Mr. Speechly to be the variety used in the manufacture of Port wine; the white Muscadine, the Malmsey Muscadine, the Miller Grape, the St. Peter's Grape, and the Auverna, or true Burgundy, sometimes called the black Morillon, which is an indifferent fruit for the table, but is esteemed the best for making wine. To the above sorts perhaps, may be added the Verdelho or Verdellio grape of Madeira, from which the celebrated wine of that island is understood to be generally made. Mr. Wilson of Pitmaston, near Worcester, has given an account of this variety, in the second volume of the Transactions of the Horticultural Society; and from that work we have taken our figure of the berries, which are of an amber colour when ripe, and of a very rich saccharine taste.

The age to which the Vine will attain, is supposed to equal or even

surpass that of the oak; it spreads also to a great extent, and when supported, rises to a considerable height. Pliny speaks of a vine which had existed six hundred years; and Bosc says, there are vines in Burgundy upwards of four hundred years of age. In Italy, they are found overtopping the tallest elm and poplar trees; and the wood of very old ones is frequently of size enough for being sawn into planks. A vine, trained against a row of houses at Northallerton, covered, in 1785, one hundred and thirty-seven square yards, and measured four feet in circumference: it was then above one hundred years old, but is now dead. That at Hampton Court, nearly of the same age, covers above 116 square yards: it is of the red Hamburgh sort, and is a most productive bearer, having seldom fewer than 2000 clusters upon it every season. In the year 1816, there were at least 2240, averaging one pound each, so that the whole crop weighed a ton, and, merely as an article of commerce, was worth upwards of £400.

Raisins, or dried grapes, are prepared either by cutting the stalks of the bunches half through, and leaving them suspended on the vine, till they become sufficiently dry; or by gathering the grapes when they are fully ripe, and dipping them in a ley of the burnt tendrils, to which is added a small portion of slaked lime, and afterwards exposing them to the sun to dry. In the kingdom of Grenada, particularly towards Malaga, they are simply dried in the sun, without any other preparation. About 8000 tons of raisins are annually imported into England; and a considerable quantity of undried grapes are also imported, principally from Portugal, in jars, among saw-dust. *Currants*, of which about 6000 tons are annually imported into this country, are small dried grapes, principally grown in the Ionian islands.

The *juice of the grape* consists of water, sugar, mucilage, jelly, albumen, gluten, super-tartrate of potass, and the tartaric, citric, and malic acids. These principles left to themselves for a short time in a medium temperature, undergo remarkable changes; their elements assume a new arrangement, and the principal compounds which are formed are *wine* and *acetic acid*.

Wine.—When the fruit is fully ripe, it is gathered for the manufacture of *wine*, and immediately subjected to the press, in order to separate the juice from the skin and seeds. In some places, however, the grapes are permitted to remain on the vines till they wither, or are gathered and dried in the sun, before they are pressed. Thus, the celebrated Tokay wine is made of dried fruit, as are many of the luscious wines of Italy. Sometimes the juice is separated by treading the grapes with the feet, in perforated tubs or baskets, placed over the vat destined to receive the must, The expressed juice, or *must* as it is called, is then put into a proper vessel or vat, and exposed to a temperature of at least 55 degrees, to enable it to commence the fermentative process. In a short time the liquor becomes turbid, an intestine motion is excited in it, its temperature increases, the skins, seeds, and other impurities rise to the surface, and a quantity of carbonic acid gas is disengaged. When the fermentation is finished, the spongy crust which forms on its surface falls to the bottom; the liquor becomes clear,

having lost its saccharine taste and become *wine*. If we now examine the liquor, we shall find that it differs essentially in its chemical and physical properties from the juice of grapes before fermentation. Its agreeable sweet taste is changed; it has not the laxative quality of must, but affects the head and occasions intoxication: lastly, on distillation with a gentle heat, a volatile, colourless, and highly inflammable liquor called *spirit of wine*, or *alcohol*, is obtained. When the juice contains too large a proportion of sugar, it is customary to add a small portion of tartar; on the contrary, if the saccharine matter be deficient, and that salt in excess, sugar is to be added. If the juice only is fermented, white wine is produced; for when the fermentation has been conducted on the skins or *marc*, red wines are obtained, both from white and coloured grapes. Great attention and practical knowledge are required in managing the fermentation properly, as on this important process depends entirely the future qualities of the wine. The same fruit in different seasons requires to be managed differently; and almost every kind of wine requires a different, and in some cases, even an opposite mode of treatment. Thus the fine *bouquet* of Burgundy is completely dissipated by a too rapid fermentation, while, on the contrary, the fermentation of the strong wines of Languedoc, celebrated chiefly for the quantity of alcohol which they contain, should be long and complete. When the sugar is not completely decomposed, or the fermentation checked, the wine retains a sweet taste; a more perfect decomposition, with a brisker fermentation, render it strong and spirituous.

