PLANTÆ UTILIORES;

OR

ILLUSTRATIONS OF USEFUL PLANTS,

EMPLOYED IN

THE ARTS AND MEDICINE.

BY M. A. BURNETT.

VOL. I.

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1842.

TO MISS MINSHULL.

MADAM,

My gratitude and inclination alike prompt me to dedicate to you the First Volume of *Illustrations of Useful Plants.* Had it not been for your kind encouragement, the Work would never have been undertaken. Fostered by your patronage, I trust it may still continue to prosper.

I have the honour to remain,

MADAM,

Your most grateful and humble Servant,

M. A. BURNETT.

49, London Street, Fitzroy Square,
April 1st, 1842.

ADVERTISEMENT.

On concluding the First Volume of the Illustrations of Useful Plants, the Author cannot refrain from offering her sincere thanks for the eminent and extensive patronage with which her Work has been honoured; encouraged by her success, she hopes to make the following Volumes more worthy of public approbation. The greatest care will be taken to select Plants which are interesting for their historic and poetical associations, as well as those which are remarkable for their beauty or utility.

The Oak, the material of Britain's Navy, and the symbol of Britain's strength,—the Ash, the most elegant denizen of our woods,—and the Elm, Milton's favourite tree, will be figured, if possible, within the next ten or twelve numbers.

It will be the Author's endeavour, in selecting the extracts by which the Plates are accompanied to combine amusement with instruction, and thus make her Work an agreeable companion in the study, as well as a fit ornament for the drawing-room table.

49, London Street, Fitzroy Square,

April 1st, 1842.

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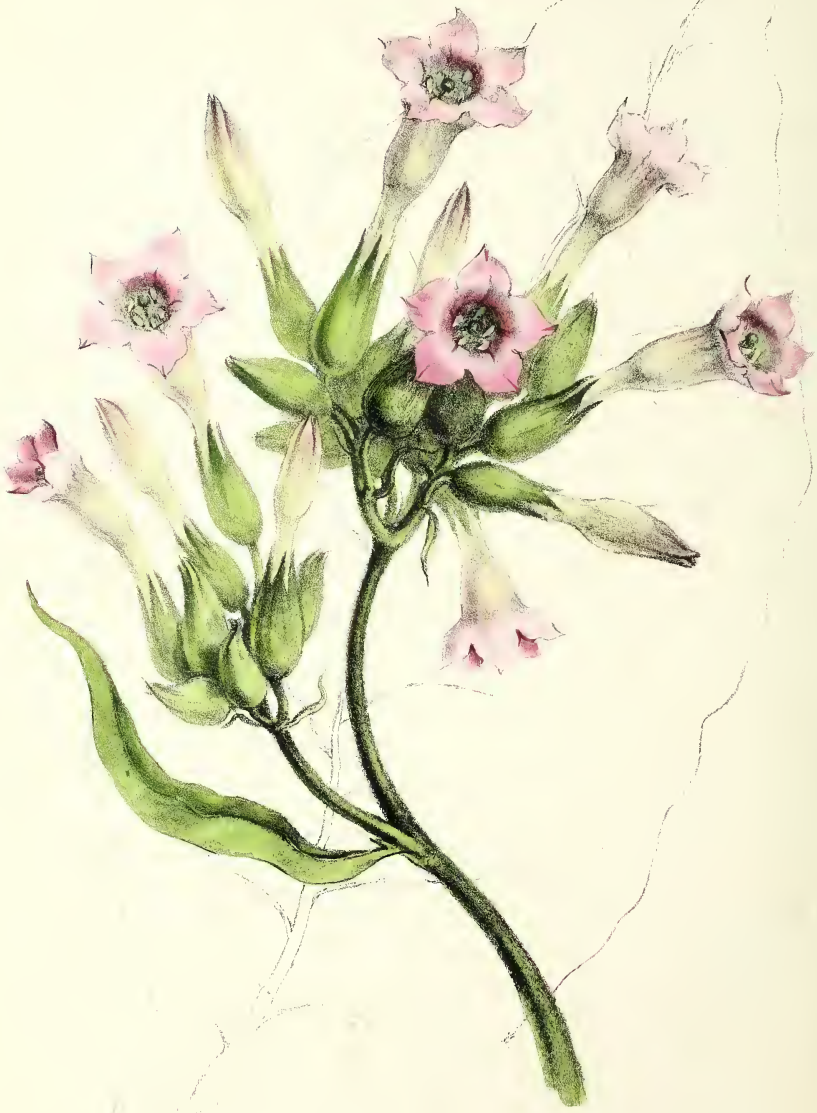

Nicotiana Tobacum f

NICOTIANA TABACUM.—VIRGINIAN TOBACCO.

Class PENTANDRIA.—Order MONOGYNIA.—Natural Order SOLANEÆ.

NIGHT-SHADE TRIBE.

One of the most powerful narcotics, and one of the most important plants of this group, in a commercial point of view, is the Tobacco. There are about thirty species of Nicotiana, and some of these are natives, or naturalized in most parts of the world; for although its use was known in Europe before the discovery of America, indulgence in its fume is so common, nay, so universal among the Chinese, and the forms of their bamboo pipes, and their methods of inhaling so peculiar, that Pallas and many others had been led to believe that the custom is aboriginal with them; and that they, and other nations of the east, were acquainted with its use before the discovery of the Western Hemisphere. Two or more species.

Chardin states, that its use was common in Persia long before the discovery of America, and that it is a native of that country, or at least was naturalized there as early as 1260; furthermore, Liebault asserts, that one species (his "Petit Tabac Sauvage,") is a native of Europe; and that it was found wild in the forest of Ardennes, previous to the discovery of the New World; this assertion, seems, however, to be deficient in proof, and its correctness is doubted by most naturalists.

All the species of Nicotiana possess the same, or nearly similar properties; but two only, N. Tabacum, and N. Rustica, are in much repute, or are much cultivated for use. The specific name Tabacum is not, as was long supposed, a slight corruption of Tobago or Tobasco, whence the drug is brought, but is, as Humboldt has shewn, the Haytian word for the pipe, in which it is smoked, and which has been transferred, like the term mate, [§1928] from the instrument to the herb.

The history of Tobacco is one of peculiar interest; it was first introduced into Europe about 1560, seeds being sent by Jean Nicot, from whom it derives its generic name, to Catherine de Medici; but it was not until 1586, that the use of the herb became generally known, and the practice of smoking introduced into England by Sir Walter Raleigh, and the Settlers who returned from Virginia. Harriott, who accompanied the expedition which was sent out to attempt to found a colony in Virginia, gives, with a long description of the Tobacco plant, an account of the manner in which it was used by the native Americans; and adds that the English, during the time of their stay abroad, and since their return home, were accustomed to smoke it after the fashion of the Indians, "and found many rare and wonderful experiments of the virtue thereof."

Tobacco encountered much violent opposition when its half-inebriating and soothing influence recommended it to popular use. Many governments attempted to restrain its consumption by penal edicts. The Sultan Amurath IV. forbade its importation into Turkey, and condemned to death those found guilty of smoking. The Grand Duke of Moscow prohibited its entrance into his dominions, under pain of the knout for the first offence, and death for the next; and in other parts of Russia the practice of smoking was denounced, and all smokers condemned to have their noses cut off; the Shah of Persia and other Sovereigns were equally severe in their enactments; and Pope Urban VIII. anathematized all those who smoke in churches. In 1654 the counsel of one of the Swiss Cantons cited all smokers before them; every innkeeper was ordered to inform against those who were found smoking in their houses; and in the laws of Bern there is conclusive evidence of the serious light in which this, at that time presumed crime, was held, for the prohibition of smoking immediately follows the enactment against adultery. But not only legislators, but philosophers, or at least book-makers, entered into a crusade against Tobacco; upwards of a hundred volumes, the names of which have been preserved, and the titles catalogued, were written to condemn its use; and amongst these, not the least singular was the counterblaste of our pedantic James. His vituperations indeed are most amusing; and although in some parts the language is too gross for modern taste, its tenor may be judged of from the following quotations.

"Now to the corrupted basenesse of the first use of this Tobacco, doeth very well agree the foolish and groundlesse first entry thereof into this kingdome; it was neither brought in by king, great conqueror, nor learned doctor of physicke. With the reporte of a great discovery for a conqueste, some two or three savage men were brought in, together with this savage custom, but the pitye is, the poore wild barbarous

men died, but that vile barbarous custom is yet alive, yea, in fresh vigour." His physiological arguments out of respect to the monarch, may be passed over without notice, in truth they are not worth abridgment, but his detail of the post mortem appearances of the body of an inveterate smoker, are too exquisite to be altogether omitted. "Surely smoke becomes a kitchen farre better than a dining chamber, and yet it makes a kitchen oftentimes in the inward parts of men, soyling and infecting them with an unctuous and oyly kind of soote, as hath been found in some great tobacco takers that after their death were opened." The monarch then enters into a pathetic expostulation with his loving subjects, and appeals to their patriotism, or rather national pride: "Now, my good countrymen, let us, (I pray you) consider what honour or policie can move us to imitate the barbarous and beastlie manners of the wild, godlesse, and slavish Indians, especially in so vile and filthy a custome. Shall we that disdain to imitate the manner of our neighbour, France, (haveing the style of the greate christian kingdom,) and that cannot endure the spirit of the Spaniards, (their king being now comparable in largenesse of dominions to the greatest emperor of Turkey;) shall we, I say, that have been so long civill 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 beastlie Indians, slaves to the Spaniards, the refuse of the worlde, 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 toys, to gold and precious stones, as they do? yea, why do we not deny God, and adore the devils, as they do? Have you not then reasons to forbear this filthie noveltie, so basely grounded, so foolishly received, and so grosslie mistaken in the right use thereof? In your abuse thereof, sinning against God, harming yourselves both in person and goods, and raking also thereby the markes and notes of vanitie upon you, by the custome thereof, making yourselves to be wondered at by all forreine civill nations, and by all strangers that come among you, to be scorned and contemned; a custome loathsome to the eye, hateful to the nose, harmfull to the brain, dangerous to the lungs, and in the blacke stinking fume thereof, nearest resembling the horrible stigian smoke, of the pit that is bottomless."

Of the sincerity of the royal anti-tobacconist there can be no doubt, if any reliance may be placed on energy of expression, or on his almost unequalled force of language. But notwithstanding all opposition, smoking and snuffing have spread not only through polished, but savage countries; and instead of being "scorned and contemned by strangers," and "wondered at by all forreine civill nations," the English now are countenanced, nay, not only equalled, but exceeded, in the custom by many other people; for, during the reign of George III. the practice of smoking declined in this country, although since the peace it has been again in some part revived.

"In Spain, France, and Germany, in Holland, Sweden, Denmark and Russia," says a writer in the Asiatic Journal, xxij. 142, "the practice of smoking prevails among the rich and poor, the learned and the gay. In the United States of America smoking is often carried to an extreme excess. It is not uncommon for boys to have a pipe or cigar in their mouth during the greater part of the day. The death of a child is not unfrequently recorded in American newspapers with the following remark subjoined: Supposed to be occasioned by excessive smoking.

If we pass to the east, we shall find the practice almost universal. In Turkey the pipe is perpetually in the mouth; and the most solemn conferences are generally concluded with a friendly pipe, employed like the calumet of peace among the Indians. In the East Indies not merely all classes, but both sexes, inhale the fragrant steam; the only distinction among them consisting in the shape of the instrument employed, and the kind of herb smoked. In China the habit equally prevails. Barrow states that, every Chinese female, from eight to nine years old, wears as an appendage to her dress, a small silken purse or pocket to hold tobacco, and a pipe, with the use of which many of them are not unacquainted at this tender age.

That excessive smoking is injurious, like excessive indulgence of any other kind, there is no doubt, and those who are guilty of such excess must expect to suffer for their imprudence or their folly; but that there is anything peculiarly injurious in the use of Tobacco, whether chewed, smoked, or snuffed, remains to be proved. The evidence on the contrary, would seem to shew that it is one of the less injurious excitants and sedatives. Dr. Thompson observes, that in the snuff manufactories of France, where 4,000 persons are employed, and where from their constant exposure to the influence of Tobacco, to a much greater extent than the consumers can be, it has been ascertained that they live as long, and are as healthy as manufacturers in general. Such being the facts, putting all prejudice aside, and believing from accumulated evidences, the pleasurable sensations which the slight stimulus of a pinch of snuff gives

rise to, a pleasure which can be resorted to so much more often, and with so much less probability of being injurious, than any other stimulus; and having watched the composing influence of a cigar, the contentment which springs up in the mind as the smoke rises in the air, the calmness and satisfaction it produces, and the temporary happiness of which it is the cause, it does seem at least to one who, be it observed, neither smokes, snuffs, nor chews Tobacco, not wonderful that the custom of smoking and taking snuff should prevail amongst all people, and in all countries; nor is there any sound argument to be raised against the practice; indeed the discontinuance of that which so materially increases the sum of human happiness would be greatly to be deplored; philippics and royal anathemas have long since ceased, and legislatorial prohibitions have been evaded or repealed; whether this may have been the result of a rational conviction of its utility, or whether the fact of a very considerable part of the revenues of all sovereigns of Europe, as well as of those of most other parts the world, being derived from a duty on Tobacco, may have had any thing to do with the present state of toleration, it imports us not to determine, but it seems not improbable that the tone of our James's counterblaste would have been very much subdued, had he been forewarned that, by a duty levied on Tobacco, between three and four millions a year might be added to the revenue of his kingdom; and, truly, when persons are content to tax themselves to such an amount for the enjoyment of a harmless luxury, he must be a tyrant indeed who would set his veto against the indulgence.

Tobacco is used medicinally in powder as an errhine, an infusion as an expectorant and sedative, and in vapour both as an anti-spasmodic, and to bring on nausea and fainting. Tobacco is often employed as a masticatory, but this is the least commendable mode of use; it impairs the appetite, brings on torpor of gastric nerves, and hence, although it may at times be convenient to appease the calls of hunger without eating, yet the practice of chewing Tobacco when indulged in, as it sometimes is by the lower classes, is commonly followed by the distressing train of symptoms familiar to all, as the Protean forms of Dyspepsia.

The active properties of Tobacco appear to depend upon two proximate principles, which bear a considerable resemblance to each other, and which some authorities believe to be only varieties of one and the same body, these have been called Nicotine and Nicotianine; the latter which is procured from the leaves by simple distillation, appears to be a solid volatile oil, it is poisonous, and resembles in its effects ordinary Tobacco in a concentrated form. The former, when pure, is a colourless fluid, extremely acrid and pungent, and most virulently poisonous; it has been extracted both from the seeds and leaves; besides these, there has been procured an empyreumatic oil, by destructive distillation, which probably contains both the preceding substances, mixed with various impurities; this oil is formed whenever Tobacco is burned; and it was first noticed, or at least first made use of, by the Hottentots, who are accustomed to poison snakes by putting a drop of it on their tongues; the effect of the application, Barrow says, is instantaneous, almost like that of an electric shock; and many experiments which have been made by Brodie and others, as well as some accidents which have occurred, prove that the oil of Tobacco is one of the most active poisons known. In some peculiar constitutions, even small quantities of the powdered leaves or their fumes have proved injurious or even fatal. The celebrated Santeuil is said to have experienced vomitings and horrible pains, amidst which he expired, in consequence of having drank a glass of wine into which some Spanish snuff had been put; intoxication, vomiting, faintings and other untoward symptoms have been known to follow the application of Tobacco ointment to scald heads; and Mr. Howison gives a very interesting account of a kind of trance into which he was thrown, being conscious of all around, but unable to move or speak from lying down to sleep among numerous packages of fresh tobacco.

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 hebenon, i. e. henbane. Now it appears from Gerarde, that Tobacco was commonly called henbane of Peru, (Hyoscyamus Peruvianus;) No preparation of 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."

G. T. Burnett.

The leaves retain their green colour when properly dried; their brown colour being produced purposely by the action of a little sulphate of iron.

In Constantinople where its use is now so general, the custom was, in the beginning of the 17th century, thought so ridiculous and hurtful that any Turk who was found smoking, was conducted in ridicule through the streets with a pipe transfixed through his nose. Tobacco which has been introduced into the Sandwich Islands by Europeans is now, says Kotzebue, (vide Voyage of Discovery) so generally used, that young children smoke before they learn to walk, and grown up people have carried it to such an excess, that they have fallen down senseless, and often died in consequence.

When the use of snuff has become habitual, it cannot be relinquished without considerable risk, arising from the suspension of artificial discharge it produces, as Dr. Cullen observed from his experience.

Tobacco is subject to be destroyed by a worm, and without proper care to exterminate this enemy, a whole field of plants may soon be lost. It appears to be peculiar to the Tobacco plant, so that in many parts of America it is distinguished by the name of the Tobacco worm, are found in greatest numbers in July and August.

Tobacco in the countries of which it is a native is considered by the Indians as the most valuable offering that can be made to the being they worship; they use it in all their civil and religious ceremonies. When once the spiral wreath of its smoke ascend from the feathered pipe of peace, the compact that has been just made is considered so sacred and inviolable, that few instances have occured in which it has been violated.

The following nice calculation is given to those who study economy. Every professed and incurable snuff-taker at a moderate calculation, takes one pinch in ten minutes. Every pinch with the disagreeable ceremony of blowing and wiping the nose, and other incidental circumstances consumes a minute and a half. One minute and a half out of every ten, allowing sixteen hours to a snuff-taking day, amounts to two hours and twenty four minutes out of every day of twenty four hours, or to one day out of ten, and one day out of every ten will amount to thirty six and a half days in the year, or to seven years of wasted time out of that short life which is allowed us for far other purposes; compute now the expense, and it will be found that this luxury encroaches as much on the income of the snuff-taker as it does on his time, and that the time and money thus lost, would have enabled the tradesman to enjoy many real comforts in his family, and perhaps to save up a little store against a time of sickness and distress.

Annual. Height, four or five feet. Seed may be sown in February or March. Transplant in May.

Passiflora Cærulea

Class PENTANDRIA.——Order TRIGYNIA.

Natural Order PASSIFLOREÆ.——PASSION FLOWER TRIBE.

The Passion Flowers and their allies, associated to form this type, are herbaceous, or shrubby plants, rarely trees, with often twining scandent stems, and alternate simple petiolate leaves, either entire or lobed, and usually furnished with glands and stipules.

The inflorescence is axillary, and the peduncles which in the non-scandent species are all floriferous, become in part in the climbing ones, converted into tendrils. The flowers are showy, regular, and united, rarely separated by abortion, usually solitary, seldom aggregate, and for the most part invested with a triphyllous involucrum.

The calyx is free, the sepals 5 - 10, the external ones herbaceous, and the inner petaloid, they are imbricate in æstivation, sometimes irregular, cohere by their ungues, and constitute a tube of variable length, which is lined by filamentous or annular processes, forming a nectary. The petals when present are five in number, and exserted from the faux of the calyx external to the ring of filaments; often metamorphosed into the filamentous nectary. The torus lines the bottom of the calyx, and is produced to form a cylindrical column, which bears the germen, and from which the stamens are exserted; the stamina are definite (5) in Smeathmannia alone indefinite, surrounded by numerous barren filaments, forming a radiant circle, arranged in one or two series, thus accounting for the indefinite stamens of Smeathmannia. The filaments are shortly monodelphous and opposite the external lobes of the calyx, the anthers versatile, or rather peltate, being attached to the filaments by their back; reversed and thus by situation extrorse, although in reality introrse, two celled and dehiscent lengthwise, the germen is free, stipitate, one celled, with three, rarely five, parietal placentæ, and many ovules, the styles are short or none, and the stigmata are equal in number to the trophosperms, thick and lobed or dilated. The fruit is baccate or capsular, either naked or invested by the calyx, and elevated on the stalk like torus. It is three, rarely five, valved, one celled, when capsular dehiscent by valves, when baccate indehiscent: the parietal placentæ (3 - 5 in number,) are polyspermous, nerviform, and attached to the middle of the valves, the seeds are pendulous, rarely erect, and covered either by membranous or pulpy arillus, (seldom exarillate) the testa is crustaceous, and the tegmen membranaceous, the albumen is fleshy but thin, and often scrobiculate; the embryo is straight and included, the radicle round and turned towards the hilum, and the cotyledons flat and foliaceous, seldom fleshy.

Hence, selecting the chief differential characters, the Passifloraceæ are subcorollaceous grossulinæ, with radiant nectaries, a stipitiform staminiferous torus: definite, many seeded placentæ; and scrobiculate albumen.

The Passifloraceæ although in general innoxious, are suspicious plants for one species. Passiflora Quadrangularis, is known to be deleterious, and the others have not been sufficiently examined to allow their innocence to be affirmed, notwithstanding, the fruit of most of them, even of the noxious one, is eatable.

The Passion Flowers are not only curious, but most beautiful plants; they grow well and blossom freely in this country, yet they seldom ripen their fruit. Several hybrid varieties have been produced by art, which exceed in beauty any of the natural species. It may be propagated from seeds, cuttings or layers; it is said that layers or cuttings seldom produce fruit, its situation should be with a southern aspect

the root protected with straw during the winter. It was discovered in the Brazils, brought to Europe, and became a denizen of our gardens in the year 1699.

The name Passion Flower owes its origin to some imaginative Jesuit, who fancied he had found an allegorical representation of our Saviour's passion, or at least, of the instruments of torture, as well as other attendant circumstances, in the structure of blossoms, leaves, and tendrils of these curious plants. The leaves are compared to the *spear* or the hand which pierced our Saviour's side; the tendrils to the *cords* that bound his hands, or the *whips* that scourged him; the ten petals to the *ten apostles,* Judas having betrayed and Peter deserted him; the pillar in the centre to the *cross* or *tree*; the stamens to the *hammers*; the styles to the nails; the inner circle round the central pillar, to the *crown of thorns;* the radiance, to the *glory;* the white in the flower to an emblem of his *purity;* and the blue is a type of *heaven.*

Hervey in his Meditations on the Flower Garden, vindicates the supposed resemblance, with the following words.

I have read in a profane author, of flowers inscribed with the names of kings, but here is one emblazoned with the marks of the bleeding prince of life. I read in the inspired writings of apostolic men, who bore about, in their bodies, the dying of the Lord Jesus; but here is a blooming religioso, that carries apparent memorials of the same tremendous and fatal catastrophe.

Who would have expected to find such a tragedy of woe, exhibited in a collection of the most delicate delights? Or, to see Calvary's horrid scene pourtrayed on the softest ornaments of the garden? Is nature then actuated by the noble ambition of paying commemorative honours to her agonizing sovereign? Is she kindly officious to remind forgetful mortals of that miracle of mercy; which it is their duty to contemplate, and their happiness to believe? Or, is a sportive imagination, my interpreter, and all the supposed resemblance, no more than the precarious gloss of fancy? be it so: yet even fancy has her merit, when she sets forth in such pleasing imagery, the crucified Jesus. Nor shall I refuse a willing regard to imagination herself; when she employs her creative powers to revive the sense of such unparalleled love, and prompt my gratitude to so divine a friend.