It is then put in casks, where the fermentation still continues, though in an imperceptible degree; a scum rises on its surface, and escapes by the bung-hole, which at first requires to be covered only by a leaf or tile. In proportion as the fermentation subsides, the mass of wine diminishes in bulk, and it becomes necessary to watch this cautiously, in order to supply the place with new wine, so as to keep the cask always full. In some districts, they fill up every day during the first month; every other during the second; and every eight days afterwards, till the time of racking. The effect of this insensible fermentation, is the gradual increase of the quantity of alcohol, and the separation of the tartar, which is deposited in considerable quantity in the casks, along with the colouring matter of the wine. It is of a dark red colour, very hard, and is known under the name of *argol*. When this is dissolved in water, and purified by crystallization, and reduced to powder, it forms the *cream of tartar* of commerce.

Weak wines, and those that have been too long fermented, are very apt to become sour; but the *acidity* may be corrected by the addition of sugar; or more effectually by neutralising the acid. For this purpose, the alkalies and alkaline earths, especially lime, have been employed. It was formerly the practice to use the acetate of lead to destroy the acidity in weak wines, but this murderous practice has long since been laid aside. *Ropiness* may be got rid of by exposing the bottles to the sun and air, by adding a small quantity of vegetable acid, and by fining. The *mustiness* and other

ill flavour communicated by the casks or cork, may sometimes be removed by agitating the wine in contact with the air, or by the introduction of common carbonic acid gas, by pumping.

The odour and flavour of wines depend altogether on climate, soil, and the mode of conducting the fermentation: the same climate, soil, and mode of culture, often produce wines of very different qualities. Position and aspect alone, all other circumstances being the same, make a prodigious difference. The Vine grows in every soil, but that which is light and gravelly, is best adapted for its cultivation. It flourishes extremely well in volcanic countries; thus some of the best wines of Italy are made in the neighbourhood of Vesuvius. The famous Tokay wine is also made in a volcanic district, as are several of the best French wines. The Vine also flourishes well in primitive countries, and especially among the debris of granite rocks; thus the celebrated Hermitage wine is made from a soil of this description.

The quality and flavour of the more fully fermented wines depends principally on the mode of conducting the process of fermentation; but the sweet and half-fermented wines, derive their taste immediately from the fruit. "Malaga, Frontignac, Tokay, Vino Tinto, Montifiuscone, Schiras, and the Malmsey wines of the Greek islands, are sweet to the taste, and consequently the result of imperfect fermentation; Champagne, Gooseberry, and all sparkling wines, owe their briskness to carbonic acid gas; Hock, Rhenish, Mayne, Barsac, Burgundy, Claret, and Hermitage, contain a certain quantity of uncombined acid, and are termed light and dry; while Marsala, Madeira, Sherry and Port, are dry and strong. The odour of *Sherry* is pleasant and aromatic; the taste warm, with some degree of the agreeable bitterness of the peach kernel; the taste of *Port* is austere and bitterish; *Claret* is less rough, thinner, slightly acidulous, and highly flavoured; and *Hock* acidulous. Of the common white wines, Marsala is undoubtedly the strongest." The roughness and flavour of red wines are generally derived from the husks of the fruit, and when it is wished to impart these qualities in a higher degree, various astringent and chemical preparations are used, such as catechu, kino, logwood, rhatany root, the juice of sloes, elder berries, &c. A yellow tint is given to many wines by means of burnt sugar: raspberries, oris root, fir-tops, and a variety of other ingredients are employed for the purpose of communicating their respective flavours. In Madeira wines as well as those of Xeres and San Lucar, it is the practice to use sweet and bitter almonds; hence the *nutty* flavour of many of these wines. Notwithstanding these differences in the qualities of wines, the essential principles found in all of them are the following: one or more acids, viz. the *tartaric*, the *malic*, the *citric*, the *carbonic*, and in some instances the *acetic;* extractive matter, which in old wines is deposited with the tartar, and constitutes part of what is called the crust; a *volatile oil*, on which the flavour depends; *colouring* matter; and *alcohol*. The following is Mr. Brande's valuable table representing the average quantity by measure of alcohol, sp. gr. 0·825, contained in different kinds of wine:

Proportion of spirit per cent. by measure.		*Proportion of spirit per cent. by measure.*	
1	Lissa, average..... 25.41	28	Lunel..... 15.52
2	Port, ditto..... 22.18	29	Sheraaz..... 15.52
3	Raisin wine, ditto..... 25.12	30	Syracuse..... 15.28
4	Marsala, ditto..... 25.9	31	Sauterne..... 14.22
5	Madeira, ditto..... 22.27	32	Burgundy, average..... 14.57
6	Currant wine..... 20 55	33	Hock, ditto..... 13.68
7	Sherry, average..... 19.17	34	Hock (old in cask)..... 8.88
8	Teneriffe..... 19.79	35	Nice..... 14.63
9	Colares..... 19.75	36	Barsac..... 13.86
10	Lachryma Christi..... 19.70	37	Tent..... 13.30
11	White Constantia..... 19.75	38	Champagne, white..... 13.30
12	Red Constantia..... 18.92	39	Champagne, red..... 11.93
13	Lisbon..... 18.94	40	Red Hermitage..... 12.32
14	Malaga (1666)..... 18.94	41	Vin de Grave, average.... 13.37
15	Bucellas..... 18.49	42	Frontignac..... 12.79
16	Red Madeira, average.... 20.35	43	Côte Rotie..... 12.32
17	Cape Muschat..... 18.25	44	Gooseberry wine..... 11.84
18	Cape Madeira, average... 20.51	45	Tokay..... 9.88
19	Grape wine..... 18.11	46	Elder wine..... 9.87
20	Calcavella, average..... 18.65	47	Orange wine, average of six samples, made by a London manufacturer..... 11.26
21	Vidonia..... 19.25		
22	Alba Flora..... 17.26		
23	Malaga..... 17.26	48	Cider, highest average.... 9.87
24	White Hermitage..... 17.43		Ditto, lowest average..... 5.21
25	Rousillon, average..... 18.13	49	Perry, average of four samples..... 7.26
26	Claret, average..... 15.10		
27	Malmsey Madeira..... 16.40	50	Mead..... 7.32

Of the wines drank in Europe, the following are the most esteemed: in the island of Madeira, which has long been celebrated for its wine, and Palma, one of the Canaries, there are two kinds of wine; the first called *Madeira per se,* or Canary wine, and *Palm sec,* or Palm wine. The name sec, (corruptly written *Sack,*) signifies dry; these wines being made from half-dried grapes. Upwards of forty thousand pipes of Madeira wine are annually exported, one half of which goes to the British settlements in the East and West Indies. The wines of Candia and Greece are of common use in Italy. *Malmsey* was formerly the produce of those parts only; but is now chiefly brought from Spain; it is a sweet wine, of a golden, or brownish-yellow colour, and to this is applied the Italian proverb, "Manna to the mouth and balsam to the brain." Almost all the wines used in the Venetian territories comes from Greece and the Morea. Italy produces the *Vino Greco,* which is a gold coloured unctuous wine, and is the growth of Mount Vesuvius. In the same neighbourhood is made the *Mangiaguerra* wine, a thick blackish one called *Verracia,* and at the foot of the hill the delicious *Vino vergine.* The kingdom of Naples affords the *Campania* or *Pausillipo, Muscatel, Salernitan,* and other excellent wines, and also the *Chiarello,* much drank at Rome. But the principal is the red, unctuous, and poignant wine called *Lachryma Christi.* The ecclesiastical state produces the bright pleasant *Albano* and the sweet *Montefiascone.* In Tuscany are the excellent white and red Florence; the celebrated hot, strong, red wine, *de Monte Puciano,* &c. In Lombardy, the Modenese and Montserrat are tolerable; between Nizza and Savona is produced an incomparable *Muscadine.* Piedmont and part of Savoy have