Among all the beauties, that shine in sunny robes, and sip the silver dews; this, I think, has the noblest import, if not the finest presence; were they all to pass in review, and expect the award of superiority from my decision, I should not hesitate; a moment be the prize assigned to this amiable candidate, which has so eminently distinguished and so highly dignified herself, by bearing such a remarkable resemblance to the righteous branch; the plant of renown.

Flowers—bright Flowers!—how many a memory springs
Back to the heart, in silent hours, and brings
The vivid crowding thoughts of hopes and fears,
The rainbow colour'd dreams of other years.

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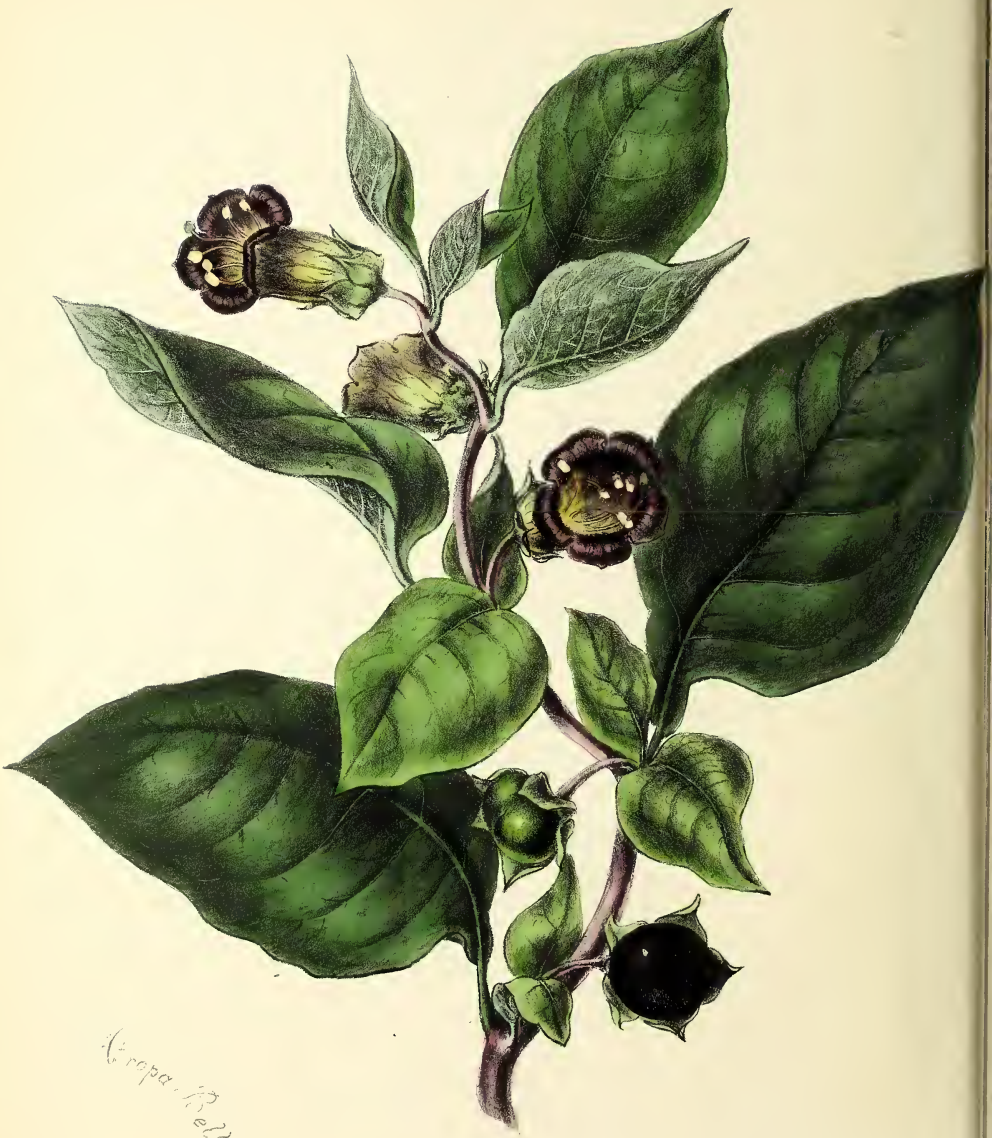


Atropa Belladonna

ATROPA BELLADONNA.——DEADLY NIGHTSHADE.

Class Fifth, PENTANDRIA.—Order First, MONOGYNIA.

Natural Order, SOLANEÆ.———THE NIGHT-SHADE TRIBE.

Atropa Belladonna, the Dwale, or deadly Night-shade, (the Solanum lethale, maniacum, or furiosum, of the older writers,) is one of the most powerful of our native narcotic poisons: and its various synonymes are truly expressive of its strangely fatal powers. Its present generic name is a slight variation of Atropos, one of the evil destinies, and a derivative of α and τρεπω, thus signifying the inflexible, and being indicative of the inevitable fate of such as become subject to its influence. The modern specific name Belladonna, in the Italian language, signifies a beautiful woman; and was bestowed on this plant, in consequence of the use once made of its berries by the Italian ladies as a cosmetic; and older ones, lethale, maniacum, and furiosum, allude to the frantic delirium, nay, madness, which precede death when it is taken in over doses. From the tempting appearance of its black, shining, cherry-like fruits, accidents have frequently happened to children and others who have eaten it, being ignorant of its deleterious properties.

Koestler, of Vienna, has placed upon record the symptoms which occured in five persons of different ages, who ate more or less freely of the berries of this fatal plant; they were a man and his two sons, one a boy nine years old, the other five years of age, and two older daughters. The younger children ate the most, and in them the phenomena were the most marked; they became restless and delirious, complained of pain in the head, giddiness, dimness of vision, and subsequently loss of sight. The pupils were much dilated, the restlessness uncontrollable, but the wanderings all on lively subjects. There were observed frequent spasmodic contractions of the muscles of the eye-balls, and of the throat, especially of the latter, whenever any attempts were made to swallow; the phenomena, on the whole, bearing a strong resemblance to the symptoms of mania.

But a still more important record is that of M. Gaultier de Claubry, who relates the case of 150 soldiers who were poisoned by it near Dresden. (Sedillot's Journ.) The cases of six soldiers, likewise poisoned by this deadly plant, are given by Mr. Brumwell, (in the Lond. Med. Observations and Inquiries,) and in most of them the delirium was extravagant, and commonly of the most pleasing kind, sometimes accompanied with immoderate and uncontrollable paroxysms of laughter, sometimes with constant talking, but occasionally as in the soldiers, with complete loss of speech.

The poisonous qualities of Belladonna reside in every part of the plant, but chiefly predominate in the fruit: the berries are said to be less pernicious than the leaves; and although one, or even half of one, has produced death, Hatter informs us that he has seen a fellow student eat three or four with impunity. Dr. Paris, in his Synoptical Tables of poisons, remarks that Belladonna is one of the narcotico-acrid class, which not only exert 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 over-dose it produces 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?"

Sauvages (Nosel,) supposes that the Belladonna was the plant which produced such strange and dreadful effects upon the Roman soldiers during their retreat (under the command of Antony,) from the Parthians; they are said to have "suffered great distress for want of provisions, and were urged to eat unknown plants; among others they met with an herb that was mortal; he that had eaten of it, lost his memory and his senses and employed himself wholly in turning about all the stones he could find, and after vomiting up bile, fell down dead."—Plutarch's Life of Antony. Buchanan relates that the Scots mixed a quantity of the juice of the Belladonna with the bread and drink which by their truce they were to supply the Danes with, which so intoxicated them, that the Scots killed the greatest part of Sweno's army while asleep.

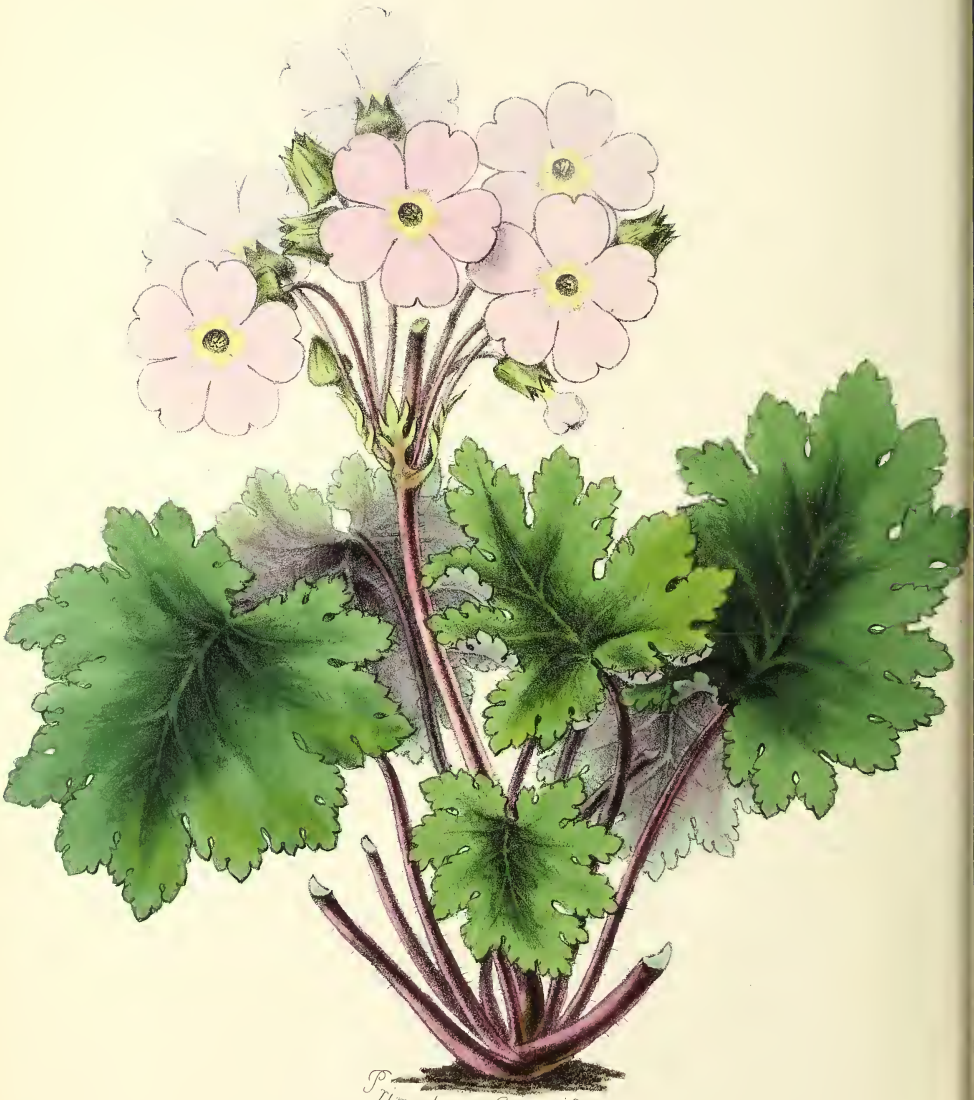
The active properties of Belladonna reside in a salifiable base named *Atropine*.

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 head-aches, 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 entirely abstained from further experiments. He once tasted a small quantity of the sulphate of Atropine—it was merely saline. He was quickly attacked with violent head-ache, shaking in the limbs, alternate sensations of heat and cold, 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 pupils; he also found that lime water produces the same effect.

Belladonna has been much extolled as a remedy in hooping cough, and from its exhibition being accompanied by symptoms resembling those of scarlatina, it has been recommended as a preventive against that disorder, and it does really seem, on experiment, to render persons insusceptible of the infection of scarlet fever.

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.

The Belladonna is a perennial plant, flowering in June, and July, ripening its berries in September, and rises to the height of three or four feet. It is generally found in shady lanes, and hedges; in the neighbourhood of villages, and ancient ruins, and very luxuriantly amongst the ruins of Furness Abbey, in consequence of which, the valley is called the vale of Night-shade.


Primula Sinensis

PRIMULA SINENSIS.——CHINESE PRIMROSE.

Class, PENTANDRIA.—Order, MONOGYNIA.

Natural Order, PRIMULACEÆ.——THE PRIMROSE TRIBE.

Primula is derived from the Latin Primus, first, from its early flowering; hence its English name also, Prime rose, now contracted to Primrose.—Sinensis, from Sinæ, the name of an ancient people, who are supposed to have inhabited that part of the Chinese Empire now called Cochin China. This pretty plant was first taken notice of by the Horticultural Society, in the year 1819, when a drawing of it was received from John Reeves, Esq. a corresponding member, residing at Canton. Subsequently a plant, and seeds, also, were sent off by him to the Society; the plant perished during its passage, and the seeds did not vegetate. Since that period it has been introduced by Captain Rawes. This beautiful acquisition to our green-houses was received from China, and first cultivated with success in this country by Thomas C. Palmer, Esq. of Bromley, in Kent.

Its manner of flowering is particularly elegant, for out of a simple umbel or head of flowers, rises a distinct scape or stalk, supporting a second umbel, and from this is produced a third, and sometimes a fourth, by which peculiarity, and its free increase of flowering side shoots, it remains in bloom during the greater part of the year, but is in its greatest beauty in the latter part of autumn, winter, and spring. Thus, with a few of our vegetable favorites we may still contrive to ornament our vases and rooms with a variety of forms, beautiful tints, and delightful perfumes, thus enlivening the dreary months of winter. The Chinese Primrose may be considered a half hardy plant, as it has occasionally stood our winters in the open air. It may be propagated very readily by offsets, and flourishes exceedingly in a pot of compost, made with equal parts of peat, rich loam, and sand, or it may be planted in a warm dry border of light soil, and have the protection of a hand glass during severe frost. Seeds are produced very freely by the Primula Sinensis, and from them young plants may be propagated in abundance, and with little trouble. They should be sown as early as March, in pots of light rich earth, placed in a hot-bed, and the young plants when large enough, should be potted singly, and be gradually inured to the open air, but they will require occasional shade in the summer. The protection of the cold frame is necessary for them during the first winter of their growth, and in April, part may be removed to dry parts of the borders for flowering, and part may be retained in pots, as portable summer or winter ornaments. They are perennial plants, and grow from six to twelve inches high—should be well watered, but not over the plant, as it is apt to rot at the crown. The whole of the Primrose tribe rank among the most esteemed objects of culture.

Flowers, the joy of nature, have always been the symbols or representatives of joy. It is evident that these in particular are formed to please mankind, for no eyes but his can enjoy their beauties. Animals never seem to be affected with pleasure, when they behold them, whereas, man amidst a crowd of objects and riches that surround him, distinguishes, and pursues the flowers with a peculiar complaisance.

Bring flowers, young flowers, for the festal board,
To wreathe the cup ere the wine is pour'd;
Bring flowers! they are springing in wood and vale,
Their breath floats out on the southern gale,
And the touch of the sun-beam hath waked the rose,
To deck the hall where the bright wine flows.

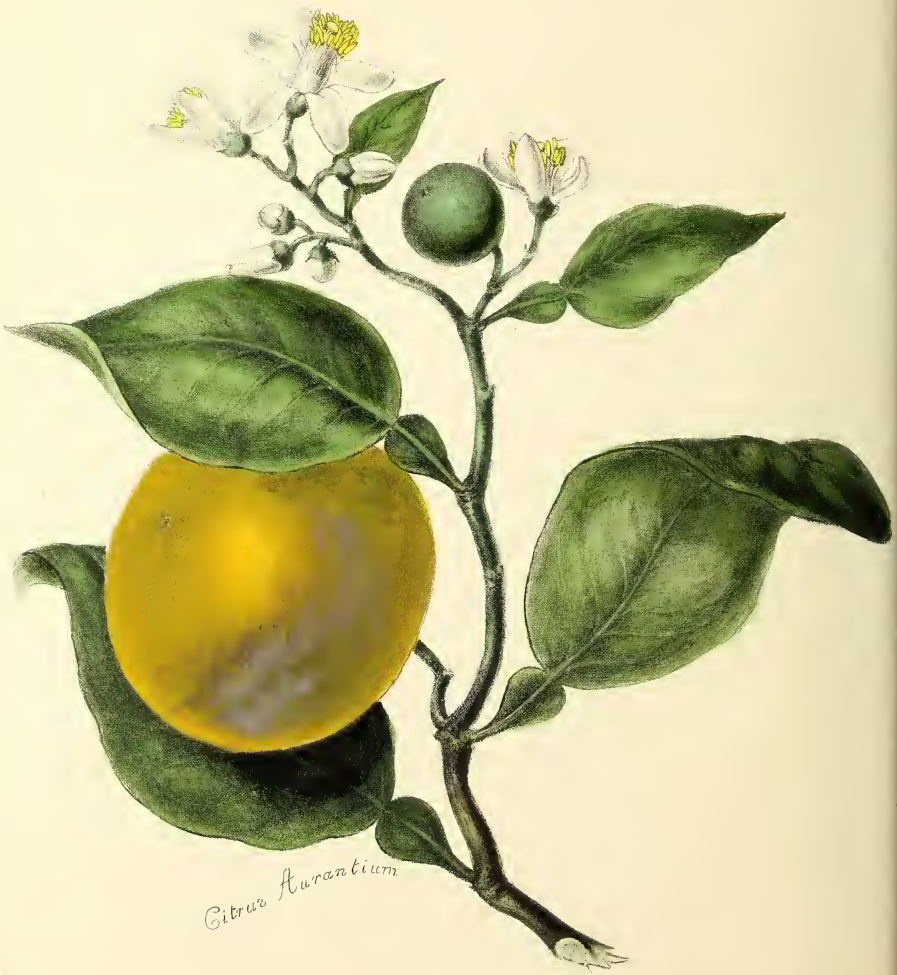
Bring flowers to strew in the conqueror's path—
He hath shaken thrones with his stormy wrath!
He comes with the spoils of nations back,
The vines lie crush'd in his chariot's track,
The turf looks red where he won the day—
Bring flowers to die in the conqueror's way!

Bring flowers to the captive's lonely cell,
They have tales of the joyous woods to tell;
Of the free blue streams, and the glowing sky,
And the bright world shut from his languid eye;
They will bear him a thought of the sunny hours,
And a dream of his youth—bring him flowers, wild flowers.

Bring flowers, fresh flowers, for the bride to wear!
They were born to blush in her shining hair.
She is leaving the home of her childhood's mirth,
She hath bid farewell to her father's hearth,
Her place is now by another's side—
Bring flowers for the locks of the fair young bride!

Bring flowers, pale flowers, o'er the bier to shed,
A crown for the brow of the early dead!
For this through its leaves hath the white rose burst,
For this in the woods was the violet nurs'd!
Though they smile in vain for what once was ours,
They are love's last gift—bring ye flowers, pale flowers.

Mrs. Hemans.



Citrus Aurantium

CITRUS AURANTIUM.——SWEET ORANGE.

Class Eighteenth, POLYADELPHIA.—Order Third, ICOSANDRIA.

Natural Order, AURANTIACEÆ.——THE ORANGE TRIBE.

The Orange tree is an evergreen, originally a native of the warmer parts of Asia, though it has been long naturalized in the south of Europe, as well as in the West India islands, and the tropical parts of America. The specific name is derived from aurum, gold, from the colour of the fruit. It is supposed by some to be also indigenous to the Canary islands or Hesperides, and its fruit to be the golden apples which the daughters of Hesperus caused to be so strictly guarded by a dragon: under this idea Ventenat changed the name of the natural order to which it belongs to Hesperideæ, and hence, likewise, the fruit is called Hesperidium:

> "Thus was this place,
> A happy rural seat of various view:
> Groves whose rich trees wept odorous gums and balm;
> Others whose fruit burnish'd with golden rind,
> Hung amiable, Hesperian fables true,
> If true, here only, and of delicious taste:—Milton.

The orange is supposed to have been introduced into Italy not earlier than the fourteenth century, above a thousand years after the citron. Parkinson, writing in the beginning of the seventeenth century, says, "The orange hath abiden with some extraordinary looking and tending, when neither citron nor lemon trees could be preserved any length of time." The orange trees he alludes to, were those of Beddington, in Surrey, introduced from Italy by a knight of the noble family of the Carews, and the first that were brought into England; they were planted in the open ground and placed under a moveable cover in the winter months. Sir Francis Carew is the knight above referred to, who introduced orange trees into England, in the reign of Elizabeth, but whether he imported plants, or raised them from seeds brought home by Sir Walter Raleigh, has not been satisfactorily ascertained. These were very fine trees, fourteen feet high, the girt of the stem twenty nine inches, and the spreading of the branches one way nine feet, and twelve feet another. Evelyn informs us that they were neglected in his time during the minority of their then owner; they were killed by the great frost of 1739—40; they were planted before 1595.

In this country the orange is chiefly prized as a green-house plant, and there are some splendid specimens in the conservatories at Nuneham Courtenay, in Oxfordshire, at Smorgony, in Glamorganshire, at the Wilderness in Kent, and at other places. "In the south of Devonshire, and particularly at Salcombe, one of the warmest spots in England, Loudon says, there may be seen in a few gardens, orange trees that have withstood our winters in the open air for upwards of a hundred years; the fruit is as large and fine as any in Portugal. Trees raised from seed and inoculated on the spot, are found to bear the cold better than those which are imported. In our hot houses the trees produce their pure white and very fragrant flowers in June, and after the first season of flowering, blossoms and fruit appear together on the same plant, the latter remaining a year, or fifteen months, on the tree before it becomes ripe." As a desert fruit the orange is well known. The varieties most esteemed are the China, Portugal, and Maltese. The fruit is also used in confectionary, both ripe and when green and not larger than a pea; it forms various liquors and conserves, either alone or with sugars, wines, or spirits. In cooking it is used to perfume a number of dishes. It is used to form various perfumes and pomades, and the flowers distilled produce orange water, used in cooking, medicine, and as a perfume; but the chief use of the sweet orange is for desert. There are nineteen varieties of the orange enumerated by Risso. All the species of Citrus may be propagated by seeds, cuttings, layers, by grafting, and budding. The object of raising plants from seed is stock for grafting or budding, or for new varieties. Pruning orange trees in England does not differ from that given to other greenhouse plants, and the consequence is handsome bushes or trees. But when orange trees are cultivated for the sake of their fruit, the branches ought to be kept thin, so as to admit of sun and air. The blossoms of most of the Citrus kind are produced in the form of terminating peduncles

on the wood of the current year, and hence the object of the pruner ought to be, to encourage the production of young wood in every part of the tree. In France they thin the flowers, which by that means they are enabled to use for distillation. The thinned fruit is used in confectionary. The thinning of the fruit, however, will depend upon the state of the trees; those at Bromley Hill in Kent, never require any thinning, where the trees are very fine, and loaded with peculiarly large fruit. The coccus and red spider are the chief insects injurious to the citron tribe: both to be removed by water applied with a brush or sponge. Mr. Mean, early in March, when he top-dresses his plants, applies a copious washing with the engine; then shuts up the house close for three or four hours, which produces a strong heat, as high as 70° which effects the destruction of the red spider, while the stems and leaves are wiped with a wet sponge, to remove other insects and dirt. At Rienes in France, where the fruit of the orange is reared for sale, it is gathered every year, generally in May. If not gathered then, it will hang on the tree for two or three years longer; but when the young fruit is green and swelling, the old ripe fruit becomes somewhat shrivelled, and almost void of juice. But as the new fruit begins to arrive at maturity, the juice begins to return to the old fruit, so that both old and new crops are in perfection the following May. In this way at Genoa the fruit is sometimes allowed to remain on three years, and being then gathered, has a peculiar sub-acid sweetness and flavour, and is sold at a higher price. In conservatories the orange tree generally requires fifteen months to ripen its fruit, and hence both green and ripe fruit are together on the tree. In gathering for the table in this country, the fruit should be carefully cut off with a few leaves attached, and thus garnished sent to the desert. By allowing the fruit to remain, the trees will at all times have green and yellow fruit, which, with the shewy leaves and fragrant white blossoms, form in spring, a charming ornament. The wood of the Citrus tribe, is universally hard and compact; they abound in a volatile, fragrant, bitter, exciting oil, if to this be added the excellence of their wood, and the fragrance and beauty of their flowers, I know not if an order more interesting to man can be pointed out. The productiveness of the common orange is enormous. A single tree at St. Michael's has been known to produce 20,000 oranges fit for packing, exclusive of the damaged fruit and waste, which may be calculated at one third more.

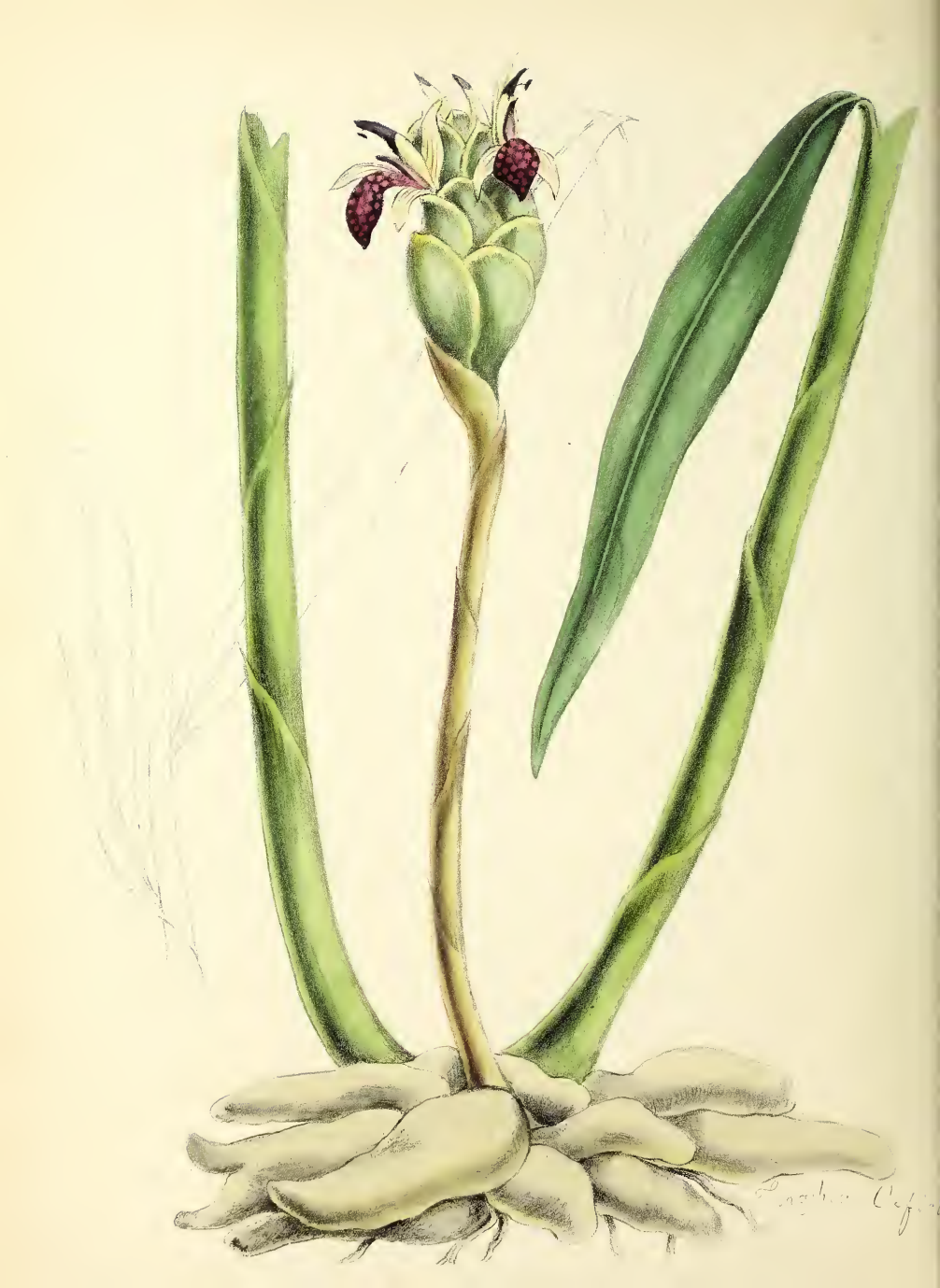
The China Orange contains a large quantity of saccharine matter and mucilage, united to an agreeable malic acid; hence it is much employed as a wholesome, cooling, and antiseptic article of food for the sick, particularly in febrile, inflammatory or scorbutic effections. Eaten, however, in too large a quantity, the orange is liable to produce great disorder of the stomach and bowels, colic, diarrhœa, and cholera; and, like other sub-acid fruits, is hurtful in calculous complaints. This country is chiefly supplied with oranges from the Peninsula, where they are grown for exportation; they are likewise brought in great perfection from Malta, Italy, the West India Islands, and other places, but the best come from the Azores, Portugal, and Spain. The fruit is imported in slight chests and boxes, and each orange carefully wrapped in a separate paper. The orange trade carried on by this country is (as Mr. M'Culloch observes) of very considerable value and importance. Oranges are never much more, and often much less expensive than most of our superior or even common domestic fruits, while they are perhaps the most refreshing and wholesome of those of warmer climates, and brought here in such abundance and perfection, as to give a tropical character to our markets and deserts. It is believed that fully a third of the whole quantity imported is consumed in London and its environs, which must on the whole have a very beneficial effect on the health of so large and densely populated a town. It is not possible to form any estimate of the number of persons employed in the importation and sale of oranges, but they must certainly be great.

Orange trees require a large share of air and light; the soil should be rich and light. At Genoa and Florence they are grown in a strong yellow clay, richly manured; this is considered by Italian gardeners to be best suited to the Orange tribe.

Height, 10 to 30 feet.—Flowers, May, July.—Cultivated, 1595.

The orange, with a vernal face
Wears ev'ry rich autumnal grace;
While the young blossoms here unfold,
There shines the fruit like pendent gold.
Citrons their balmy sweets exhale,
And triumph in the distant gale.

Cotton's Vision of Pleasure.



ZINGIBER OFFICINALE.——NARROW-LEAVED GINGER.

Class First, MONANDRIA.—Order First, MONOGYNIA.

Natural Order, SCITAMINEÆ.———THE GINGER TRIBE.

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 Indian 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 stake is perennial, tuberous, fleshy, of a compressed roundish form, covered with an ash-coloured tegument, and sending off many stout fibres. The whole herb is smooth, and partakes of the hot, gratefully aromatic flavor of the root.

The rhizomata of all the Zingiberaceæ contain fæcula, which, however, is rendered unfit for ordinary food, and can only be used as a condiment, by the quantity of pungent, resinous, and aromatic oily matter it contains; in some, however, as Curcuma angustifolia, the spicy flavor is lessened, and from it an excellent kind of arrow-root is prepared.

The Greek name for ginger, Ζιγγιβερι, is evidently derived from *Zungebeel*, its Persian appellation; and as it is indigenous at *Gingi* in China, it is supposed by some persons to have obtained its English name from that place, although *zingiber* and *ginger* are so much alike, that the one might be assumed to be a derivative of the other.

Ginger is a native of many eastern countries, but it 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 Indian 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 impatient of these our northern regions, as myself haue 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 from the West Indies, as from Barbarie, and other places; which haue sprouted and budded forth greene leaves 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."

The plant 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, beeause 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."

The spice was common in Shakespeare's time, and, we believe, for centuries previously: in Twelfth Night, when Sir Toby says "Dost thou think, because thou art virtuous, there shall be no more cakes and ale?" the clown adds, "Yes, by Saint Anne; and ginger shall be hot i' the mouth too."

Experience shows that in situations where ginger is extensively grown, 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. The bleached ginger, now so much esteemed, owes its whiteness to the action of chlorine; and although a more elegant, or rather a more delicate looking spice, it is far less aromatic than the ordinary white or black sorts.

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 occasionally employed; but it seldom requires more than three syrups. The shifted syrups are diluted, and made 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.

Chemical Analysis. According to the experiments of M. Morin, ginger contains a resinous and subresinous matter; a dark blueish green essential oil, acetic acid, acetate of potash, osmazome, gum, some vegeto-animal matter, sulphur, starch, and lignin. In Jamaica ginger the starch is very abundant.

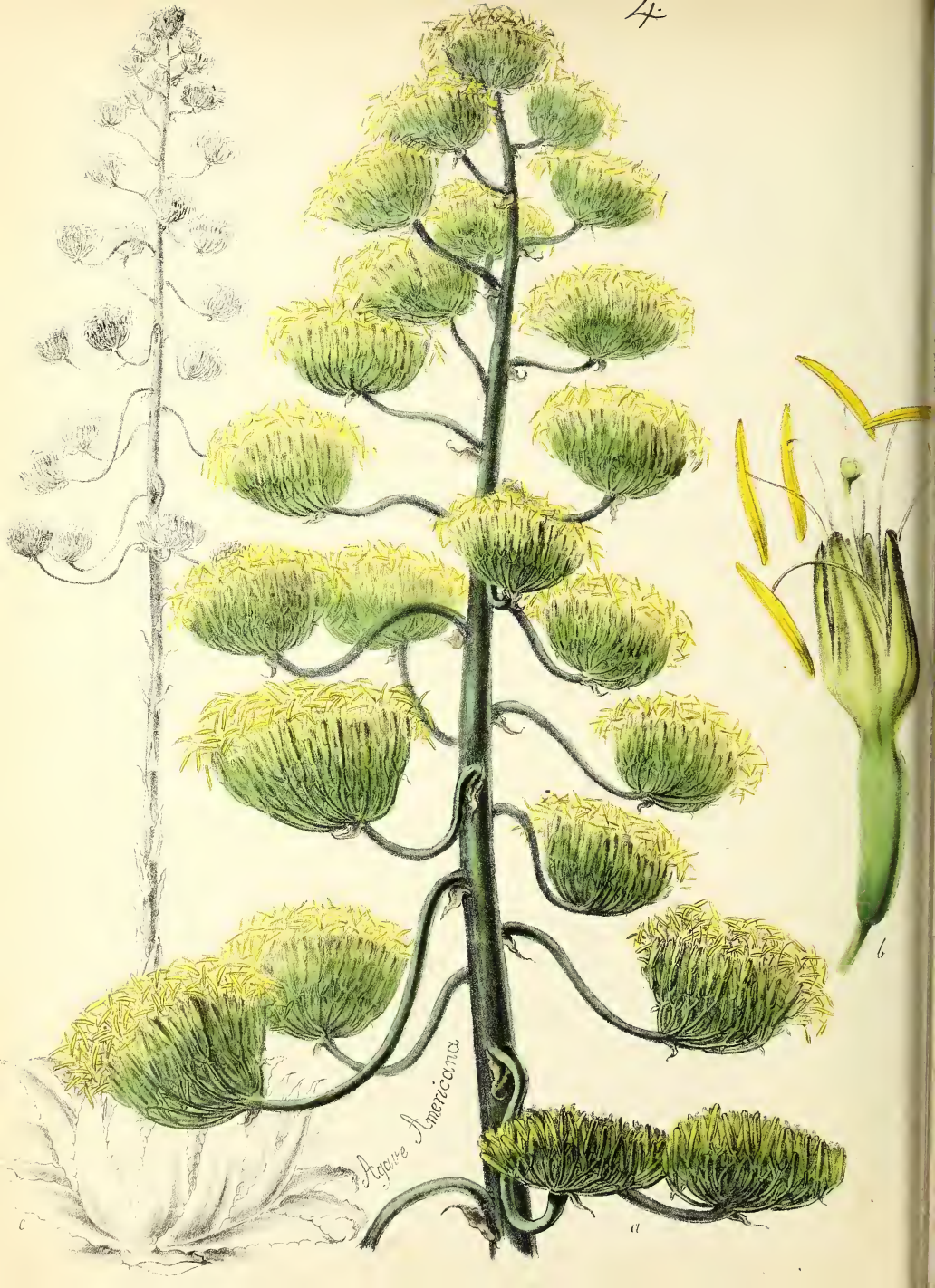
Qualities. The active matter of this root is yielded to alcohol, and in a great measure to water. It affords, by distillation, a small quantity of essential oil, upon which the flavour of ginger depends; while its pungency appears to reside in a resino-extractive matter, united with a great quantity 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, tympanites, and some forms of dyspepsia. It also acts as a sialagogue, when chewed: tooth-ache is therefore sometimes relieved by it, and by many persons 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 that the natives eat it freely in salads. In China green ginger is commonly seen in the vegetable markets, and is there eaten as a common potherb. The ginger tribe may be considered as almost exclusively tropical plants, flourishing only in hot countries, hardly any of them being found without the tropics.

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

Height; leaf stalks about three feet, flower stalks about a foot.


Agave Americana.
b
c
a

AGAVE AMERICANA.—AMERICAN ALOE.

Class VI. HEXANDRIA.—Order I. MONOGYNIA.

Natural Order, BROMELIACEÆ.———THE PINE-APPLE TRIBE.

Fig. *a*, Represents a portion of the flowering stem. *b*, Flower of the natural size. *c*, The character of the plant in its flowering state.

The different species of *Agave*, (αγαυος admirable) especially the *A. Americana*, or American aloe, have long been favourite greenhouse plants in England, and have even been acclimated to the southern parts of Europe. Indeed, so essential an ornament is the American agave considered in Italy, that near Milan, and in other parts of Lombardy, where it will not endure the winter, imitations of it are made, and so well constructed and painted, that they are usually mistaken for real plants. The old and absurd notion that the Agave flowers only once in a century, is scarcely worth contradicting. Several have blossomed in the neighbourhood of London within the last few years, and been made the subjects of public exhibition. The slowness of the general growth of the foliage, and the rapidity with which these plants send up their flowering stem, (fifteen or twenty feet in height, within the space of a few weeks,) is a circumstance worthy observation. In the West Indies, and even in Spain, Portugal, and Sicily, hedges of Agave are common.

The Agave Americana abounds with sap, which flows freely from wounds made either in the roots or the leaves, even for months together. This sap contains much sugar, which is converted into syrup, or obtained in a solid form, by evaporation. When allowed to ferment, this juice becomes changed into a sort of wine called *pulque;* but large quantities are consumed in an unfermented state, the plants being tapped, and bucketsful carried to the markets daily.

Agave Americana is not an aloe, though it goes by the name. The true aloes belong to another natural order, the Asphodeleæ, which are named after asphodel, or king's spear, of which there are several varieties, natives of the south of Europe. That family all contain active principles, some of which are merely pungent, as in the onion tribe; others mild, by being blanched underground, as in common asparagus; and others, again, are strongly medicinal, and used as drugs; as the aloes of Zocotora and Barbadoes. Some of that family grow to be very large trees, as, for instance, the dragon tree (Dracæna Draco.) The Agave belongs to the pine apple tribe (Bromeliaceæ.) The whole are natives of America, though many of them have been transplanted to other parts of the world. The pine apple is well known as the most exquisitely flavoured fruit that is produced in our hot houses; and all that branch of the order are very fragrant, so that in their native countries, where they grow, though not rooted in the earth, they are much used for ornamenting the balconies of houses. The agave bears some resemblance to the pine-apple in its leaves, only they are thicker, stiffer, and less numerous; but it produces no edible fruit. The outside leaves stand round in a star, or crown, and the middle consists of a thick spire of leaves, so firmly twisted together, that the edges of the one impress the others with a seal. The points are armed with very strong spines; so that the plant is truly formidable, and answers well for hedges, only it occupies considerable breadth. With us it is cultivated only as an ornamental plant, and is generally set in large pots or tubs, though it bears in the open air in the milder districts, all the year round. Indeed, it is apt to suffer more from the constant soaking of the rain, which gets into the central spire and rots the plant. The varieties with striped leaves are most handsome; but they do not flower so readily. Indeed, none can be made to flower in this country without artificial heat. The scape, or flowering stem, rises from the centre of the tuft of leaves; it is smooth and green, and the branches that bear the individual clusters of flowers come off very gracefully in double curves, which have the bend downward near the stalk, and upward near the flowers. The appearance is not unlike that of a majestic candlestick, with successive branches, for a great portion of its height, and tall as the stem is, the form of the leaves gives it the appearance of great stability. Tropical America is the native habitat of the plant, but it abounds in the dry and warm places of the south of Europe, along the sandy shores of the Mediterranean, and especially in the south of Portugal, and in the dry districts on the confines of Por-

tugal and Spain, so as to give a tropical appearance to European scenery. Like most plants which grow in very hot and dry places, the rind or epidermis of the leaves resists powerfully the action of heat, so that the interior of the leaves is very juicy. The juice contains a good deal both of alkali and oil (the ingredients of which soap is composed,) so that in some places of the peninsula, it is used as a substitute for soap; the pulp forming a lather with water. Cattle are also fed on the sliced or bruised leaves, at those seasons when the pastures are burnt up by the drought. So that it is a useful plant even in those parts of Europe where the vegetation of more temperate climes is apt to fail. In Mexico, it is far more useful; and is, indeed one of the most valuable products of the soil, answering some of the purposes which are answered by rye in the north of Europe, barley in the middle latitudes, and the vine toward the south. The wines and spirits of the country are prepared from it; and though their flavour is not much relished by Europeans, they are in high estimation with the natives. When the leaves have come to their full size, and the flower stalk is about to spring up, the heart of the plant is scooped out, and the outside left in the form of a cup. That cup soon fills with the juice, which is removed successively, till no more can be obtained, and the remaining leaves, as well as those that are cut out, are dried for fuel. The juice is set to ferment; and when it has undergone that process, it is the Pulqué, or Mexican beer. It soon gets acid, and even rancid, from the quantity of oil; but the natives relish it. When recently made, it is said to be much more palatable, and probably it does not become unpleasant sooner than the weak and imperfectly fined malt liquors of this country do in the hot season. The juice of the Agave is also distilled into an ardent and intoxicating spirit, called Mercal, or Vino Mercal, in which the inconsiderate indulge to the same excess as they do in spirits from grain, potatoes, beetroot, and other vegetables, in Europe. The people of all countries are too fond of preparing such beverages; thus the natives of India lay the palm trees under contribution for their arrack; and the hemp, for that still more intoxicating and pernicious liquid which they call Bang. The fibres of the Agave are tough and straight, and they are sometimes used as cords; but the proper cordage of the tropical Americans is not made from them; but from the fibres of some of the wild Bromelias, or from the *coire*, or fibres, which surround the shell of the cocoa nut.

A specimen of the American aloe, exhibited in flower a short time ago at the Colosseum, in Regent's Park, London, was about twenty-five feet high. This plate is from a drawing made of the Agave Americana, shown January last, on the grounds of the intended Garden of the Royal Botanical Society, in the inner circle of the Regent's Park, which plant was said to be thirty feet high, save two inches. The panicle, or bunch of flowers, according to the habits of the tribe, fade off at the bottom as others come into flower at top. When first the gardener observed the leaves of this plant begin to droop, he thought it sickly, but on examination discovered in the centre of the plant, a small head shewing for flower, which grew seven inches in twenty four hours. Having acquired its full growth, it finally produces its gigantic flower stem, after which it perishes. This stem sometimes is as much as forty feet high, and continues to flower for two or three months in succession. On this Agave, were twenty six bunches of flowers, of which one was accidentally broken off on removal from Kentish Town, and each bunch contained about a hundred flowers. The leaves when we saw it had undergone considerable mutilations from the visits of the curious, the fibres of the leaves being torn or cut away, to mark handkerchiefs, &c., the largest of the thorns for cribbage pegs, &c. many without doubt, believing in the popular opinion of its blossoming only at the end of one hundred years. The period at which the plant arrives at maturity varies, according to circumstances, from ten to fifty, or even seventy years. The leaves are about six feet long, and each leaf will continue to exist for many years, so that but a small number have withered away by the time the plant has acquired its full maturity. The dried flowering stems are an almost imperishable thatch, and finally the centre of the flowering stem split longitudinally is by no means a bad substitute for an European razor strop, owing to minute particles of silica forming one of its constituents.

In the year 1818, on the Isola Madre, in the Lago Maggiore, was a fine Agave Americana in bloom: the plant, which had maintained possession of a cliff in the rock, on the verge of the water, carried a flower stalk twenty-seven feet high, and measured twenty-two inches in circumference at the base; its flowering canopy was one of the most imposing spectacles ever beheld.