excellent light wines. The Sicilian and Sardinian wines are also good. Some of the wines of Spain are excellent; the greatest quantities are made in the southern part of the kingdom. The wines of the Canaries are to be met with in most of the ports of Spain, and are usually classed with the wines of that country. Although the whole of the Canaries produce excellent wines, the preference is given to those of Parma and Teneriffe. When the vintage proves favourable, Teneriffe annually produces about 30,000 pipes of *Vidonia*, or as it is sometimes denominated *bastard Madeira*, from the similarity of its flavour and appearance to the dry wine of that island. Teneriffe also produces a sweet wine, which is nearly similar to Malmsey Madeira. The wine of Guidas in Castile, is made from cherries, and is a species of *ratafia*. The Foucal wine, which takes its name from a village near Madrid; and the wines of *Val de Penas, Cuidad Real, Ribadavia, Rioxa*, and those called *La Mancha*, are said to be very good. The best wine of Arragon is a red wine named *Hospital*, and *Caninea*, called likewise white Garnachas, is very fine, and much esteemed, The wines of Peralta, well known under the name of *Rancio*, and those of Tudela, Tafalla and Arandillo in Navarre, are excellent, both as to flavour and quality. The wines of Xeres, better known under the name of Sherry, are made at a town of that name in the province of Andalusia. The flavour of leather which is sometimes perceived in tasting Sherry, is said to be owing to the custom of bringing the wines down the country in large leathern vessels; or as the Spaniards call them, boots, whence we derive our term butts, which we bestow upon the casks in which we receive the wine. In Andalusia, are made sweet and dry wines, called *Pagarete* and *San Lucar;* and the strong well-known red wine, denominated *Tinto Rota*, or *Tent;* which is an excellent stomachic. The *Montillo* is a dry wine. The territory of Xeres alone, annually produces about 60,000 pipes of wine. In the province of Granada is made the celebrated wine called *Mountain* or Malaga; it is dry and sweet, both red and white. Granada also produces *Peroximenes* or *Pedro Ximenes*, which is a very fine-flavoured wine, and a kind of Malmsey which is exquisite. In Valentia, is found the *Tinto Alicante*, a wine much used in France and Germany; and the *Benicarlo*, an inferior sort of red, dry, and thick wine, which is often palmed upon the public by wine dealers as Port wine. The wine called *Siches*, and that called *Garnache*, both made in Catalonia, are exquisite. In the same provinces are made *Tinto de las Montanas*, or Mountain Tent, and *Mataro* wine; both of which are sweet, thick, ropy, and unwholesome. It is almost needless to observe, that the wine called *Port*, of which such vast quantities are consumed in Great Britain, is the production of Portugal. The vines, whence it is made, grow upon the banks of the Douro, and occupy a space about six leagues in length, and two leagues in breadth. These vineyards produce between 60 and 70,000 pipes of Port, and there are others which yield nearly 6000 pipes annually. In France there are a great variety of wines, of which the strong, sweet, full-bodied spirituous ones, are called *vins de liqueur*. Languedoc and Provence afford the sweetest wines, and the same provinces, with Champagne and Burgundy, the strongest. In the province of Champagne there

are two kinds of wine, the white wines called *Riviere de Marne* wines, and the red wines called *Montagne de Rheims* wines. The most celebrated of the French wines are *Champagne*, *Burgundy*, *Hermitage*, *Vin de baume;* the *Muscat* wines, *Frontignac*, *Lafitte*, &c. The *Vin de Laugon*, so called from a small town, near which it is made, is reckoned the best of all the wines of the Bordelais, which are included under the general name of *Vins de Grave*, from the sandy and gravelly soil in which the vines grow. A great deal of the wines made in the Bordelais, are sold under the name of *Macon*. *Auvernat*, commonly called *Casse Taille*, is made at Orleans, and is a full good wine. Another Orleans wine is *Genetin*. *Hermitage* is the produce of a vine which is grown upon the banks of the Rhone, between Valance and St. Valiere. Near this also the *Cöte rotie* is made, which takes its name from the hill on which the vines grow. In Switzerland, the best wines are the *Neufchatel*, *Valteline*, *Lacote*, and *Reiff*. The dry grape-wines of Upper Hungary, especially the Tokay, are in general excellent. Among the German wines, those of Tyrol are very delicate, but do not keep. Of Austrian wines, those of *Kloster*, *Newburgh* and *Rosenburgh*, are deemed the best. In the Palatinate, the best wine is that of *Worms*. Among the most esteemed wines may be reckoned also *Rhenish*, *Mayne*, *Moselle*, *Neckar* and *Elsas*. The Rhenish wine made in Hockheim (Hock,) is regarded as the prince of German wines.