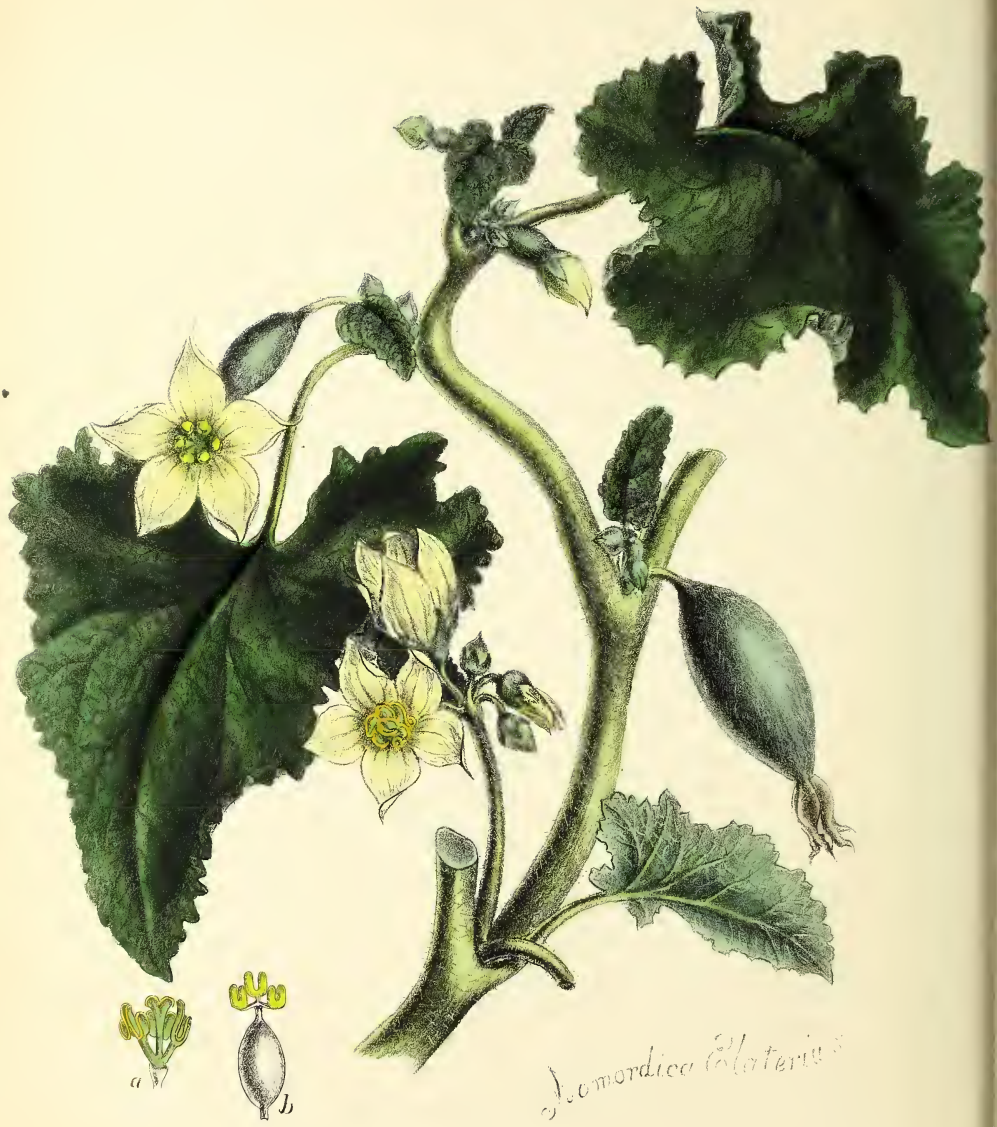
An agave Americana flowered, sometime ago, at the seat of the Marquis of Westminster, which had a flower stem twenty-five feet high; there were 3000 flowers sustained on thirty-two flower stalks, branching from the main pedunculus, or flower stem, like a magnificent chandelier.

Its native country is America within the tropics, from the plain nearly on a level with the sea, to stations upon the mountains at an elevation of between 9000 and 10,000 feet; from these regions they have migrated eastward in such numbers, as to have established themselves as part of the present flora of the west coast of Africa. They are propagated by shoots.

Plants, perhaps suffer more from invermination and the attacks of insects than from any other means; yet they are subject to other diseases, both of a sporadic and epidemic kind. Some of these even bear a likeness to animal disorders, and have, therefore, received similar names, of which Wildenow furnishes a catalogue. Thus, plants are affected with atrophy, tabes or consumption, anasarca or dropsy, hæmorrhage, lepra, verrucæ, or warts, chlorosis, icterus, ulcerations, common gangrene, and necrosis, or dry gangrene, besides various kinds of deformities, wounds, mutilations, &c. &c. They are likewise subject, especially the cacti, to a peculiar kind of sudden death, called by the French "la mort," by which, when affected, a branch or even a whole plant is as rapidly destroyed as the use of a limb is lost, or death produced in animals by apoplexy.

Plants, although they will bear judicious pruning, resent barbarous operations, and even accidental injuries. In them, as in animals, contused wounds, especially contused and punctured wounds, are much more dangerous than incised ones; of this there was an example in the Apothecaries' garden at Chelsea. It was a splendid agave or American aloe; one of its leaves was pierced with the ferrule of an umbrella by a visitor. The parenchymatous substance became diseased; it sphacelated, and the mortification, which at first extended upwards, subsequently began to descend, and travel so rapidly towards the base, as to render amputation necessary. The operation was performed, but the mortification had previously extended in an insidious manner so far towards the centre that a fatal termination was probable. As an illustration of the vitality of plants, and their proneness to disease from injuries, no example could be more satisfactory; but I am sure I need not formally reprobate such wanton mischief. Experiments of all kinds are justifiable, but to destroy a noble plant like that, without any object to be attained, could only have been done through thoughtless ignorance, for I would not attribute it to any other motive.

The plant, upspringing from the seed,
  Expands into a perfect flower,
The virgin-daughter of the mead,
  Wooed by the sun, the wind, the shower;
In loveliness beyond compare,
  It toils not, spins not, knows no care;
Train'd by the secret hand that brings
  All beauty out of waste, and rude,
It blooms its season, dies and flings
  Its germs abroad in solitude.


a
b
Momordica Balsamina

MOMORDICA ELATERIUM.—WILD, OR SQUIRTING CUCUMBER.

Class XXI. MONŒCIA.—Order VIII. MONADELPHIA.

Natural Order, CUCURBITACEÆ.——THE GOURD TRIBE.

Wild Cucumber is a hardy annual, growing spontaneously on waste grounds, in the south of Europe; flowering in June and July. It appears to have been introduced into this country at an early period, and is mentioned by Gerarde in 1596. With us, it is seldom cultivated except for curiosity. A few acres, however, are raised annually at Mitcham, in Surrey, and some other places, for the sake of the fruit, which yields the well known *elaterium* of medicine.

From the root, which is large and fleshy, somewhat resembling that of bryony, issue several thick, round, rough, and trailing stems, divided into many branches, extending every way three or four feet, and destitute of tendrils: both male and female on the same plant: the male flowers stand on short peduncles, but the female sit on the germen. The fruit is watery, of a coriaceous texture, pendulous, oblong, of a greyish green colour, and closely set with short bristles. The seeds when mature are black. When ripe, the pepo bursts on being touched, and throws out, with great violence, the juice and seeds, through the hole at the insertion of the footstalk.—Fig. (*a*) represents the stamens; (*b*) the pistil and germen.

The term *elaterium* was used by Hippocrates to denote internal applications of a detergent or digestive nature, but more especially purgatives of a violent or drastic quality, from the word Ελαυνω, *agito, moveo, stimulo*, but by succeeding authors it was exclusively applied to the active matter which subsides from the juice of the wild cucumber, either on account of its purgative properties, or because its capsule, when ripe, suddenly bursts with violence, and emits its contents to a considerable distance. Hence, also, its name ‘ Squirting Cucumber.”

Qualities and Chemical Properties.—According to Lewis, all the parts of this plant are purgative; an opinion, which he appears to have borrowed from Geoffroy, who says, “radicum vis cathartica major est quam *foliorum;* minor vero quam *fructuum.*” Lewis observes further, that in Holland, an extract from the root in wine, is exhibited for the elaterium, and found equally efficacious. M. M. Coste and Willemet, also recommend the root to be given in doses of from fifteen to thirty grains; but the conflicting accounts respecting the effects of the substance improperly termed “ *extractum elaterii,*” (for it is not an extract, either in the chemical or pharmaceutical acceptation of the term, nor an inspissated juice, nor is it a fecula,) and the uncertainty with which different samples are administered, induced Dr. Clutterbuck to institute a series of experiments, from which it appears,

“ That the most active principle belonging to this plant, is neither lodged in the *roots, leaves, flowers,* nor *stalks,* in any considerable quantity; nor is it to be found in the *body* of the fruit itself, nor in the *seeds* contained within it; *it was only in the juice around the seeds, therefore, that it could be looked for; and here it will be found, as is evident from the following trials.*

“ This juice, as it first issues, without pressure, appears perfectly limpid and colourless. After it has stood for a short time it becomes turbid; and after some hours it slowly deposits a sediment, which, being collected and gently dried, without much exposure to light, is of a yellowish white colour, slightly tinged with *green.* When dried, it is very light and pulverulent. This is the real *elaterium,* and it is extremely active as a medicine; an *eighth* part of a grain seldom failing to purge violently, and often with vomiting previously. The quantity contained in the cucumber is exceedingly small. From forty cucumbers I obtained only six grains; so that a single cucumber contains about an ordinary dose. Half a bushel, charged at half a guinea in the market, furnished less than two drams of elaterium; hence we cannot wonder at the high price it bears in the shops. This, however, is unnecessarily enhanced by the mode of preparation, and its not being known distinctly in what part the active principle is lodged.

“ The juice after the elaterium had subsided, was evaporated to an extract. Two grains of this were given in *six* cases. In *two* of them it produced several stools; *one* was vomited, and was purged on the following day; *one* was vomited in half an hour without purging; and in *two* it appeared to produce no effect.

I gave five grains of a similar preparation, obtained from Apothecaries’ Hall, in *fourteen* instances. In *seven* of them it produced no effect; in *three* it appeared to operate gently by stool. Of the others there was no report.

"It appears from hence, that the juice, after the fecula, or *elaterium* has subsided, contains but very little of the active principle; and *that*, probably, from the fecula having imperfectly subsided.

"With regard to the *sensible* and *chemical* properties of the fecula, which subside spontaneously from the juice contained within the cucumber, as above described, and which alone appears to be the true elaterium, I have already observed that it is a light, pulverulent substance, of a very pale green colour, approaching to yellowish white. To the *taste* it is acrid and bitterish. The juice itself, as it escapes from the cucumber, readily inflames the skin of the fingers; and on getting accidently into the eye in one instance, it occasioned severe pain and inflammation, with an erysipelatous swelling of the eyelids, that continued till the following day.

"Much of this medicine, as it is ordinarily met with in the shops, is of a dark green colour, approaching to black: it is likewise compact and heavy, and breaks with a shining resinous fracture. This is usually prepared by strong pressure of the cucumber, and consists of course, in great part, of the ordinary juices, as well as the elaterium. It is very uncertain in its operation, and very weak, in comparison with that which has been properly prepared. The quantity is much increased by this mode of preparation; and hence it is sold at a much lower rate. The difference in price of this drug is extreme; the Apothecaries' Company charging sometimes as much as twelve shillings a dram, while it is sold at Corbyn's and some other shops, at four shillings. The quality, indeed, is superior at the Hall; but in no degree proportioned to the price. Yet I do not believe that either obtains an exorbitant profit; the difference arising chiefly from the mode of preparation, which, by the Apothecaries' Company, who adhere rigidly to the directions of the Pharmacopœia, is extremely wasteful, as I have satisfied myself by inspection.

"With respect to the *chemical* properties of this substance, I shall enter no further into these, than is connected with the purposes of pharmacy.

"*Water*, whether *hot* or *cold*, appears to have no action on pure elaterium. An infusion of eight grains, when filtered, produced no effect. Its insolubility in water, indeed, might be inferred from its spontaneous subsidence in the fluid: yet it is said, by Dr. Woodville, in his 'Medical Botany,' to be soluble both in spirit and in water. What it is that keeps the elaterium in a state of solution in the juice as first discharged, I have not ascertained."

For this problem, Dr. Thompson proposes the following solution. He says, "The insolubility of elatin in water suggests a query:—What keeps it in solution in the juice of the fruit? Were I to suggest an opinion, it would be, that elatin does not exist completely formed in the fruit; the fecula, which subsides when the juice runs out, is in part the consequence of an oxidizement of it; for it becomes turbid soon after it is exposed to the air; and it loses much of its activity or rather it does not become so active, when it is dried in a bright sun-shine, as when it is dried in the shade. Now we know that light abstracts oxygen from substances containing it; as for instance from metallic oxides, which are partially reduced by exposure to light; and we may thence infer, that substances, which would attract and combine with oxygen in the shade, may be prevented doing so in a bright light; and, therefore, in this case, owing to the superior attraction of light for oxygen, the fecula may be prevented from acquiring its due share of oxygen; and consequently from acquiring the peculiar state requisite for exerting its energy on the system.

"The *elaterium* procured from the spontaneous subsidence of the juice, without expression, and which may be considered as in a state of purity, dissolves almost entirely in alcohol. Of the best specimens from the Hall, spirit dissolves more than a half, while of inferior sorts, a *fourth* part is thus dissolved. The residue, after repeated affusions of spirit, is quite inert as a medicine The active principle therefore may be considered as of a *resinous* nature; by which I only mean, however, that it is soluble in alcohol, which it tinges of a pale green colour. When the spirit is slowly evaporated, a resinous looking extract is obtained, which is very inflammable, and which is extremely active as a medicine; the *sixteenth* part of a grain generally producing considerable purging, and often vomiting. When the dose was increased to one fourth of a grain, the effect was more considerable, and often took place in a very few minutes."

The foregoing details were communicated to the President of the College of Physicians, who requested Dr. Paris to report upon them. He accordingly, in conjunction with Mr. Faraday, entered upon a new series of experiments; "the results of which will show, that although Dr. Clutterbuck found that an *eighth* part of a grain of elaterium seldom failed to purge violently, yet strange as it may appear, that not more than one grain in ten of elaterium, as it occurs in commerce, possesses any active properties, and that this decimal part is a vegetable proximate principal, not hitherto noticed," to which Dr. Paris gives the name of *Elatin*. A full detail of these experiments has been published by him,* and he expresses the chemical composition of elaterium in the following manner:

* Vide Pharmacologia, edit. 6th, fol. 226.

Water	·4
Extractive	2·6
Fecula	2·8
Gluten	·5
Woody matter	2·5
Elatin } Bitter principle } . . .	1·2
	10 grains.

Dr. Paris further remarks,

"That the whole of the *elatin* does not separate itself from its native juice by spontaneous subsidence, and that on this account the supernatant liquor possesses some powers as a cathartic. We cannot be surprised, therefore, that the elaterium of commerce should be a very variable and uncertain medicine; for, independently of the great temptation which its high price holds out for adulterating it, which is frequently done with starch, it necessarily follows, that where the active principle of a compound bears so small a proportion to its bulk, it is liable to be affected by the slightest variation in the process for its preparation, and even by the temperature of the season; where pressure is used for obtaining the juices, a greater or less quantity of the inactive parts of the cucumber will be mixed with the *elatin*, in proportion to the extent of such pressure, and the elaterium will, of course, be proportionally weak. There is one curious result obtained in my experiments which deserves notice, *viz.* that there is a bitter principle in the elaterium, very distinct from its extractive matter, and totally unconnected with its activity, for I diluted the solution obtained in experiment G, and swallowed it, but it produced upon me no effect, except that which I generally experience upon taking a powerful bitter—an increased appetite; and yet notwithstanding this fact, when in combination with *elatin*, it is far from being inert, since this body is considerably quickened by its presence."

Mr. Barry has made some trials on the elaterium prepared according to the process of Dr. Clutterbuck, and found that out of ten grains of the first sample, 5·5 were soluble in spirit of the specific gravity of 809; of the second 6·2; and of the third 6·4; of that prepared by the same process at Apothecaries' Hall, six grains were soluble. The residue, insoluble in the spirit, was administered to a patient, and ascertained to be perfectly inert.

"Mention is made, by Bergius, of *two* kinds of elaterium, the *white* and the *black*. The *white* is prepared from the juice that flows without pressure from the fruit simply cut open. The juice is suffered to form a deposit, which is dried by the heat of the sun. It seems to be the precise substance which I have described above. *Bergius* says, it is dissolved by digestion in water, but this appears to be a mistake.

"The *black* elaterium is prepared from the expressed juice of the cucumber altogether, and of course contains a great deal of extractive and colouring matter along with the real elaterium. This black preparation, instead of being light and pulverulent, is said to be heavy and glutinous when masticated, and sticks to the teeth; it is irritating to the fauces. It dissolves in considerable proportion in *water*, but only partially in *spirit*. It is also deliquescent in some degree. The white is more *resinous*, the black *gummy*, in its properties.

"The mode of preparing the elaterium in different pharmacopœias is far from uniform, and the medicine varies accordingly, independent of adulteration. According as more or less *pressure* is used, the medicine will approach to the *black* or *white* species, described above. It appears, from the account I have given, that pressure is not at all necessary in order to obtain the elaterium, and can only serve to deteriorate its quality, and render the dose uncertain. It is in this way that I account for the large doses prescribed by some writers, without any caution. Sydenham recommends two grain doses without reserve; and Woodville extends the dose from half a grain to three grains. These quantities, where the medicine is in the most active form, would, I think, be often attended with danger.

"The method recommended by the London College, and which is strictly followed at Apothecaries' Hall, is the least objectionable, as it directs only the slightest pressure to be made use of. It is, however liable to objection in other respects, from it not having been known that the elaterium resides *exclusively* in the juice lodged in the hollow of the cucumber. Hence this has been often wasted and lost. Another source of waste, and that to a great amount, is the bursting of many of the cucumbers during their removal from the country.

"I have obtained the greatest quantity of the medicine by the following method:—

"The cucumbers should be gathered when nearly as ripe as possible, and without violence, that might endanger their bursting.* They should then be wetted by the affusion of cold water, that less of the juice when they are cut may adhere to the external surface. In this state they should be cut through longitudinally, and the juice allowed to strain through a fine sieve,

* The Dublin College directs them to be gathered *before* they are ripe; by this means the chance of bursting is avoided; but it is a question whether the medicine is equally active as at a later period.

placed in a large earthenware vessel. The seeds and surrounding pulp should be scooped out upon the sieve, and washed with repeated affusions of cold water, by which they will be freed from all adhering juice. Something will be saved also by afterwards rinsing the split cucumbers themselves in cold water, from which a portion of elaterium may be collected.

"After standing a few hours, a sediment is formed from which the clear liquor is to be poured off; it is then to be thinly spread on fine linen, and exposed to the air to dry: a gentle warmth may be employed without injury; but the access of sunshine destroys the fine green colour which the substance otherwise acquires."—*(Clutterbuck.)*

Since the foregoing experiments were tried by Drs. Clutterbuck, Paris, and Faraday, a further series of investigations has been made by Mr. Hennell, of Apothecaries' Hall, and Dr. Morries, of Edinburgh. From the researches of these gentlemen, carried on wholly independently of each other, it appears, that even the *Elatin* of Drs. Paris and Faraday is not a simple proximate principle, but a compound body, consisting of the true active ingredient now named *Elaterine*, mixed with a green resin-like matter, similar to chlorophylle or the colouring matter of leaves.

"Elaterine may be procured by evaporating the alcoholic infusion of Elaterium to the consistence of thin oil, and throwing it into boiling distilled water; upon which a white crystalline precipitate is formed, and more falls down as the water cools. This precipitate, when purified by a second solution in alcohol, and precipitation by water, is pure Elaterine. In mass it has a milky appearance. The crystals are microscopic rhombic prisms, striated on the sides. It is intensely bitter. It does not dissolve in the alkalis nor in water, is sparingly soluble in diluted acids, but easily soluble in alcohol, ether, and fixed oil. It has not any alkaline reaction on litmus. This substance, it is very evident, from the above condensed account, is a very different body from the *Elatin* previously mentioned." *

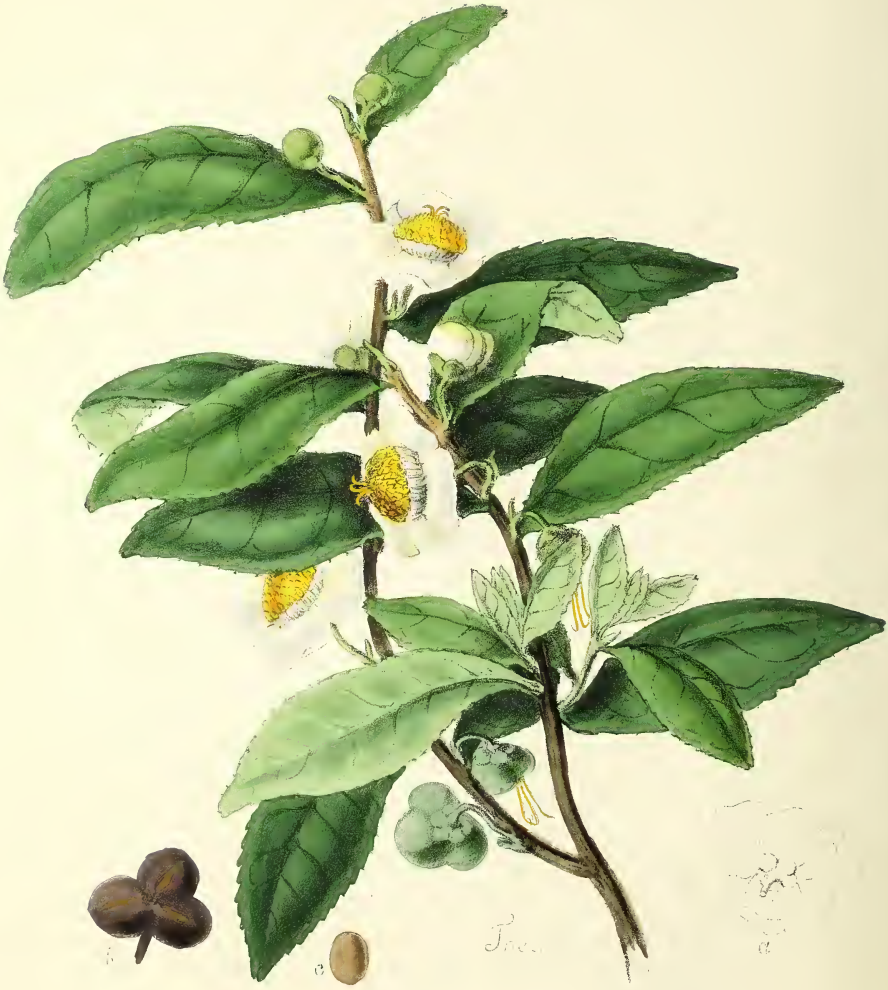
Elaterine, as it has been named by Dr. Morries, or, *Elateria* as it has been called by Mr. Hennell, may be procured from the Elatin of Drs. Paris and Faraday, by "acting on that compound body by ether, when a substance is left which is soluble in alcohol; and which on leaving the tincture at rest to spontaneous evaporation, crystallizes in acicular tufts. These crystals are nearly colourless, they are scarcely soluble in water, and the undiluted acids. They do not form neutral salts with acids. They consist of seventeen parts of carbon, eighteen of oxygen, and eleven of hydrogen."

"The activity of Elatin as a cathartic, is (continues Dr. Thompson) almost incredible; it operates violently when only one minim of an alcoholic tincture, consisting of one grain of *Elateria* dissolved in ninety-six minims of strong alcohol, is administered. Hence it operates in doses of less than the 96th part of a grain. This extreme activity has hitherto prevented this principle being employed medicinally in its pure state, as a cathartic, even in the alcoholic solution.