Medical Properties and Uses.—The ripe fruit of the Vine is wholesome, antiseptic, and cooling, and when eaten freely, diuretic and gently laxative; grapes obviate and correct the stimulant and septic effects of animal food, open the body, and cool and refresh the system. Hence they have been found eminently useful in bilious and putrid fevers, dysentery, scorbutic affections, and in all acute, febrile, and inflammatory diseases. Grapes when used raw, or conserved, afford a considerable quantity of bland nutritious aliment, and hence they have been highly extolled as an article of diet in pulmonary consumption. Raisins *(Uva passæ,)* and currants *(Uvæ passæ minores,)* contain a large proportion of saccharine matter, and are highly nutritious and demulcent. They are more laxative than the fresh fruit; but when too freely indulged in, are apt to produce flatulence and cholic. Raisins are used in pharmacy to impart an agreeable sweet, and on this account, enter as an ingredient into some officinal preparations, as the *Decoctum Hordei compositum*, L.D. the *Tinctura Cardamomi Composita*, L. D., and *Tinctura Sennæ*, L.

Wine is cordial, stimulant, antiseptic and tonic. In moderate quantities, it stimulates and excites the energies of the system, promotes digestion, increases the action of the heart and arteries, exhilarates the spirits, enlivens the senses, awakens the passions, and calls into action all the intellectual powers. Taken in excess it intoxicates, produces nausea, sickness, head-ache, vertigo, diarrhœa, nervous tremors, and other symptoms, which continue for two or three days. Like ardent spirit, its habitual and long continued use is equally destructive to the body and mind, producing dyspepsia, hypochondriasis, visceral obstructions, hepatic and pulmonary inflammation, gout, apoplexy, palsy, dropsy, madness, and a long and frightful catalogue of diseases.

"The action of wine on the system," says Dr. Murray,* "though analogous to that of alcohol, is not precisely alike; its stimulant operation appears to be less sudden and more durable; and hence it can be employed with more advantage as a tonic. It is as a tonic indeed, rather than as a narcotic, that wine is administered. Its chief medicinal application is in the treatment of fevers of the typhoid type, to support the strength of the system, and to obviate symptoms arising from debility. With these views, it is given with more advantage than any other tonic,—a superiority derived from its stimulating power being obtained with more certainty, and being more easily regulated, from its being more grateful, and probably not requiring to be assimilated by the digestive organs to produce its effects. The quantity in which it is given is dependent on the state of disease; the object to be attained is that of supporting the strength of the system until the disease has run its course; the danger to be avoided is that of giving it so largely, as to occasion any degree of exhaustion. Its administration is regulated, therefore, by the effects it produces; advantage being always derived from it, when it renders the pulse more slow and firm; when the recurrence of delirium is prevented; when irritation is lessened, and sleep induced. If the pulse is quickened, and the countenance becomes flushed; if it excite thirst, increase the heat of the body, and occasion restlessness or delirium, it is obviously injurious; and the dose must either be diminished, or its use altogether suspended. In general its operation is less powerful than it is on the system in a state of health; larger quantities therefore can be taken, and are even required, to produce an exciting effect.

"In various diseases of chronic weakness, or where the strength of the system has been reduced by profuse evacuations, or by any other debilitating operation, wine is in common use as a cordial and tonic.

"Different wines have effects somewhat different, according as they are possessed of astringency, or as they are sweet or acescent; and are hence adapted to answer different indications."

As Wine is found to be capable, by infusion, of extracting many vegetable principles; it is sometimes used in Pharmacy. From the alcohol it contains, it dissolves a certain portion of their resin, extract, and essential oil; its watery part dissolves their gum or mucilage; but medicated wines are more liable to spontaneous decomposition than tinctures; hence the London College has rejected them from the last edition of their Pharmacopœia.

Off. Prep.—Vini medicati, *E. D.*

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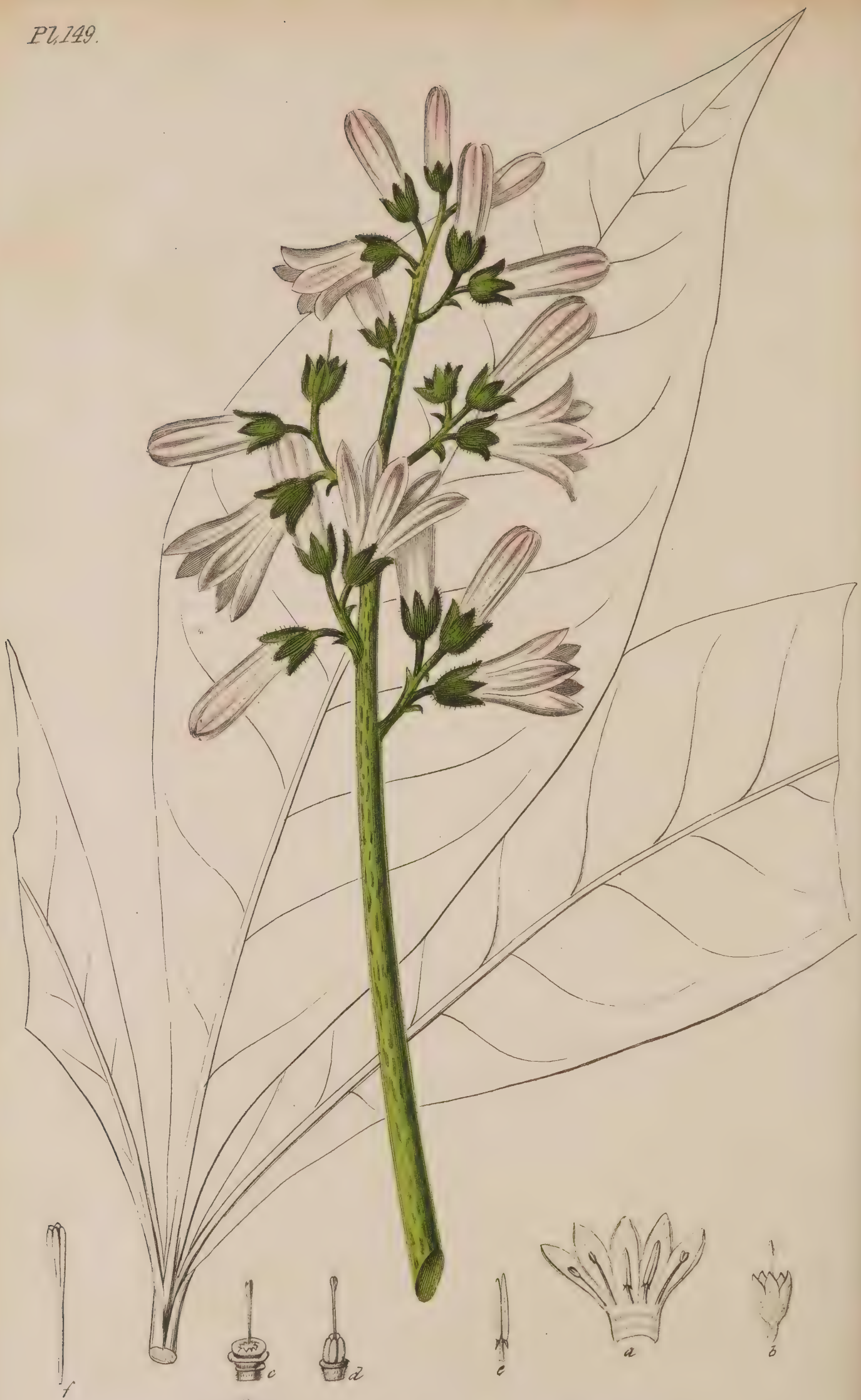
* *System of Materia Medica*, v. i. p. 133.



Bonplandia trifoliata

G.Reid del. Wedd. lith.

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BONPLANDIA TRIFOLIATA.

Three-leaved Bonplandia.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. QUASSIÆ, *Juss.* SIMARUBEÆ, *Decand.*

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

Syn.—Cusparia febrifuga. *Humboldt, Geogr. des Plantes.*
Bonplandia Angostura. *Rich. Mem. de l'Instut. an.* 1811. *p.* 82. *t.* 10.
Bonplandia a trois Feuilles. *Roq. Phytogr. Medic. v.* 2. *t.* 143.
Galipea officinalis. *Hancock in Trans. of Med. Bot. Soc. v.* 1. *t.* 2.?
Bonplandia trifoliata, *Willd. Act. Berol. an.* 1802, *p.* 24; *Humboldt et Bonpl. Pl. Equinoct. v.* 2. *p.* 59. *t.* 97.
FOREIGN.—*Angusture.* Fr.; *Angustura,* It.; *Angusturarinde,* Ger.