Poisonous Effects.—Elaterium very much resembles the Helleborus *niger* in its effects.

"Elaterine is a poison of very great activity. A tenth of a grain, as I have myself witnessed, will sometimes cause purging in man; and a fifth of a grain in two doses administered at an interval of twenty-four hours to a rabbit, killed it seventeen hours after the second dose. The best British Elaterium contains 26 per cent. of this active principle, the worst 15 per cent.; but French Elaterium does not contain above 5 or 6 per cent." These facts, as Dr. Christison continues, sufficiently account for the great irregularity in the effects of the ordinary drug, as a cathartic.

* Vide Christison, p. 525; Dr. Morries' Essay in the Edinburgh Medical and Surgical Journal, xxxv. 339; and Mr. Hennell's paper in the Journal of the Royal Institution, i. 592.



THEA.——THE TEA PLANT.

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

Natural Order, TERNSTRŒMIACEÆ.——THE CAMELLIÆ TRIBE.

Fig. *a*, Represents the back of a flower. *b*, A seed-vessel containing seeds.
c, The seed which yields an oil, which in some parts is used as sauce to food.

Thea (altered from Tcha the Chinese name for Tea.) All the different kinds of teas brought to this country from China are the produce of Thea Viridis, and the whole differences depend upon soil and climate, and the different ages and periods at which the leaves are gathered, and different modes of drying. Dr. Lettsom observes, that a green tea planted in the Bohea tea country will produce Bohea Tea, and on the contrary that a plant brought from the Bohea tea country, planted in the green tea country will produce green tea. The plant loves to grow in valleys, at the foot of mountains, and upon the banks of rivers, where it enjoys a southern exposure to the sun, though it endures considerable variations of heat and cold, as it flourishes in the northern clime of Pekin, as well as about Canton, and it is observed, that the degree of cold is as severe in winter as some of the southern parts of Europe. However, the best tea grows in a mild temperate climate, the country about Nankin producing better tea than either Pekin or Canton. In Japan the tea is planted round the borders of fields without regard to soil or situation, but as the Chinese export great quantities, they plant whole fields with it. The plants are raised from seeds sown where they are to remain. Three or more are dropped into a hole four or five inches deep; these come up without any further trouble, and require little culture, except that of removing weeds. The leaves are not collected from the cultivated plants until they are three years old, and after growing nine or ten years they are cut down, in order that the young shoots that will then rise, may afford a greater supply of leaves. The best time to gather the leaves is while they are small, young, and juicy. The first gathering of tea-leaves, according to Kampfer, commences about the latter end of February, when the leaves are young, and unexpanded. The second collection is made about the beginning of April, and the third in June. The first collection, which only consists of fine tender leaves, is most esteemed, and is called Imperial Tea. The second is called Tootsjaa, or Chinese Tea, because it is infused and drunk after the Chinese manner. The last, which is the coarsest and cheapest, is drunk by the lower class of people.

Besides the three kinds of tea here noticed, it may be observed, that by sorting these, the varieties of tea become still further multiplied. The tea trees that yield often the finest leaves grow on the steep declivities of hills, where it is dangerous, and in some cases impracticable to collect them. The Chinese are said to vanquish this difficulty by a singular contrivance. The large monkies which inhabit these cliffs are irritated, and in revenge they break off the branches and throw them down, so that the leaves are thus obtained. The leaves should be dried as soon as possible after they are gathered. The building, or drying-houses, contain from five to ten, or twenty small furnaces, about three feet high, each having at the top a large flat iron pan. There is also a long low table, covered with mats, on which the leaves are laid and rolled by workmen, who sit round it; the iron pan being heated to a certain degree, a few pounds of fresh gathered leaves are put upon it; the fresh and juicy leaves creak when they touch the pan, and it is the business of the operator to shift them as quick as possible with his bare hands, till they become too hot to be easily endured. At this instant the leaves are taken off with a kind of shovel, like a fan, and thrown on the mats before the rollers, who, taking small quantities at a time, roll them in the palms of their hands in one direction, while others are fanning them that they may cool the more speedily, and retain their curl the longer. This process is repeated two or three times, or oftener, before the tea is put into the stores, in order that all the moisture of the leaves may be thoroughly dissipated, and their curl more completely preserved. On every repetition the pan is less heated, and the operation performed more slowly and cautiously. The tea is then separated into the different kinds, and deposited in the store for domestic use or exportation. The country people cure their tea leaves in earthen kettles, which answer every necessary purpose at less trouble and expense than the process described above, and they are thus enabled to sell it cheaper. After the tea has been kept for some months, it is taken out of the vessels in which it was stored, and dried again over a very gentle fire, that it may be deprived of any humidity which remained, or it might have since contracted. That which is brought down to Canton undergoes a second roasting, winnowing, packing, &c. from whence it is sent to Europe.

The Chinese know nothing of Imperial Tea, Flower of Tea, and many other names which in Europe serve to distinguish the goodness and the price of tea, but besides the common tea they distinguish two

other kinds, viz. the Voui and Soumlo, which are reserved for people of the first quality, and for those who are sick.

We have two principal kinds of tea in Europe, viz. green tea, which is the common tea of the Chinese; (T. le Compte calls it Bing tea, and says it is gathered in April;) Bohea tea which is the Voui or Vou-tche of the Chinese, and which M. le Compte makes to differ from the green tea only by its being gathered a month before it, viz. in March, while in the bud. Others take it for the tea of some particular province, the soil being found to make as much alteration in the properties of tea as the time of gathering. As to the difference of flavour and colour peculiar to these two kinds, Dr. Lettsom thinks that there is reason to suspect that they are produced by art. As to the opinion that green tea owes its verdure to an inflorescence acquired from the plates of copper on which it is supposed to be curled or dried, there is no foundation for the suspicion, as the infusions undergo no change on the addition of volatile alkali, which would detect the minutest portion of copper by turning the liquors blue. On the whole, Dr. Lettsom thinks it not improbable that some green dye, prepared from vegetable substances, is employed in the colouring of the leaves of the green teas. And Newman suspects that the brown colour and flavour of the Bohea teas are introduced by art. Both convey their own particular colour to water, but to rectified spirits they both impart a fine deep green.

The process of gathering the tea is one of great nicety and importance. Each leaf is plucked separately from the stalk: the hands of the gatherer are kept clean, and in collecting some of the fine sorts, he hardly ventures to breathe on the plant. At a place called Udsi, in the Island of Japan, is a mountain, the climate of which is supposed to be particularly congenial to the growth of tea, and the whole crop which grows upon it is reserved for the sole use and disposal of the Emperor. A wide and deep ditch round the base of the mountain, prevents all access, except to the appointed guardian of its treasures. The shrubs are carefully cleansed of dust, and protected from any inclemency of the weather. The labourers who collect the leaves, are obliged, for some weeks previous, to abstain from all gross food, lest their breath or perspiration might injure the flavour; they wear fine gloves while at work, and during that period bathe two or three times a day.

Owing to the minute division of land in China, there can be few, if any large tea-growers; the plantations are small, and the business of them carried on by the owner and his own family, who carry the produce of each picking immediately to market, where it is disposed of to a class of persons whose business it is to collect and dry the leaves, ready for the Canton tea-merchants. *Don's General System of Gardening.*

The activity of tea chiefly resides in the fragrant and volatile parts, which stands charged as the cause of those nervous affections that are said to be produced or aggravated by the use of the infusion.

From Dr. Smith's experiments it appears, that green tea has the effect of destroying the sensibility of the nerves and the irritability of the muscles; and from the experiments of Dr. Lettsom it appears, that green tea gives out on distillation an odorous water, which is powerfully narcotic, but in a more recent state, as in China, it is still more powerfully narcotic, therefore the Chinese never use it until it is one year old or more, till its volatile parts are still further dissipated. It would therefore appear, that what are considered the finer teas, contain more of this narcotic principle, than what are considered the coarser kinds, especially the green teas, as the more odorous teas in this country often show their sedative powers, in weakening the nerves of the stomach, and the whole system. Its effects, however, seem to be very different in different persons, hence the contradictory accounts that are reported of these effects. The substitutes for tea used by the Chinese may be mentioned. A species of moss common to the mountains or shantung, an infusion of ferns of different sorts, and Dr. Abel thinks that the leaves of the common Camellia and oil Camellia may be added, and Kampfer asserts that in Japan, a species of Camellia, as well as Olea fragrans is used to give tea a high flavour. By far the strongest tea Dr. Abel tasted in China was that called Yutien, used only on occasions of ceremony. It scarcely coloured the water, and on examination, was found to consist of buds and half-expanded leaves.

Savory speaks of a sort of red tea, or Tartar tea, called Honan-tcha, which tinges the water of a pale red; it is said to be extremely digestive; by means of it the Tartars are said to be able to feed on raw flesh; the drink tea is made in China and the greatest part of the East, in the same manner as in Europe.

The Chinese are always taking tea, especially at meals, sometimes three, six, or ten times a day; it is the chief treat with which they regale their friends.

With regard to the commercial history of tea, it was first introduced into Europe by the Dutch East India Company, very early in the 17th century, and a quantity of it was brought over from Holland by Lords Arlington and Ossory, about the year 1666, at which time it was sold for 60*s.* a pound. But it appears, even before this time, drinking of tea even in public coffee houses in this country was not uncommon, for in 1660 a duty of 8*d.* per gallon was laid on the liquor made and sold in all coffee-houses. As tea has always held so principal a place in our intercourse with China, it requires some particular consideration as an article of commerce. We have seen before, that the fineness and clearness of tea are determined by the tenderness and

smallness of the leaf when picked. The various descriptions of the black diminish in quality and value as they are gathered later in the season, until they reach the lowest kind, called by us Bohea, and by the Chinese (Ta-cha) "large tea," on account of the maturity and size of the leaves. The early leaf buds in spring, being covered with a white silky down, are gathered to make Pekoe, which is a corruption of the Canton name Pa-ko, "white down." A few days' longer growth produce what is here styled "black-leaved pekoe." The more fleshy and matured leaves constitute Souchong; as they grow larger and coarser they form Congou; and the last and latest picking is Bohea. The tea farmers, who are small proprietors or cultivators, give the tea a rough preparation, and then take it to the contractors, whose business it is to adapt its further preparation to the existing nature of the demand.

VARIOUS WAYS OF MAKING TEA.—"The Japanese reduce their tea to a fine powder by pounding it; they put certain portions of this into a tea cup, pour boiling water upon it, and stir it up, and drink it as soon as it is cool enough." Dubuisson's manner of making tea: "Put the tea into a kettle with cold water,—cover it close, set it on the fire, and make it all but boil, when you see a sort of white scum on the surface, take it from the fire, when the leaves sink it is ready."—"The night before you wish to have tea ready for drinking, pour on it as much cold water as you wish to make tea—next morning pour off the clear liquor, and when you wish to drink it, make it warm."

The above are from "L'Art de Limonadier," de Dubuisson, Paris. A great saving may be made by making a tincture of tea, thus, pour boiling water upon it, and let it stand twenty minutes, putting into each cup no more than is necessary to fill it about one third full,—fill each cup up with hot water from the urn, thus the tea will be always hot and equally strong to the end,—and one tea spoonful will be found enough for three cups for each person: according to the present mode of making it, three times the quantity is often used."—*See Trusler's Way to be Rich and Respectable.*

The use of tea as a beverage in China is of antiquity beyond record, and is as universal as it is ancient; from the Emperor to the lowest peasant or labourer, all alike drink tea, varying only in quality. That consumed by the common people must, however, be not only of an inferior class, but very weak; as the native attendants on Lord Macartney's embassy were continually begging the refuse leaves, which had been already used by the English, because, after pouring fresh water over them, they obtained a better beverage than what they had usually an opportunity of enjoying. On the other hand, some tea presented by the Emperor Kien Long to Lord Macartney, was found to want somewhat of the astringency which the British tea drinker is accustomed to look for and to value in the infusion.

Mr. Ellis, in an account of one of Lord Amherst's visits of ceremony to Kwang, a mandarin of high rank, says, "The tea served round was that used only on occasions of ceremony, called yu-tien: it was a small leaf highly-flavoured green tea. In Lord Amherst's and Kwang's cups there was a thin perforated silver plate, to keep the leaves down, and let the infusion pass through. The cups used by the mandarins of rank, in form resemble coffee-cups, and are placed in a wooden or metal saucer, shaped like the Chinese boats."

From Mr. Ellis's Journal, we transcribe the following passage, descriptive of a plantation, "Our walk led us through a valley, where we saw, for the first time, the tea plant. It is a beautiful shrub, resembling a myrtle, with a white flower extremely fragrant. The plantations were not of any extent, and were either surrounded by small fields of other cultivation, or placed in detached spots; we also saw the ginger in small patches covered with a frame-work to protect it from the birds."

It is hardly credible that on the first introduction of the Chinese leaf, which now affords our daily refreshment, or the American leaf, whose sedative fumes made it so long a universal favourite, or the Arabian berry, whose aroma exhilarates its European votaries, that the use of these harmless novelties should have spread consternation among the nations of Europe, and have been anathematized by the terrors and fictions of some of the learned. Yet this seems to have happened. Patin, who wrote so furiously against the introduction of antimony, spread the same alarm at the use of tea, which he calls "l'impertinente nouveauté du siècle." In Germany, Hahnemann considered tea-dealers as immoral members of society, lying in wait for men's purses and lives; and Dr. Duncan, in his treatise on hot liquors, suspected that the virtues attributed to tea were merely to encourage the importation.

Many virulent pamphlets were published against the use of this shrub, from various motives. In 1670, a Dutch writer says, it was ridiculed in Holland, under the name of hay-water. The progress of this famous plant, says an ingenious writer, has been something like the progress of truth, suspected at first, though very palatable to those who had courage to taste it, resisted as it encroached, abused as its popularity seemed to spread, and establishing its triumph at last, in cheering the whole land from the palace to the cottage, only by the slow and resistless efforts of time and its own virtues.

Mr. Hanway enumerates "the mischiefs of tea, and seems willing to charge upon it every mischief that he can find. He begins, however, by questioning the virtues ascribed to it, and denies that the crews of the Chinese ships are preserved in their voyage homewards from the scurvy by tea. About this report I have

made some inquiry, and though I cannot find that these crews are wholly exempt from scorbutic maladies, they seem to suffer them less than other mariners in any course of equal length. This I ascribe to the tea, not as possessing any medicinal qualities, but as tempting them to drink more water, to dilute their salt food more copiously, and perhaps to forbear punch or other strong liquors. He then proceeds in the pathetic strain, to tell the ladies how, by drinking tea, they injure their health, and, what is yet more dear, their beauty.

'To what can we ascribe the numerous complaints which prevail? how many sweet creatures of your sex languish with a weak digestion, low spirits, lassitudes, melancholy, and twenty disorders which in spite of the faculty, have yet no names, except the general one of nervous complaints? let them change their diet, and among other articles leave off drinking tea, it is more than probable the greatest part of them will be restored to heath. Hot water is also very hurtful to the teeth. The Chinese do not drink their tea so hot as we do, and yet they have bad teeth. This cannot be ascribed entirely to sugar, for they use very little, but we all know that hot or cold things which pain the teeth, destroy them also. If we drank less tea, and used gentle acids for the gums and teeth, particularly sour oranges, though we had a less number of French dentists, I fancy this essential part of beauty would be much better preserved.

The women in the United Provinces who sip tea from morning till night, are also as remarkable for bad teeth. They also look pallid, and many are troubled with certain disorders arising from a relaxed habit. The Portuguese ladies on the other hand, entertain with sweet-meats, and yet they have very good teeth. But their food in general is more of a farinaceous and vegetable kind than ours. They also drink cold water instead of sipping hot, and never taste fermented liquors; for these reasons the use of sugar does not seem to be at all pernicious to them.

Men seem to have lost their stature and comeliness, and women their beauty. I am not young, but methinks there is not so much beauty in this land as there was. Your very chamber-maids have lost their bloom, I suppose by sipping tea.' To raise the fright still higher, he quotes an account of a pig's tail scalded with tea, on which however he does not much insist.

Of these dreadful effects, some are perhaps imaginary, and some may have another cause. That there is less beauty in the present race of females, than in those who entered the world with us, all of us are inclined to think on whom beauty has ceased to smile, but our fathers and grandfathers made the same complaint before us, and our posterity will still find beauties irresistibly powerful." *Dr. Johnson.*

Now, then, let us take the bare cost of the use of tea. I suppose a pound of tea to last twenty days; which is not nearly half an ounce every morning and evening. I allow for each mess half a pint of milk—and I allow three pounds of the red dirty sugar to each pound of tea. The account of expenditure would then stand very high, but to these must be added the amount of tea tackle, one set of which, will, upon an average be demolished every year. To these outgoings must be added the cost of beer at the public house; for some the man will have after all, and the woman too, unless they be upon the point of actual starvation.—Two pots a week is as little as will serve in this way; and here is a dead loss of ninepence a week, seeing that two pots of beer, full as strong, and a great deal better, can be brewed at home for threepence. The account of the year's tea drinking will, then, stand thus:—

	£	s.	d.
18 lbs. of Tea	4	10	0
54 lbs. of Sugar	1	11	6
365 pints of Milk	1	10	0
Tea Tackle	0	5	0
200 Fires	0	16	8
30 Days' Work	0	15	0
Loss by going to the Public-house	1	19	0
	£11	7	2

I have here estimated every thing at its very lowest. The entertainment which I have here provided is as poor, as mean, as miserable, as any thing short of starvation can set forth; and yet the wretched thing amounts to a good third part of a good and able labourer's wages."—*Cobbett's Cottage Economy.*

In no instance has a greater revolution taken place in the habits of a people, than in that which tea has effected within the last hundred years among the English. It was known, about the middle of the seventeenth century, rather as a curiosity than an article of use, as appears from an entry in Pepys's gossiping Diary, dated 1661, in which the writer says, that he "sent for a cup of tea, a Chinese drink, of which he had never drank before." About the beginning of the last century it came more into use, and the following statement exhibits the surprising strides which it has from time to time made, in the space of just one hundred years, towards its present consumption:—

1734	632,374 lbs.	1785	10,856,578 lbs.
1746	2,358,589	1800	20,358,702
1758	4,205,394	1833	31,829,619
1768	5,892,074		

In 1806, the Excise Duty was raised to ninety per cent.—1819, to nearly one hundred per cent. on the sale price of all teas—a tax which must have had a powerful effect in checking the growth of consumption. In spite, however, of this, it is well known that the importations into this country have exceeded the aggregate consumption of the whole western world besides. By a letter written from Siberia to Canton, in 1819, it appears that the quantity annually carried to Russia amounted to 66,000 chests, containing about 5,000,000 lbs., and no material increase has since taken place.

Next to the British trade, the most considerable in tonnage and value at Canton, has been that of the United States; subject, however, to fluctuations from which our own has been free. The remission of the tea duties, gave it, in 1833, a sudden stimulus, and the exports and imports at Canton, on the part of the Americans, each of them exceeded eight millions of dollars on board of nearly fifty small vessels. In consequence, however, of the losses sustained upon the teas, the American tonnage in the following year, 1834, was greatly reduced, nor was it expected very soon to reach its previous amount. The annual consumption of teas, in the United States, has been commonly estimated at about 8,000,000 lbs. Until the year 1824, our North American colonists, in Canada and Nova Scotia, were chiefly supplied with teas smuggled across the lakes from the Northern States of the Union; but in that year, the East India Company began to send an annual provision of about three ship loads of cheap teas to Quebec and Halifax, which had the effect of altogether stopping the American supply.

A difference once arose between the Court of Directors of the East India Company, and the principal tea-dealers of London and Edinburgh on the subject of what is termed "lot money." This charge, as is stated in the petition, addressed in October, 1828, to the directors by the principal tea dealers, requesting that it might be discontinued, was originally a perquisite granted to one of the Company's servants, and which, though unsupported by any claim of right, or of advantage to the trade, the Company have now appropriated to themselves. Their refusal to cancel this charge, which the Court intimated by letter to the memorialists excited the strongest dissatisfaction among them. The lot money was, in the infancy of the Company, given to one of the servants of the concern, but the company finding that it was extremely productive, took it to themselves, and although not warehousemen laid on charges which were found to be oppressive and insupportable. The servant alluded to, lost this valuable perquisite in rather an odd way. He was so struck with the liberality of the Directors, in throwing him an addition to his salary, that he determined to invite them to dinner at his house at Blackheath. The entertainment which his gratitude dictated was such, as even the directors themselves were unaccustomed to; there was not a delicacy of the season that was not on the hospitable board. The directors were all astonished, and after congratulating each other on the magnificent treat, they returned home silent, but in deep thought. Next morning an inquiry was instituted into the amount of the salary and fees of their generous entertainer, and the "Lot money" was immediately struck off from his office, and adopted into the general concern. They however, had so lively a feeling of the warmth with which he gave them a taste of his gratitude, that they increased his salary, we are told, about £1500 or £2000 a year.

It is a question of some importance, how far a sudden increase in the demand for tea at Canton is calculated to injure its average quality. The essential services derived by the East India Company from their experienced inspectors, who from long practice, acquired that readiness in discriminating the slightest shades of quality, which nothing but practice can confer, have demonstrated the expediency of such professional persons being still employed under the free-trade system, by all those, at least, who are not rash enough to trust to themselves or to the Chinese. One of the inspectors, Mr. Reeves junior, informed the writer of this at the close of 1833, that he had detected many attempts to pass off spurious or adulterated teas among the black kinds. The greater portion, indeed, of a particular description of tea, distinguished by the term *Ankoi* was mixed with spurious leaves. These were of various kinds, but appeared generally to be largish leaves cut up, though it was found impossible to ascertain the trees or shrubs to which they belonged. The two most prevalent were a thick, soft, dark green leaf, very smooth, and a palish hairy leaf, with the veins strongly marked. The former is not detected easily, and only by inspecting the leaves after infusion, as it imparts no bad smell to the tea, and is hardly perceptible even to the taste; the latter is readily discovered by its giving to the tea a "faint and odd" smell, as well as taste.

But this was nothing in comparison with the effrontery which the Chinese displayed in carrying on an extensive manufactory of *green* teas from *damaged black leaves*, at a village or suburb called Honan, exactly opposite to the European factories, but divided from them by the river. The remission of the tea duties in the United States occasioned, in the years 1832 and 1833, a demand for green teas at Canton which could

not be supplied by arrivals from the provinces. The Americans, however, were obliged to sail with cargoes of green tea within the favourable season; they were determined to have these teas, and the Chinese were determined they should be supplied. Certain rumours being afloat concerning the manufacture of green tea from old black leaves, the writer of this became curious to ascertain the truth, and with some difficulty persuaded a Hong merchant to conduct him, accompanied by one of the inspectors, to the place where the operation was carried on. Upon reaching the opposite side of the river, and entering one of these laboratories of factitious hyson, the party were witnesses to a strange scene.