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

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

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

Qualities and Chemical Properties.—Cusparia or Angustura bark is brought to England packed in casks. It varies in length, while some pieces are flat others are in quills of different dimensions. It has a disagreeable smell, somewhat resembliug that of Chenopodium *olidum*. Its taste is bitter

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

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

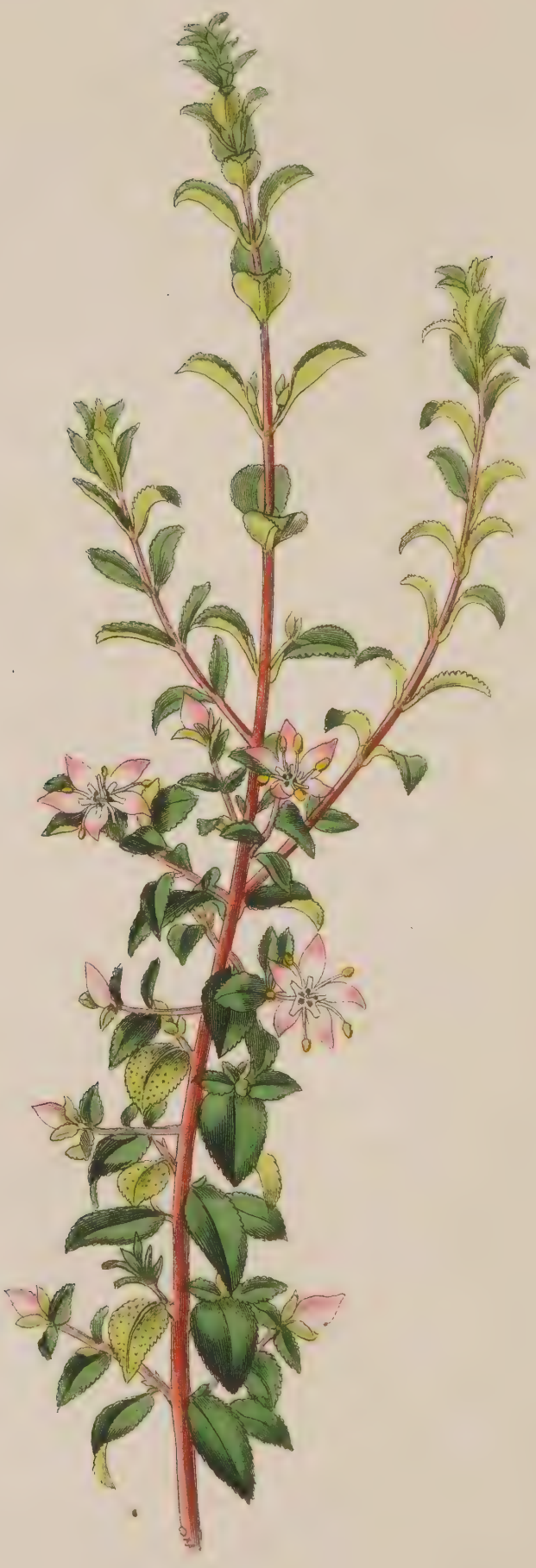
* See Fées *Essai sur les Cryptogames des écorces officinales.*

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

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

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

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



Diosma crenata.

Waddell sc.

CXXI

DIOSMA CRENATA.

Crenated Diosma.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

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

GEN. CHAR. *Petals* five. *Nectary* of five scales crowning the germen. *Capsules* three or five, connected. *Seeds* in an elastic bivalve arillus.

SPEC. CHAR. *Leaves* ovate-lanceolate, crenate, punctured underneath; *flowers* solitary.

Syn.—Hartogia betulina, *Berg. Cap.* 67.
Diosma crenata, *Lin. Sp. Pl.* 287; *Amæn. Acad.* 6. *p.* 308; *Houttuyn Lin. Syst.* 3. *p.* 286; *Willd.* 2. 1138; *Thunb. Dissert. p.* 14; *Ait. Hort. Kew. v.* 2. *p.* 32. *Bot. Cab. n.* 404.

ALL the species of this genus are shrubs, and natives of the Cape of Good Hope. The subject of the present article was introduced by Mr. Francis Masson in the year 1774. It forms a thin branching shrub, flowering in its native soil throughout August, September, and October. It is still very rare in our collections; but blossoms occasionally in March, at Messrs. Loddiges, at Hackney. For its culture the soil should be sandy peat, and the plant requires the usual greenhouse protection in winter.

The plant is perennial, erect, everywhere smooth, and rises about two feet high; the branches are round or somewhat angular, loose, wand-like, and of a purplish colour. The leaves are opposite, scattered, ovate, pointed, of a dark green colour above, paler underneath, crenated, and full of small transparent punctures, particularly at the edges between each tooth. The flowers are solitary on short pedicels, delicate, white, or of a pale reddish tint, and arise at the ends of short opposite lateral shoots. The

calyx consists of five deep ovate, acute permanent segments. The corolla is composed of five elliptic-oblong bluntish segments, slightly spreading. The nectaries are five linear-lanceolate scales crowning the germen. The filaments are five, awl-shaped, bearing ovate, incumbent anthers. The germen is superior, turbinate; the style erect, the length of the stamens, with a simple stigma. The capsule is ovate, containing an oblong solitary seed, inclosed in an elastic arillus.

Qualities and Chemical Properties.—The odour of the whole of this plant is very strong and peculiar. It affords an essential oil, which resembles a mixture of oil of rue, cubebs, and camphor. The extractive matter is slightly bitter and mucilaginous. It yields to water, on long-continued boiling, a quantity of mucilage; and the essential oil, which is imparted to boiling water by infusion, is dissipated by decoction. To an analysis by M. Cadet, jun. the leaves of this plant yielded,*

Essential oil . .	0.665
Gum . . .	21.17
Extractive . . .	6.17
Chlorophylle . . .	1.10
Resin	2.151

Medical Properties and Uses.—To this plant the natives of Southern Africa ascribe incredible virtues in numerous diseases, and of a very opposite nature. To Dr. Reece of Bolton Row, we are indebted for the Krameria *triandra,* as an article of our authorised materia medica, which as an astringent tonic is much prized by Sir H. Halford, at whose recommendation it found a place in our pharmacopœia. The former gentleman, whose therapeutical knowledge is deservedly esteemed, was also the first to excite the attention of British practitioners to the D. *crenata;* and as the subsequent experience of several able men in Ireland has confirmed its efficacy, it now ranks amongst the officinal drugs of the Dublin pharmacopœia. For several years it appears to have been successfully prescribed in

* Journ. Chim. iii. 44.

Holland, for rheumatism and inflammatory affections of the membranes, particularly of the bladder, urethra, prostate gland, and rectum. The natives of the Cape, from whom the Dutch derived their knowledge on the subject, are partial to the spirit of buchu, made by distilling the leaves in the dregs of wine, which they term buchu-brandy, and regard as a sovereign remedy for all chronic diseases, and even acute ones, of the stomach and bladder, but especially spasmodic affections of the stomach and intestines. By referring to Burchell's travels in Africa, it will be found, that the Hottentots apply a decoction of buchu leaves to fresh wounds, and also use them as a cosmetic, which is referred to by Thunberg, when speaking of the uses of the plants belonging to this genus: "Inserviunt imprimis *uniflora*, *pulchella*, *crenata*, et *betulina*, quarum folia inter lapides in pulverem redigunt Hottentotti, eoque, cognomine Buchu, corpus pinguedine ovina arte inunctum adspergunt, unde odor eorum graveolens et insuetus valde ingratus."*

The Diosma Crenata appears to be an excellent aromatic stomachic, and is very efficacious as a diuretic. It also exerts very powerful effects on the urinary apparatus, as irritative affections and chronic inflammations of the bladder and urethra, which so often follow mismanaged gonorrhœa, or are consequences of retention of urine, diseased prostate gland, stricture of the urethra, the action of calculi, or the rude use of the bougie. Dr. M'Dowall† has given many cases of these kinds in which it has been eminently successful, and the correctness of his assertions is fully borne out by Dr. Cumming, also of Dublin. We are also in the habit of employing the infusion for the same diseases, and are generally well satisfied with the results. An eminent general practitioner (and it is from this class of the profession that we naturally look for the advancement of our therapeutical knowledge) has favoured us with the following observations, with which we conclude: "I have often found the infusion of buchu-leaves, taken internally and applied externally, extremely beneficial for rheumatism. In one case of long stand-

* Dissert. Botan. de Diosma, p. 20. † Vide Dublin Medical Transactions.

ing chronic rheumatism, the patient, an elderly man, was suffering severely in the loins and extremities, as also from a most distressing irritative affection of the bladder and urethra. A wine glassful of the infusion, made with an ounce of the leaves to a pint of boiling water, taken three times a day, not only reduced the rheumatic pains, but entirely removed the complaint of the bladder and urethra, which had been ascribed to a diseased state of the prostate gland. These sedative effects, so remarkably displayed, induced me to try it in similar affections of the rectum, and the favourable results fully confirm the opinion I had anticipated."

Off. Prep.—Inf. Diosmæ Crenatæ. D.