In the first place, large quantities of black tea, which had been damaged in consequence of the floods of the previous autumn, were drying in baskets with sieve bottoms, placed over pans of charcoal. The dried leaves were then transferred in portions of a few pounds each to a great number of cast iron pans, imbedded in chunam or mortar, over furnaces. At each pan stood a workman stirring the tea rapidly round with his hand, having previously added a small quantity of *turmeric* in powder, which of course gave the leaves a yellowish or orange tinge; but they were still to be made green. For this purpose some lumps of a fine blue were produced, together with a white substance in powder, which from the names given to them by the workmen, as well as their appearance, were known at once to be *prussian blue* and *gypsum.** These were triturated finely together with a small pestle, in such proportion as reduced the dark colour of the blue to a light shade; and a quantity equal to a small tea-spoonful of the powder being added to the yellowish leaves, these were stirred as before over the fire, until the tea had taken the fine bloom colour of hyson, with very much the *same scent*. To prevent all possibility of error regarding the substances employed, samples of them, together with specimens of the leaves in each stage of the process, were carried away from the place.

The tea was then handed in small quantities, on broad shallow baskets, to a number of women and children, who carefully picked out the stalks, and coarse or uncurled leaves; and, when this had been done, it was passed in succession through sieves of different degrees of fineness. The first sifting produced what was sold as hyson-skin, and the last bore the name of young hyson. As the party did not see the intermediate step between the picking and sifting, there is reason to believe that the size of the leaves was first redueed by chopping or cutting with shears. If the tea has not highly deleterious qualities, it can only be in consequence of the colouring matter existing in a small proportion to the leaf;† and the Chinese seemed quite conscious of the real character of the occupation in which they were engaged, for, on attempting to enter several other places where the same process was going on, the doors were speedily closed upon the party. Indeed, had it not been for the influence of the Hongist who conducted them, there would have been little chance of their seeing as much as they did. *Library of Entertaining Knowledge: The Chinese.*

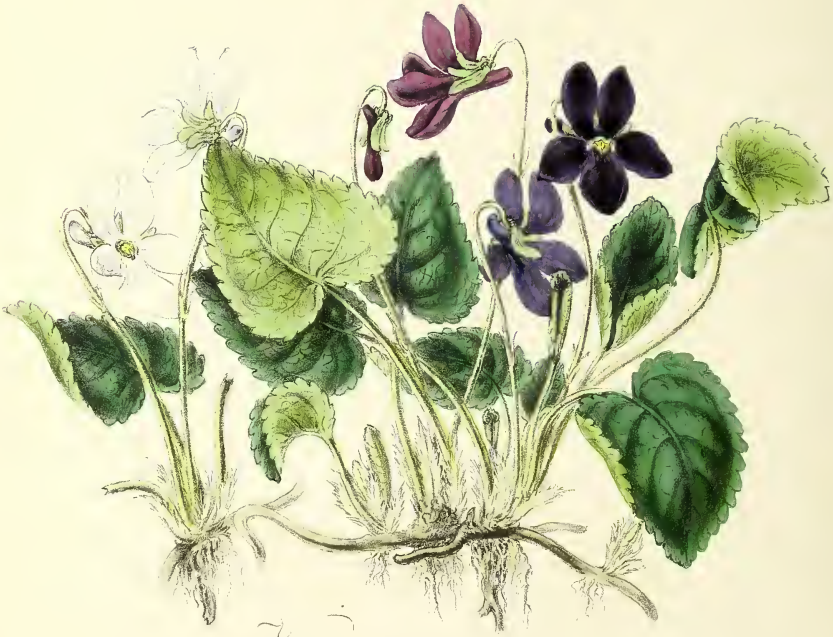
In 1834, it was discovered that the real tea plant was indigenous to the Company's territories in Upper Assam, bordering on the Chinese province of Yun-nan: and there now appears to be every reason for feeling certain that it may be cultivated, under proper management, with complete success for commercial purposes as well as for local consumption. In our works of more than a century back, as in the Spectator, Pope's poems, &c. we may always find the term Bohea applied to the best tea.

"Where none learn ombre, none e'er taste Bohea."

Now stir the fire, and close the shutters fast,
Let fall the curtains, wheel the sofa round,
And, while the bubbling and loud hissing urn
Throws up a steamy column, and the cups,
That cheer but not inebriate, wait on each,
So let us welcome peaceful evening in.

Cowper.

* Prussiate of iron, and sulphate of lime.
† The turmeric and gypsum are perfectly innocuous; but the prussian blue is a poison.



Viola odorata.

VIOLA ODORATA.—SWEET VIOLET.

Class V. PENTANDRIA.—Order I. MONOGYNIA.

Natural Order, VIOLACEÆ.———THE VIOLET TRIBE.

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 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 Loureiro saw it in China near Canton. The ancient fables feigned that violets were the first food of the cow Io, one of Jupiter's mistresses, and hence the Greek word Ion, of which *Viola* is a diminutive.

The violet is liable to change in the colour of its blossom from blue purple to red purple, pale flesh colour, and white. In the white specimens the lateral petals are sometimes without hairs which grow on the inside claws in the purple kinds, and which would appear to afford a peculiar protection to the nectary; but the fragrance is the same. (A double purple variety of exquisite odour is frequently cultivated in gardens, flowering both in spring and autumn. The stalks of the late flowers are so short as scarcely to elevate the capsules above ground, and in such petals are often wanting.)

The petals give colour to the syrup of violets, for which purpose they are cultivated in large quantities at Stratford upon Avon (Mr. Purton, of Alcester, prepares twenty or thirty gallons annually, for the use of the druggists, chiefly from the petals of the wild violets. The flowers are gathered by women and children, and the petals carefully picked from the calyx.) This syrup is very useful in many chemical investigations, to detect an acid or an alkali, the former changing the blue colour to red, and the latter to green. Slips of white paper, stained with the juice of the petals, and kept from the air and light, answer the same purpose.

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 Médecine, M. Boullay read a paper on the analysis of the violet, 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 the Ipecacuanha, and possesses the same properties, excepting its being united to the *malic* acid, instead of the *gallic.* (*Journal de Pharmacie. Jan.* 1824.)

The violet is the emblem of modesty; and if the rose reminds us of the dazzling radiance of a full-blown beauty, the violet is like some pretty village girl who shrinks from a fixed gaze, and blushes to be admired. This flower has always been a favourite of the poets, nor could it well be otherwise; how could any thing so sweet, so charming, and so simple, be unmentioned by Homer, Theocritus, or Shakespeare?

Thus we find the violet covering the meadows near the delightful grotto of Calypso:

> ———Four fountains of serenest lymph
> Their sinuous course pursuing side by side,
> Strayed all around, and every where appeared
> Meadows of softest verdure, purpled o'er
> With Violets; it was a scene to fill
> A God from heaven with wonder and delight.
>
> *Odyssey, Book v. Cowper's Translation.*

In one of the Idylls of Theocritus we are reminded that though the rose is fair, it decays with time, and though the violet is beautiful in the spring, it quickly grows old. In another, the poet desires that brambles may bear the violet, and the narcissus grow upon the juniper, that all things may be changed, in short, because Daphnis is dead. But perhaps the most original use made of this flower is in the 10th Idyll, where Battus in praising a dark and slim beauty, consoles her for the colour of her complexion by telling her that though the violet is dark, it is in great request for garlands. There is some Doric humour as well as elegance in the passage:

> Others, Bombyce, call you wondrous thin,
> And cry, how sun-burnt is that Syrian skin!

I love the richness of that gorgeous hue,
The Violet is decked in deepest blue,
The Hyacinth is darker still than you;
Yet in each wreath they claim the earliest place,
Sweet as the smiles which crown that lovely face!

Virgil, the prince of the Latin poets, perhaps the most elegant of all poets, does not forget this graceful flower. In the first of the following quotations, *pallentes violas* probably means the white violet.

Huc ades, o formose puer. Tibi lilia plenis
Ecce ferunt nymphæ calathis: tibi candida Nais,
Pallentes violas, et summa papavera carpens,
Narcissum, et florem jungit benè olentis anethi.
Tum casia, atque aliis intexens suavibus herbis,
Mollia lutcolà pingit vaccinia calthâ.
Virg. Ecl. ij.

O come! the Nymphs for thee in baskets bring
Their lilied stores: for thee the blooming spring
The white-armed Naiad rifles; violets pale,
The poppy's flush, and dills which scent the gale,
Cassia, and hyacinth, and daffodil,
With yellow marigold the chaplet fill.
Wrangham's Transl.

Pro molli violâ, pro purpureo narcisso
Carduus et spinis surgit paliurus acutis.
Virgil. Ecl v.

——for the daffodil and violet's bloom,
Thistles and briars in rank luxuriance gloom.
Wrangham's Transl.

Shakespeare repeatedly mentions it, as for instance, in the opening speech of Twelfth Night.

If music be the food of love, play on;
Give me excess of it; that surfeiting,
The appetite may sicken, and so die.
That strain again; it had a dying fall:
O, it came o'er my ear like the sweet south,
That breathes upon a bank of violets,
Stealing, and giving odour.

And in the following passages:

I know a bank whereon the wild thyme blows,
Where ox-lips and the nodding violet grows;
Quite over-canopied with lush woodbine,
With sweet musk-roses, and with eglantine:
There sleeps Titania, some time of the night,
Lull'd in these flowers with dances and delight.
Midsummer Night's Dream, Act ii, *Scene* 2.

To gild refined gold, to paint the lily,
To throw a perfume on the violet,
To smooth the ice, or add another hue
Unto the rainbow, or with taper-light
To seek the beauteous eye of heaven to garnish,
Is wasteful, and ridiculous excess.
King John, Act iv. *Scene* 2.

————O Proserpina,
For the flowers now, that frighted, thou let'st fall
From Dis's waggon! daffodils,
That come before the swallow dares, and take
The winds of March with beauty; violets, dim,
But sweeter than the lids of Juno's eyes,
Or Cytherea's breath; pale primroses,
That die unmarried, ere they can behold
Bright Phœbus in his strength.
Winter's Tale. Act iv *Scene* 3.

For Hamlet, and the trifling of his favor,
Hold it a fashion, and a toy in blood;
A violet in the youth of primy nature,
Forward, not permanent, sweet, not lasting,
The perfume and suppliance of a minute;
No more.
Hamlet, Act i. *Scene* 3.

Here is a delightful passage in Milton's best style—a mixture of vigour and tenderness.

Ye vallies low, where the mild whispers use
Of shades, and wanton winds, and gushing brooks,
On whose fresh lap the swart-star sparely looks;
Throw hither all your quaint enamelled eyes,
That on the green turf suck the honied showers,
And purple all the ground with vernal flowers.
Bring the rathe primrose that forsaken dies,
The tufted crow-toe, and the pale jessamine,
The white pink, and the pansy freakt with jet,
The glowing violet,
The musk-rose, and the well-attired woodbine,
With cowslips wan, that hang the pensive head,
And every flower that sad embroidery wears:
Bid amaranthus all his beauty shed,
And daffodillies fill their cups with tears,
To strow the laureat hearse where Lycid lies.
Milton. Lycidas.

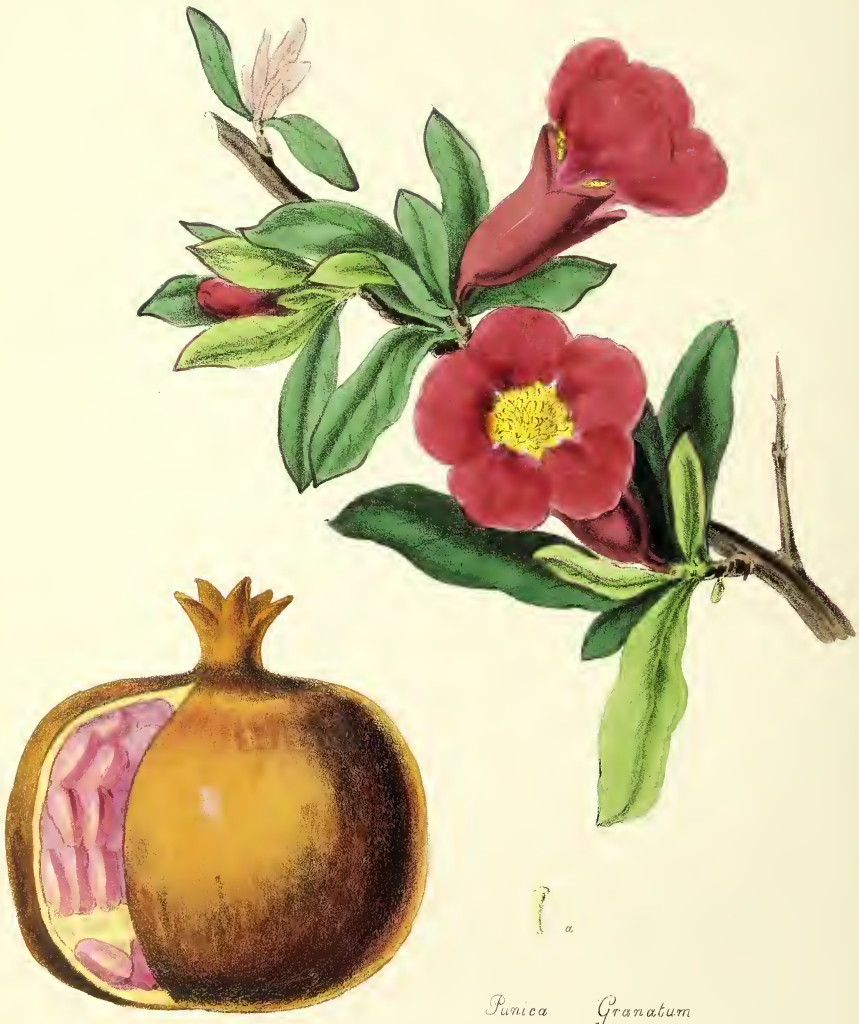
Since all things are in a state of change, but nothing utterly perishes, the atoms that once formed a human body, will again appear in the shape of herbs and flowers, and the poets with their usual felicity of thought, imagine that violets will spring from the remains of some loved and agreeable form. Thus Laertes says of Ophelia,

————Lay her i' the earth,
And from her fair and unpolluted flesh,
May violets spring!
Hamlet, Act v. *Scene* 1.

Underneath this turf is laid
Prudence Baldwin, once my maid;
From her happy spark, here let
Spring the purple violet.
Herrick.

We will conclude these quotations with an epigram from the Greek Anthologia;

I send a wreath of earliest flowers
For thee, dear girl, for thee;
Each gift of spring's most lavish hours
Was culled and wove by me.
The virgin lily here is seen,
The moist narcissus too;
The purple violet decked with green,
The rose of crimson hue.
Then while these flowers around your hair
You twine, sweet black-eyed maid,
No longer mock a lover's prayer,
For you, like them, must fade!



Punica Granatum

PUNICA GRANATUM.——THE POMEGRANATE TREE.

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

Natural Order, GRANATEÆ.——THE POMEGRANATE TRIBE.

a Seed.

The Punica *Granatum* is a native of the southern parts of Europe, of Arabia, Japan, Persia, and Barbary, and is much grown in India and Ceylon. Mr. Crawford says, that in the Indian Archipelago it is found only in a cultivated state, and that the finest fruit is brought into Upper India, from Eastern Persia; while Olivier, in his travels in the Ottoman Empire, informs us that those of Ghemlek are the finest in Turkey. It has also been introduced into the West Indies from Europe, and bears fruit of a very superior description. It blossoms luxuriantly in our own country, but, as the flowers are generally monsters, fruit is seldom met with, and never of a proper flavour. The tree was well known to the ancients, and Venus is fabled to have planted the first in Cyprus. It is said by Theophrastus to inhabit the same spots that the myrtle does, but although it is still found in Macedonia, the latter plant is not to be seen with it. According to Dierbach* it was esteemed by Hippocrates; and Pliny refers to it in the following terms: "Interior Africa ad Garamantas usque, et deserta palmarum magnitudine, et suavitate constat, nobilibus maxime circa delubrum Hammonis. Sed circa Carthaginem Punicum malum cognomine sibi vindicat."—lib. xiii. ch. 19, p. 197.

This tree rises to the height of eighteen or twenty feet; it is covered with a brownish bark, and is divided into many slender branches, which are armed with spines. The leaves are opposite, or ternate, about three inches long, sessile, wavy, entire, oblong or lance-shaped, pointed at both ends, and of a bright green colour, destitute of dots, and without marginal veins. The flowers are large, of a rich scarlet colour, solitary, or two or three together; and are produced at the extremities of the young branches, from June to September. The calyx is turbinate, thick, fleshy, of a fine red colour, and divided into five acute segments, which are valvate in æstivation. The corolla is composed of five large roundish wrinkled petals, rather spreading, and of a scarlet colour. The stamens are indefinite and perigynous, the filaments capillary, furnished with oblong yellow anthers, 2-celled, and bursting in front by two chinks. The germen is inferior, roundish, with a simple style, the length of the stamens, and capitate papulose stigma. The fruit is as big as an orange, globular, somewhat compressed, and indehiscent; it contains numerous angular, exalbuminous seeds, each enveloped in a distinct very juicy rose-coloured pulp, and is crowned with the limb of the calyx, and covered with a thick tawny coriaceous rind, which is the calycine tube.

Qualities and Chemical Properties.—The flowers (*Balaustra* of the ancients†) are of a beautiful red colour, nearly inodorous, but somewhat of a styptic taste. The juice, which is contained in the membranous cells, exhales a vinous smell, when fresh; it is of an agreeable subacid flavour, is refreshing, and contains a great deal of mucilage, united to a little tannin. The bark of the fruit has been used for making leather, and, besides mucilage, it contains a volatile oil, and tannin.

In the south of Europe the pomegranate is cultivated for its fruit; and, in some places as a hedge plant. It is also grown as an ornamental tree, the stem being trained to the height of six or eight feet, and the head afterwards allowed to spread and droop down on every side. In the conservatories in the neighbourhood of Paris, and in France generally, the double flowered variety is planted in large boxes, and treated like the orange tree. For this purpose, young plants are grown in the orange nurseries about Nice and Genoa, and exported to different parts of the world. Both the single and the double flowered varieties are very frequently trained against walls, both in France and Italy; and the more ingenious cultivators inter-

* Materia Medica of Hippocrates.

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

mingle the branches of the one sort with those of the other, so as to make a display of both double flowers and fruit, apparently on the same tree.

Medical Properties and Uses.—The pulp of the fruit may be eaten by patients who are suffering from the thirst of ardent fever; and combined with sugar, or honey, is very refreshing. By some it is said to be diuretic. The Hindoo doctors prescribe it, combined with saffron, when the habit is preternaturally heated. The bark of the fruit is a powerful astringent, and as it readily gives out its properties to water, it has been strongly recommended by Dr. Cullen as a medicine of which we may frequently make use for relaxation of the gums and throat.

The pulp which encloses the seeds is sometimes acid, sometimes sweet; and in other cases vinous, astringent, and refreshing. A syrup is made from this pulp by foreign druggists, which is employed as an astringent and detergent; the dried flowers are likewise kept in shops, for making infusions for the same purpose. Lord Bacon recommends the juice of pomegranate as good for liver complaints, and Woodville says, that it is preferable to that of oranges, in cases of fever.

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

The bark of the pomegranate is very astringent, and its decoction may be used as a gargle in relaxed sore-throat; but its principal use is as a remedy against tape-worm. Celsus says, that the patient is to eat a good deal of garlic, and then take an emetic; and the next day he is to drink a decoction of the small roots of the pomegranate tree, with a little *nitrum*, i. e., carbonate of soda.† According to some writers, it is absolutely necessary to employ the bark of the root, while in the London Pharmacopœia, that of the fruit is ordered. The London formula directs two ounces of pomegranate rind, and a pint and a half of distilled water to be boiled down to a pint, and strained. The dose of this may be two table spoonfuls three or four times a day. Although used by the natives of Hindostan, and even by the negroes of St. Domingo, the use of pomegranate bark seems to have been forgotten in Europe until its merits were again brought into notice by Dr. Gomez of Lisbon, and Mr. Breton's paper in the Medico-Chirurgical transactions.

Magendie gives the following account of the method of administering this medicine. The day before the decoction of pomegranate root is taken, the patient generally takes an ounce and a half, or two ounces of castor oil, with an equal quantity of syrup of lemons. The patient is then confined to herb broth and the lowest diet, until the following decoction has been administered:

Take of the bruised bark of the pomegranate root, either fresh or dry, two ounces.
Common water, two pounds.

Mix them together and let them soak, without heat, for twenty-four hours; then boil them over a moderate fire down to a pint, and strain. This decoction is to be taken in three glassfuls at intervals of half an hour or three quarters of an hour.

Generally in one hour, and seldom so long as two hours after the third dose, the tape-worm is voided whole and at once, rolled up, and strongly knotted in several places.

Sometimes the first and second glassfuls are thrown up again; but the third glass must be taken, just the same. It has been asserted that the pomegranate bark, given in the dose we recommend, may cause serious symptoms; but M. Bourgeoise, who always administers it in this dose, has not met with anything that would incline him to diminish the quantity; indeed, he has given more. If the whole of the worm is not voided, it will be necessary to continue the vermifuge decoction the next day, and even the following ones.‡

* Vide Ainslie's Materia Indica, vol. i. p. 323.
† De Medicinâ Lib. iv. Cap. 17.
‡ Formulaire pour la préparation et l'emploi de plusieurs nouveaux médicaments. 8e édit.

Grenadine. This is a crystalline substance procured from pomegranate bark. It is neutral, that is to say, neither acid nor alkaline, and so sweet that it might be taken for a sort of sugar; but it does not possess the property of fermenting. Magendie says, he is not aware that grenadine has been tried as a vermifuge. "Cette épreuve serait cependant curieuse à tenter."

Sir Thomas Elyot tells us, in his Castle of Health, that "pomegranates be of good juice, and profitable to the stomach; specially they which are sweet." They are also agreeable to the palate, in our opinion; but on this there is some division of sentiment. Whether delicious or not, however, the mere taste of a pomegranate once decided the fate of a goddess, if there be any truth in Ovid.

When Pluto had carried off Proserpine, her mother Ceres was desirous to recover the fair bride; on which she was informed by Jupiter that though the match was far from a bad one, Proserpine was still recoverable, provided she had eaten nothing in the shades below. Unluckily, however, she *had* eaten seven pomegranate seeds; and one Ascalaphus turned informer against her. As a punishment for his shabbiness, the Queen of Erebus changed him into an owl. We subjoin the latter part of the story in the original, for the gratification of our classical readers.†

In Romeo and Juliet, the nightingale is represented as singing on the pomegranate tree; the most melodious of birds on one of the most graceful of trees!

Jul. Wilt thou be gone? it is not yet near day;
It was the nightingale, and not the lark,
That pierc'd the fearful hollow of thine ear;
Nightly she sings on yon pomegranate tree:
Believe me, love, it was the nightingale.

Act iii. *Scene* 5.

The pomegranate is not forgotten by Thomson, in that *fruity* passage of his Summer, where he calls on the goddess of orchards to refresh him amidst the heat of the torrid zone.

Bear me, Pomona, to thy citron groves;
To where the lemon and the piercing lime,
With the deep orange, glowing through the green,
Their lighter glories blend. Lay me reclin'd
Beneath the spreading tamarind that shakes,
Fann'd by the breeze, its fever-cooling fruit.
Deep in the night the massy locust sheds,
Quench my hot limbs; or lead me through the maze,
Embowering endless, of the Indian fig;
Or thrown at gayer ease, on some fair brow,
Let me behold, by breezy murmurs cool'd,
Broad o'er my head the verdant cedar wave,
And high palmettoes lift their graceful shade.
Oh! stretch'd amid these orchards of the sun,
Give me to drain the cocoa's milky bowl,
And from the palm to draw its freshening wine!
More bounteous far than all the frantic juice
Which Bacchus pours. Nor, on its slender twigs
Low-bending, be the full pomegranate scorn'd;
Nor, creeping through the woods, the gelid race
Of berries.

"King Xerxes cutting an oddly great pomegranate, and beholding it fair and full of kernels, said in the presence of all his council, he had lever (rather) have one such friend as Zopyrus was, than as many Babylons as there were kernels in the pomegranate." (Sir T. Elyot. *Governor.)*

Soil, Situation, Propagation, &c. The single wild pomegranate will grow in almost any soil; but the double flowered varieties, and the species when it is intended to bear fruit, require a rich free soil. The double flowering pomegranate trees, grown in boxes by the French gardeners, are planted in the very richest soil that can be composed, and a portion of this soil is renewed every year when the roots are severally pruned. The head, also, is thinned out, and so cut as to multiply, as much as possible, short slender shoots; on the points of which alone the flowers are produced. In training the pomegranate against a wall in England, it is necessary to keep this constantly in view; for, if these slender shoots are cut off, no flowers will ever be produced. The plant is easily propagated by cuttings of the shoots or of the roots by layers,

† Dixerat: at Cereri certum est educere natam.
Non ita fata sinunt; quoniam jejunia virgo
Solverat; et cultis dum simplex errat in hortis,
Pœniceum curvâ decerpserat arbore pomum,
Sumtaque pallenti septem de cortice grana
Presserat ore suo; solusque ex omnibus illud
Viderat Ascalaphus, quem quondam dicitur Orphne
Inter Avernales haud ignotissima Nymphas,
Ex Acheronte suo furvis peperisse sub antris:
Vidit, et indicio reditum crudelis ademit.
Ingemuit regina Erebi; testemque profanum
Fecit avem; sparsumque caput Phlegethontide lymphâ
In rostrum, et plumas, et grandia lumina vertit.
Ille sibi ablatus fulvis amicitur ab alis,
Inque caput crescit, longosque reflectitur ungues,
Vixque movet natas per inertia brachia pennas,
Fœdaque fit volucris, venturi nuntia luctûs,
Ignavus bubo, dirum mortalibus omen.

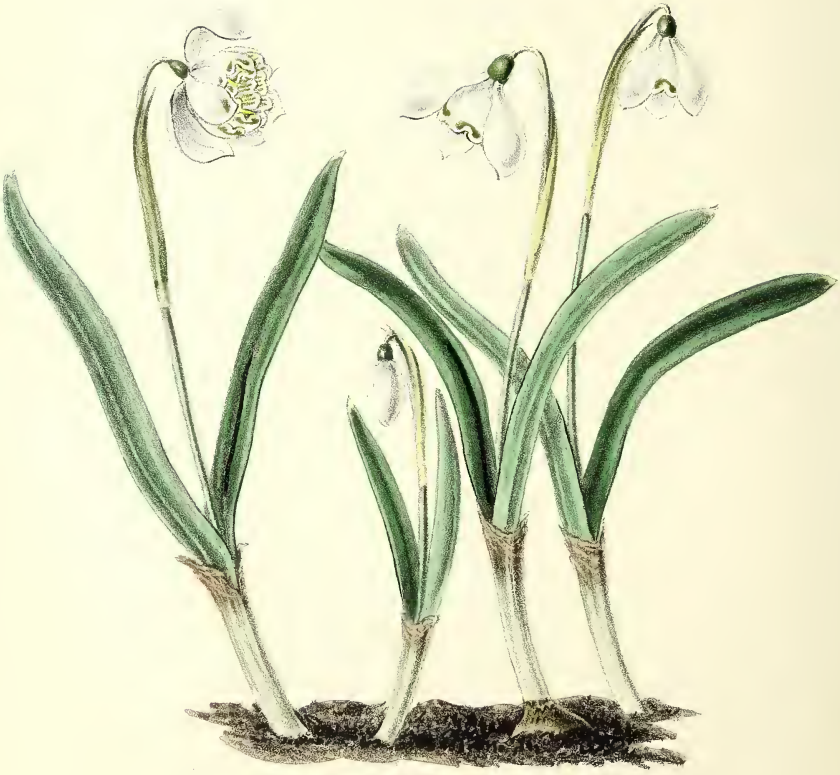
Ovid. Metam. Lib. v. v. 533—550.

or by grafting one sort on another. It also rises freely from seeds, but these ought to be sown immediately on being removed from the fruit; because they very soon lose their vital powers.

This shrub is considered the emblem of democracy; probably from its fruit consisting of numerous seeds, which form its valuable part; and a worthless crown. In allusion to the latter circumstances, Queen Ann of Austria had for a device a pomegranate, with the motto, "My worth is not in my crown." (Reid's Hist. Bot.) And Philips says, that the French, in the Island of St. Vincent, had a riddle on the pomegranate, which was "Quelle est la reine qui porte son royaume dans son sein?" alluding to the same properties.

In the Himalayas, Dr. Royle informs us, that the young pomegranate grows wild; and, also, that it is planted near villages. It forms quite a wood in Mazenderan, whence the dried seeds are exported for medicinal use. The famous pomegranates without seeds are grown in the rich gardens, called Ballabagh, lying under the snowy hills near the Caubul river. They are described as delicious about Hadgiabad, and throughout Persia. "Though grown in most parts of India, large quantities, of a superior quality, are yearly brought down by the northern merchants from Caubul, Cashmere, and Boodurwar." At a very early period, the pomegranate appears to have attracted the attention of mankind. It is mentioned by Theophrastus under the name of Rhoa; the Phœnicians named it Sida, the Greeks Cytinos, and the Romans, according to Pliny Malus Punica. The Jews appear to have held the tree in great veneration. It is mentioned, in the Old Testament, as one of the fruits discovered in the land of Promise; and while the Israelites sojourned in the wilderness it was seleeted as one of the ornaments, to the robe of the ephod. The two large pillars of brass, made by Hiram for the porch of Solomon's Temple, were ornamented with carvings of the pomegranate; and, from other passages in Holy Writ, a wine appears to have been made from it. Pliny speaks of getting a colour from the flowers for dying cloth a light red. He mentions nine varieties, including the sweet, the sour, the temperate, the austere and the wine-flavoured. The rind of the sour kind he says is the best for tanners and curriers to dress their leather with. The celebrated kingdom of Granada is supposed to have derived its name from the trees planted in it by the Moors, which is rendered highly probable by the arms of the city of Granada being a split pomegranate. The earliest mention of the pomegranate in England is in Turner's Herbal, in 1548; but it was probably introduced long before that time by the monks, and planted in the gardens of the religious houses. For a long period, it was kept exclusively in houses, along with orange trees, and we find, accordingly that it fruited in the orangery of Charles the first, as Parkinson informs us, under the care of Tradescant, when he was that king's gardener. It seems to have been first tried in the open air by Miller, at Chelsea; and at the suggestion of Bradley, in the garden of Camden House, and in other gardens about Kensington, as the oldest specimens in the neighbourhood of London are of these places. At present, it is in most collections as an ornamental wall tree, and it ripens its fruit, or at least, produces them of the full size, frequently, in the neighbourhood of London in fine seasons; but the varieties most generally cultivated are those with double flowers. The largest double flowered pomegranate in England is supposed to be that trained against the walls of Fulham Palace, which is at least forty feet high, and fifty feet broad.

The pomegranate is mentioned by the earliest poets, particularly by Homer in the Odyssey. Nicholas Rapin, in his poem entitled *Les plaisirs du Gentilhomme Champêtre*, published 1583, gives the following origin to the pomegranate. A young girl of Scythia having consulted the diviners to know her fortune, was told by them that she was destined one day to wear a crown. This rendered her so proud and vain, that she was easily seduced by Bacchus, on his promising to give her a crown. He soon grew tired, and abandoned her; and when she afterwards died of grief, he metamorphosed her into a pomegranate tree; on the fruit of which he affixed a crown (alluding to the shape of the calyx;) thus tardily and ambiguously redeeming his promise.



Galanthus Nivalis

GALANTHUS NIVALIS.—THE SNOWDROP.

Class VI. HEXANDRIA.—Order I. MONOGYNIA.

Natural Order, AMARYLLACEÆ.———THE AMARYLLIS TRIBE.

Galanthus Nivalis, Snow-drop, or Fair maids of February. Calyx an oblong spathe, gaping; corolla, three oblong concave petals; a cylindrical three leaved nectary, with the leaflets petal-shaped and notched; stigma simple; the bulb coated and truncate, flowers milk white, solitary, pendulous; nectary with a green spot, and yellowish green lines.

Snowdrop roots taken up in winter and boiled, have the insipid mucilaginous taste of the Orchis, and if cured in the same manner, would probably make as good salep. Gmelin, in his history of Siberia, says, the Martagon Lily, which is of the same natural order as the snow-drop, makes a part of the food of that country.

By cultivation, the snowdrop becomes double, but this metamorphosis does not improve the native elegance of this universal favorite. Among the innumerable effusions which this simple flower has inspired, none is more beautifully descriptive than the well-known verses of Mrs. Barbauld:

"Already now the Snow-drop does appear,
The first pale blossom of the unripen'd year;
As Flora's breath, by some transforming power,
Had changed an icicle into a flower:
Its name and hue the scentless plant retains
And winter lingers in its icy veins."

This "Morning Star of Flowers" pure as the spotless drift from which it seems to take its rise, was dedicated by the Romish church to the purification of the Virgin Mary.

"The flower that first in the sweet garden smil'd,
To virgins sacred?"—

has also been deemed the emblem of consolation, as if by its earliest revival from the death-like repose of winter, cheering mortal man with the assurance of re-animation:

Then, spirit flower, I'll pluck thy bell,
An offering for my breast;
And when ills come or passions swell,
Thy prophet flowers each storm shall quell
And give it promis'd rest.

The characteristic of the snowdrop, which gives it a peculiar grace, and has made it a universal favorite is, that it is the first flower which greets the opening year, and is seen to peep out amid the snows of February.

But why so far excursive? when at hand,
Along these blushing borders, bright with dew,
And in yon mingled wilderness of flowers,
Fair-handed Spring, unbosoms every grace;
Throws out the Snow-drop, and the Crocus first;
The Daisy, Primrose, Violet darkly blue,
And Polyanthus of unnumbered dyes;
The Yellow Wall-flower, stained with iron brown;
And lavish Stock that scents the garden round.

Thomson.

In Tickell's poem of Kensington Garden, Kenna, a young fairy, falls in love with Albion, a mortal, but her lover is killed by Azuriel, a prince of fairy birth. Kenna pours the juice of a mystic plant upon the lifeless body of Albion, and changes it into a snowdrop.

An herb there grows, (the same old Homer tells
Ulysses bore to rival Circe's spells)
Its root is ebon-black, but sends to light
A stem that bends with flowerets milky white;
Moly the plant, which gods and fairies know,
But secret kept from mortal men below;
On his pale limbs its virtuous juice she shed,
And murmured mystic numbers o'er the dead;
When lo! the little shape by magic power
Grew less and less, contracted to a flower,
A flower that first in this sweet garden smiled,
To virgins sacred, and the Snow-drop styled.
The new-born plant with sweet regret she viewed,
Warmed with her sighs, and with her tears bedewed,
Its ripened seeds from bank to bank conveyed,
And with her lover whitened half the shade:
Thus won from death, each spring she sees him grow,
And glories in the vegetable snow;
Which now increased through wide Britannia's plains
Its parent's warmth and spotless name retains;
First leader of the flowery race aspires,
And foremost catches the sun's genial fires;
Mid frosts and snows, triumphant, dares appear,
Mingles the seasons and leads on the year.

Lone flower, hemmed in with snows, and white as they,
But hardier far, once more I see thee bend
Thy forehead, as if fearful to offend,
Like an unbidden guest. Though day by day,
Storms, sallying from the mountain-tops, way-lay
The rising sun, and on the plains descend;
Yet art thou welcome, welcome as a friend
Whose zeal outruns his promise! Blue eyed May
Shall soon behold this border thickly set
With bright jonquils, their odours lavishing
On the soft west-wind and his frolic peers;
Nor will I then thy modest grace forget,
Chaste Snow-drop, venturous harbinger of Spring,
And pensive monitor of fleeting years!

WORDSWORTH.

Thou first-born of the year's delight,
Pride of the dewy glade;
In vernal green and virgin white,
Thy vestal robes, arrayed;

'Tis not because thy drooping form
Sinks graceful on its nest,
When chilly shades from gathering storm,
Affright thy tender breast;

Nor for yon river inlet wild,
Beneath the willow spray,
Where like the ringlets of a child,
Thou weav'st thy circle gay;

'Tis not for these I love thee dear—
Thy shy averted smiles,
To fancy bode a joyous year,
One of life's fairy isles.

They twinkle to the wintry moon,
And cheer th' ungenial day,
And tell us, all will glisten soon
As green and bright as they.

KEEBLE.

Although the snowdrop is found growing in woods and pastures in very many places throughout the British islands, Sir W. J. Hooker says in his British Flora, that it is "scarcely indigenous." The snowdrop, to the best of our recollection, is not mentioned by Shakspeare or Milton, which adds to the probability that it is one of the numberless garden plants which have escaped from their confinement, to add new beauties to the groves and meadows. Many more it is to be hoped are undergoing the same emancipation. Thus Mr. Irvine in his London Flora, gives amongst others the following exotics as apparently naturalized: Valeriana calcitrapa; Cannabis sativa (hemp); Geranium striatum; Linaria purpurea (purple toad-flax); Momordica Elaterium (wild cucumber); Eranthis hiemalis (winter aconite); Petasites odorata; Trifolium incarnatum and T. agrarium; and several narcissi. Mr. Irvine also says "Collomia grandiflora, and several Gillias, have been gathered in places where they were not sown, and are likely soon to be well established, as naturalized exotics." He adds, shortly afterwards, "A considerable portion of these exotic plants are as truly the spontaneous growth of the neighbourhood of London, as Datura Stramonium, Borago officinalis, and other reputed British species."

We have often thought that it would be an agreeable employment for ladies and others in the country to plant the seeds of hardy foreign flowers in our fields and hedge-rows, and thus give still more of a garden look to the face of England.

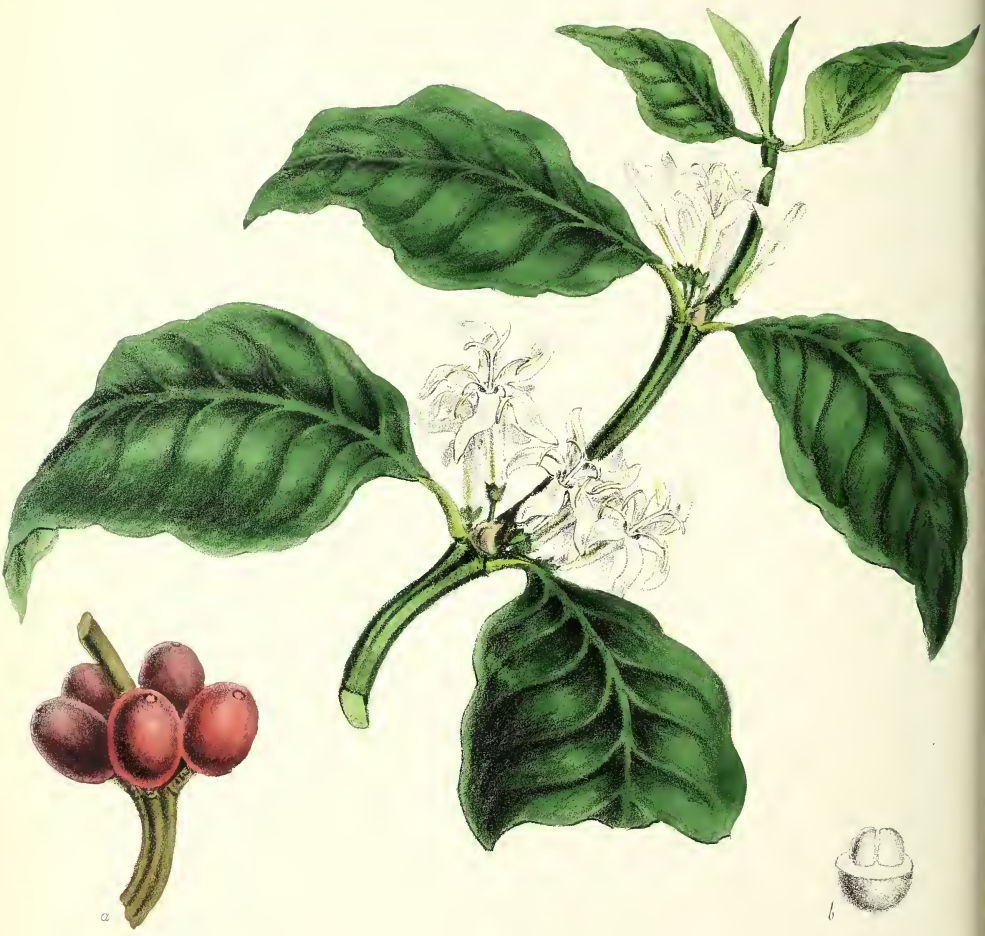
"La Perce-neige fut une fleur de la guirlande de Julie. Benserade en fit le vers que voici; c'est la perce-neige qui parle:

Sous un voile d'argent, la terre ensevelic,
Me produit; malgré sa fraicheur,
La neige conserve ma vie,
Et me donnant son nom, me donne sa blancheur;

Mais celle de ton sein, adorable Julie,
Me fait perdre aux yeux éblouis
La gloire, désormais ternie,
Que je ne cédois pas au lis.

La Guirlande de Julie fut une galanterie ingénieuse, imaginée par l'austère duc de Montausier, pour la belle Julie de Rambouillet. Lorsque sa main lui fut promise, il devoit, suivant un ancien usage, qui s'observe encore aujourdhui, envoyer tous les matins à sa future épouse jusqu'au jour de la noce, un bouquet des plus belles fleurs de la saison; mais il ne s'en tint pas là: il fit peindre, en outre (par les meilleurs peintres,) sur du velin, dans un livre in-folio, magnifiquement relié, les plus belles fleurs cultivées, et tous les poètes les plus distingués de ce temps se distribuèrent ces fleurs, et firent des vers sur chacune. Le grand Corneille fit la fleur d'orange et l'immortelle; mais ces vers de société ne sont pas dignes d'être signés par un si beau nom. Julie, le jour de son mariage, trouva sur sa toilette ce livre si précieux. Ce monument intéressant de la galanterie du dix-septième siècle, passé dans des mains étrangères (sans doute par les malheurs de la révolution), se trouvoit transporté à Hambourg dans l'année 1795, et il etoit en vente. On ignore quelle est la personne qui en a fait l'acquisition."

La Botanique Historique et Littéraire par Madame de Genlis.



Coffea arabica

COFFEA ARABICA.——THE ARABIAN COFFEE TREE.

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

Natural Order, STELLATÆ.——THE MADDER TRIBE.

a Berries. *b* The Seed within the berry.

The Arabic name of the plant is Qahoueh, and of this word, the Persian Cahwa, the Turkish Cahvey, the French Café, and our Coffee, are evidently corruptions. The coffee-plant is an evergreen shrub, rising from fifteen to twenty feet in height. The trunk is erect, seldom exceeding two or three inches in diameter, and covered with a brownish bark. The leaves are opposite, ovate-lanceolate, pointed, entire, wavy, smooth, shining; bright green on the upper surface, paler beneath, and placed on short petioles. At each knot of the branches are two awl-shaped, opposite, interfoliaceous stipules. The flowers are white, sweet-scented, sessile, disposed in clusters of four or five together, in the axillæ of the leaves, and soon falling off. The calyx is superior, very small, 5-toothed. The corolla is monopetalous, funnel-shaped, and divided into five lanceolate, spreading segments. The filaments are five, inserted into the tube of the corolla, and supporting yellow, linear anthers. The germen is ovate, inferior, bearing a simple style the length of the corolla, and two awl-shaped, reflexed stigmas. The berry is globular, about the size of a cherry, umbilicated at the summit, two-celled, and contains 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. *(Med. Bot.)*

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-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 are 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.

It appears by Le Grand's "Vie privée des François" that the celebrated Thevenot, in 1658, gave coffee after dinner; but it was considered as the whim of a traveller; neither the thing itself nor its appearance was inviting, and it was probably attributed by the gay to the humour of a vain philosophical traveller. But ten years afterwards a Turkish ambassador at Paris made the beverage highly fashionable. The elegance of the equipage recommended it to the eye, and charmed the women; the brilliant porcelain cups in which it was poured; the napkins fringed with gold, and the Turkish slaves on their knees presenting it to the ladies, seated on the ground on cushions, turned the heads of the Parisian dames. This elegant introduction made the exotic beverage a subject of conversation, and in 1672, an Armenian at Paris, at the fair time, opened a Coffee-house. But the custom still prevailed to sell beer and wine, and to smoke and mix with indifferent company in their first imperfect coffee-houses. A Florentine, one Procope, celebrated in his day as the arbiter of taste in this department, instructed by the error of the Armenian, invented a superior establishment, and introduced ices;[a] he embellished his apartment, and those who had avoided the offensive coffee-houses, repaired to Procope's, where literary men, artists, and wits resorted, to inhale the fresh and fragrant steam. It was at the coffee-house of Du Laurent, that Saurien, La Motte, Danchet, Boindin, Rousseau, &c. met, but the mild streams of the aromatic berry, could not mollify the accerbity of so many rivals, and the witty malignity of Rousseau gave birth to those famous couplets on all the coffee-drinkers, which occasioned his misfortune and his banishment.

Among a number of poetical satires against the use of coffee, I find a curious exhibition, according to the exaggerated notions of that day, in "a cup of coffee, or coffee in its colours," 1663. The writer, like others of his contemporaries, wonders at the odd taste which could make coffee a substitute for canary.

"For men and christians to turn Turks and think
To excuse the crime, because 'tis in their drink!
Pure English apes! ye may, for aught I know,
Would it but mode—learn to eat spiders too.[b]
Should any of your grandsire's ghosts appear
In your wax-candle circles, and but hear
The name of coffee, so much called upon,
Then see it drank like scalding Phlegethon;
Would they not startle, think ye, all agreed
'Twas conjuration both in word and deed;
Or Catiline's conspirators, as they stood
Sealing their oaths in draughts of blackest blood,
The merriest ghost of all your sires would say,
Your wine's much worse since his last yesterday.
He'd wonder how the club had given a hop
O'er Tavern bars into a Farrier's shop,
Where he'd suppose, both by the smoke and stench,
Each man a horse, and each horse at his drench.
Sure you're no poets, nor their friends, for now
Should Jonson's strenuous spirit, or the rare
Beaumont and Fletcher's in your mind appear,
They would not find the air perfum'd with one
Castilian drop, nor dew of Helicon;
When they but men would speak as the Gods do,
They drank pure nectar as the Gods drink too,
Sublimed with rich canary,—say shall then,
These less than coffee's self, these coffee men;
These sons of nothing, that can hardly make
Their broth, for laughing how the jest does take;
Yet grin, and give ye for the vine's pure blood
A loathsome potion, not yet understood,
Syrup of soot or essence of old shoes,
Dasht with diurnals and the books of news."

Amidst these contests of popular prejudices, between the lovers of forsaken canary, and the terrors of our females at the barrenness of an Arabian desert, which lasted for twenty years, at length the custom was universally established; nor were there wanting some reflecting minds desirous of introducing the use of this liquid among the labouring classes of society, to wean them from strong liquors. Howel, in noticing that curious philosophical traveller, Sir Henry Blount's "Organon Salutis," 1659, observed, that his "coffa drink hath caused a great sobriety among all nations; formerly apprentices, clerks, &c., used to take their morning draughts in ale, beer, or wine, which often made them unfit for business. Now they play the good fellows in this wakeful and civil drink. The worthy gentleman, Sir James Muddiford, who introduced the practice hereof in London, deserves much respect of the whole nation."

[a] A most exquisite ice is made at Paris, called *glace au café blanc*; it has the flavour of the coffee, without its brown hue; how this is managed, we know not, but Tortoni can tell.

[b] This witty poet was not without a degree of prescience; the luxury of eating spiders has never indeed become "modish," but Mons. Lalande, the French astronomer, and one or two humble imitators of the modern philosopher, have shewn this triumph over vulgar prejudices, and were epicures of this stamp.

On the introduction of coffee into Constantinople, much prejudice existed against its use. It was proscribed as an intoxicating beverage, and the shops were ordered to be shut by the Mufti, who complained that the Mahommedans forsook the mosques, and crowded the coffee-houses. Its use was also forbidden by the Syrian government. But, notwitstanding the most severe prohibitions, it has become, in Turkey, almost a necessary of life; indeed, so essential was it one time considered, that the refusal of a husband to supply his wife with a reasonable quantity of coffee, was enumerated and admitted amongst the legal causes of divoree.

Such is the history of the first use of coffee and its houses at Paris. We had the use, however, before even the time of Thevenot; for an English Turkey merchant brought a Greek servant in 1652, who knowing how to roast and make it, opened a house to sell it publicly. I have also discovered his hand bill, in which he sets forth, "The vertue of the coffee-drink, first publiquely made and sold in England, by Pasqua Rosee, in St. Michael's Alley, Cornhill, at the sign of his own head."

For about twenty years after the introduction of coffee in this kingdom, we find a continued series of invectives against its adoption, both for medicinal and domestic purposes. The use of coffee, indeed, seems to have excited more notice, and to have had a greater influence on the manners of the people, than that of tea. It seems at first to have been more universally used, and is still on the continent; and its use is connected with a resort for the idle and the curious; the history of coffee-houses, ere the invention of clubs, was that of the manners, the morals, and the politics of a people. Even in its native country, the government discovered that extraordinary fact, and the use of the Arabian berry was more than once forbidden where it grows: for Ellis, in his "History of Coffee," 1774, refers to the Arabian MS. in the King of France's library, which shews that coffee-houses in Asia were sometimes suppressed. The same thing happened on its introduction into England. *(Leigh Hunt's London Journal, from D'Israeli.)*

The appearance of a coffee plantation during the season of flowering, which does not last longer than a day or two, is very interesting. In one night the blossoms expand so profusely as to appear like trees in England, when a snow-storm has come at the close of Autumn, and loaded them while full of foliage. The seeds are known to be ripe by the dark red colour of the berries, and if not then gathered, they will drop from the trees. "When the Arabian cultivator," says Mr. Edwards, "sees that his coffee is ripe, he spreads large cloths under his trees, which he shakes from time to time, to make the ripe cherries fall. He never pulls one grain of coffee with the hand, whatever appearance it may have of maturity. He considers none as ripe, but such as fall on lightly shaking the tree." The berries are afterwards spread upon mats, and exposed to the sun's rays until perfectly dry, when the husk is broken with large heavy rollers made either of stone or of wood. The coffee thus freed from its husk, is again dried thoroughly in the sun, that it may not be liable to heat when packed for transportation.

La Roque says, that in Arabia Felix the coffee-tree is raised from seed, which they sow in nurseries, and plant them out as they have occasion. They choose for their plantations a moist shady situation, on a small eminence, or at the foot of the mountains, and take great care to conduct from the mountains little rills of water, in small gutters or channels, to the roots of the tree, for it is absolutely necessary they should be constantly watered, in order to produce and ripen the fruit. For that purpose, when they remove or transplant the tree, they make a trench of three feet wide, and five feet, which they line or cover with stones, that the water may more readily sink deep into the earth, with which the trench is filled, in order to preserve the moisture from evaporating. When they observe that there is a good deal of fruit upon the tree, and that it is nearly ripe, they turn off the water from the roots, to lessen that succulency in the fruit, which too much moisture would occasion. In places much exposed to the south, they plant their coffee-trees in regular lines, sheltered by a kind of poplar tree, which extends its branches on every side to a great distance, and affords a very thick shade. Without much precaution they suppose the excessive heat of the sun, would parch and dry the blossoms so, that they would not be succeeded by any fruit. *(Ellis's History of Coffee.)*

The most remarkable property of coffee, however, is its power of relieving drowsiness, and of retarding the access of sleep for 6 or 8 hours. Hence its introduction after dinner to remove the torpor that follows repletion. Hence also its more common use as a morning than an evening beverage, and the impropriety of taking it late at night, or soon before going to bed, at least if sleep be desired. These properties, which are by some persons regarded as infelicitous, prove its chief recommendations to others, especially to literary

men, who frequently take it to excess, in order to prolong their studies unconquered by sleep, the mind seeming to be enlivened by its use, and the body invigorated and calmed. It appears likewise to induce far less depression and nervous irritability than are known sometimes to follow too free indulgence in the use of tea. The Turks and other Asiatic nations, to whom indolence is enjoyment, moderate the effects of coffee by mixing opium with it. *(Burnett's Outlines.)*

Brute animals appear likewise to be subject to its influence, for it has been affirmed that the goats, which in Arabia browse on the leaves and eat the fruit of the coffee, are remarkable for their liveliness and gamboling. Coffee is a more fit drink for persons of a lymphatic and sluggish temperament than for those of a lively sanguineous habit, more wholesome, according to the French writers, for the old than for the young, and more required by men than women.

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,[a] 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[b]

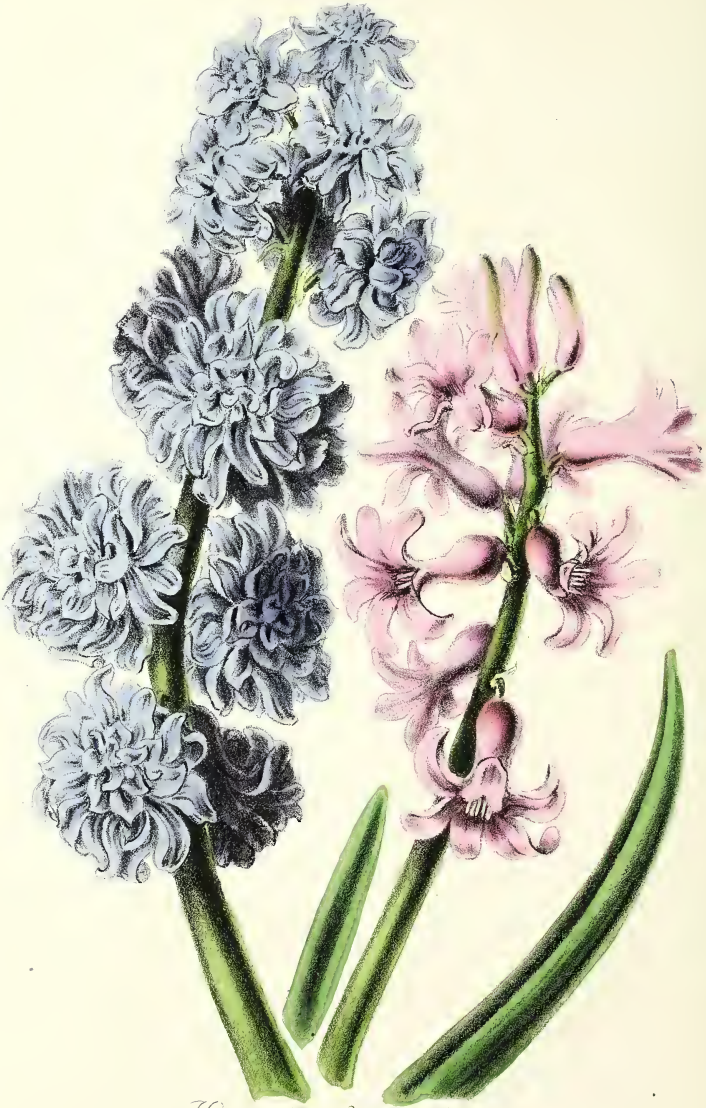
Other analyses have been made by chemists. M. Grindel[c] found it contain kinic acid; and M. Payssé has discovered what he has endeavoured to show as a peculiar acid, to which he has given the name of coffee-acid.

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 narcotic 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.

In Arabia and other parts of the East, that called Mocha is considered the best.

[a] *Ann. de Chim.* lviii. 226. [b] Crell's *Ann.* 1800, ii. 108. [c] Hist. Paris, iv. 545.



Hyacinthus Orientalis

HYACINTHUS ORIENTALIS.——THE ORIENTAL HYACINTH.

Class VI. HEXANDRIA.——Order I. MONOGYNIA.

Natural Order. ASPHODELEÆ.——THE ASPHODEL TRIBE.

Hyacinthus was the name applied by the ancient Greeks to the flower which sprang from the blood of the beloved of Apollo, when slain by his rival Zephyrus. It may be derived either from ia, a violet, or ai, an interjection of grief, and Cynthus, a cognomen of Apollo. Hyacinthus is a genus long celebrated, not only for the beautiful fable whence its name has been fancifully derived, but also for the immense number of varieties which culture has produced. The Hyacinthus orientalis of botanists, a favourite flower in gardens, a bulbous plant, found wild on the mountains of Persia, and remarkable both for its fragrance and the facility with which it varies in the colour, size, and construction of its flowers when raised from seed.

Few spring flowers are more worthy of cultivation than the hyacinth, whether we regard its varied shades of rich colour, or the sweetness of its perfume. The Dutch gardeners have been celebrated for the high state of perfection to which they grow it, and for the monopoly they have secured in the sale of the bulbs, which have even acquired in the shops the familiar name of Dutch roots. The soil and climate of Holland seem to be peculiarly adapted to the plant, for however well imported roots may flower in England for the first season, they soon degenerate and become worthless. It is however probable that this arises from want of skill in our cultivation, rather than from anything unfavourable in our climate: for some gardeners have been successful in growing the same roots for several years in succession. Mr. Herbert says, "I produced for several years successively, at my villa in Surrey, where I had the advantage of the vicinity of the fine sand of Shirley Common, hyacinth flowers fully equal, if not superior, to those obtained from the best Dutch bulbs." As experience is in all respects the surest guide, the more nearly we approach the Dutch method of cultivation, the more likely we are to be successful. According to Mr. Herbert, the compost used at Haarlem is rotten cow-dung, rotten leaves, and fine sand. In making this compost the Dutch gardeners prefer the softer leaves of elm, lime and birch, and reject those of oak, chesnut, walnut, beech, plane, &c., which do not rot so quickly. The cow-dung which they use, is also of a peculiar quality, being collected in the winter when the cattle are stall-fed upon dry food, without any mixture of straw or other litter. The sand is procured in the neighbourhood of Haarlem, where the soil is a deposit of sea-sand upon a compact layer of hard undecayed timber, the remains of an ancient forest which has been overwhelmed by the sea. Having all these substances in a proper state, they are prepared in the following manner:—First, a layer of sand is placed, then one of dung, and then one of rotten leaves, each being eight or ten inches thick. These layers are repeated till the heap is six or seven feet high, a layer of dung being uppermost, sprinkled over with a little sand, to prevent the too powerful action of the sun upon it. After the heap has lain for six months or more it is mixed, and thrown up afresh, in which state it remains some weeks to settle, before it is carried into the flower beds. (*Hort. Trans.*, vol. iv., p. 163.)

As hyacinths are planted in Autumn, and bloom early in the season, they never require any water, and as soon as the flowering is over, the more dry the ground can be kept, the better it is for the bulbs. When the leaves turn yellow and are withered, which will take place in about a month after the plants have gone out of flower, the bulbs must be carefully taken up and dried. The practice at Haarlem is this. The leaves should be cut off, and each bulb laid on its side, covering it lightly with the compost, about two inches thick: in this state it should be left about a month, and then taken up in dry weather and exposed to the open air for some hours, but not to a powerful sun, which would be very injurious to it; it should after this be carefully examined, and all the decayed parts removed; afterwards it should be laid up in an airy store-

room. (Herbert, *Hort. Trans.*) Florists who have a valuable bed of Hyacinths, generally use an awning of some kind, to shade them from a bright sun, and protect them from heavy rains. This shade, of whatever material it is made, should be so constructed as to move up and down in favourable weather; in bright sunshine the bed may be exposed from four o'clock in the afternoon, or for a few hours in the morning. If the bed is not shaded, the colours very soon spoil, and will not bear a close examination.

Hyacinths are frequently grown and flowered in water-glasses. Sometimes before they are put into the glasses they are planted in pots, and when the roots have grown a little, they are taken up and washed, and placed in the glasses, or they are placed in the glasses at first. The water must be frequently renewed, or it will soon become fetid and offensive. By far the most curious system of treating forced hyacinths is to invert them in large glass jars filled with water. This must be done when the flowers are nearly expanded; and by placing one above the glass, of the same size and colour with the inverted one, the latter presents an appearance of being the shadow of the former. The flowers retain their freshness much longer in the water than when exposed in the common way; but this circumstance, and the curious appearance presented, is all which can recommend the system; of course the fragrance of the hyacinth is in this way entirely lost. The principal difficulty that is experienced by those who force hyacinths in water in sitting rooms is to prevent their growing long, weak, and pale, so as to flower badly, and be in constant danger of upsetting. This is remedied by keeping them close to a window, where they can be constantly exposed to bright light all day long. It may also be added, that in order to secure their pushing out their roots before the leaves lengthen, they should always be kept in the dark for a fortnight or three weeks after they are first placed in the water-glasses, care being taken at that time that the water and the bulbs are not in contact. The moisture that rises into the air, will be sufficient to induce the bulbs to put forth roots; and the total absence of light will prevent the leaves from being stimulated into growth.

Much confusion has prevailed respecting the appellation of the favorite Bell-flowers. The little Campanula, whose blossom "nods on the summit of a stalk so slender, as to appear supported by magic," and which we call the Heath-bell, is the Hare-bell of Scotland, while the Hare-bell of England is the Scottish Blue-bell, intimately associated with one of our most popular modern airs. Indeed scarcely less celebrated in song, than the famed Hyacinth of the ancients, (a flower no longer to be identified with certainty,) is the simple Hare-bell, which with the revival of nature, animates

—"the lone copse, or shadowy dell,
Wild cluster'd."

The term non-scriptus was applied to this plant by Dodonæus, because it had not the characters Ai, Ai, (the token of grief, as it were impressed by the fatal discus, which deprived this favourite of Apollo of life,) inscribed on the petals, and therefore could not be Hyacinthus poeticus. The true poetical Hyacinth of the ancients is supposed, by those who hazard a conjecture, to be the Red Martagon Lily, most of which Mr. Martyn observes, are marked with a darker colour forming the revered symbol;

——— "Apollo with unweeting hand,
Whilome did slay his dearly loved mate,
Young Hyacinth, the pride of Spartan land;
But then transformed him to a purple flower."

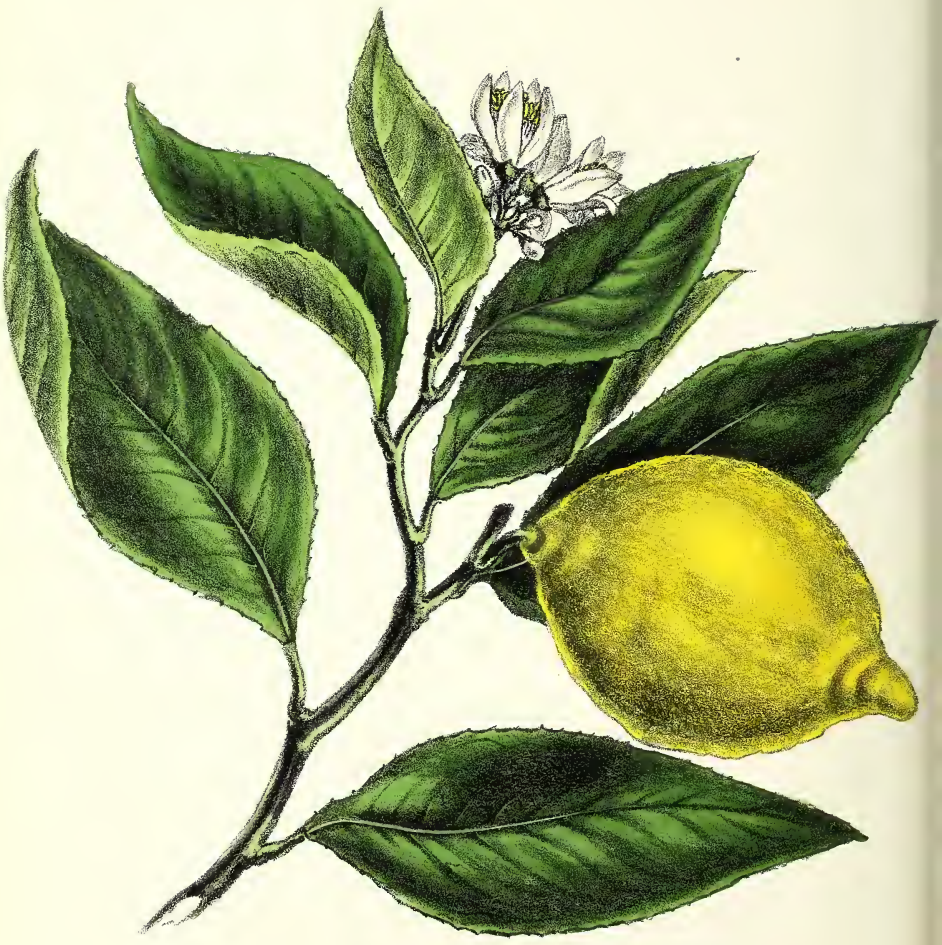
And Virgil, in speaking of the Hyacinth, uses an epithet peculiarly applicable to the Martagon Lily:

——— "et ferrugineos Hyacinthos." Georg. 4.

Confirmed also by a description in Ovid, x. These equally display the tokens

"Del languido Giacinto, che nel grembo
Porta dipinto il suo dolore amaro."

Though the Hare-bell be often admitted into our gardens, the expensive varieties of the Hyacinth which ornament the parterre or the boudoir are derived from H. Orientalis of Aleppo and Bagdad, and sometimes obtain a price of from ten to twenty or even thirty pounds, for a single bulb, especially the fine kinds produced near Haerlem, (of which there are nearly two thousand, and cultivated by the acre,) a species of extravagance scarcely justifiable.



Citrus Limonum

CITRUS LIMONUM.——THE LEMON TREE.

Class XVIII. POLYADELPHIA.——Order III. ICOSANDRIA.

Natural Order, AURANTIACEÆ.——THE ORANGE TRIBE.

It is supposed that the genus Citrus has derived its name from the town Citron, in Judea, but this is very doubtful. The most remarkable varieties of the Lemon in English gardens are, 1st Common Lemon, 2nd Pear-shaped Lemon, fruit small with very little juice, 3rd Imperial Lemon, (the fruit of this variety is sometimes imported from Italy, but mostly from Spain and Portugal,) 4th Furrowed Lemon, 5th Childing Lemon, 6th Double flowered Lemon, 7th Broad leaved Lemon, 8th Chinese Lemon, 9th Rough fruited Lemon, 10th Smoothed leaved Lemon, 11th Gold and silver striped Lemon, 12th Upright Lemon, 13th Warted fruited Lemon, 14th St. Helena Lemon. Brown mentions this variety as having been introduced into Jamaica, and much cultivated there, on account of its large fruit, which frequently yields about a pint of juice; 15th Fingered Lemon. In China and other parts of the East, they have a remarkable variety of Lemon or Citron, which has a solid fruit, without any cells or pulp and divided about the middle into 5 or more long round parts, a little crooked, and having the appearance of the human hand, with fingers a little bent, whence the Chinese call it, *phat theu* or fingered Lemon. *Culture.* The species of Limonia will thrive well in a mixture of loam and peat, with the addition of a little rotten dung; ripened cuttings will root in sand under a hand glass, in a moist heat. The Lemon flowers in May and July. Height from 8 to 20 feet.

Amid the innumerable variety of vegetables (says a French author,) which is spread by the hand of the Creator over the surface of the earth, there are none which can be compared with the Citron tribes, which unite all the advantages of the most agreeable plants with those of the most useful, noble and regular in their form, possessing perpetual verdure in their foliage, beauty of colour and of smell in their flowers, a deliciously flavoured fruit, whose elegant form is adorned with the colour of gold; everything in fact, connected with these charming trees, is formed to delight the sight, to please the smell, and to gratify the taste. The property belonging to the citron tribe of bearing fruit and flowers at the same time, has been beautifully touched upon by Moore:

> Just then beneath some orange trees,
> Whose fruit and blossoms in the breeze,
> Were wantoning together, free,
> Like age at play with infancy, &c.

The whole of the citrus tribe are evergreen trees or shrubs, with axillary spines and simple leaves, with their petioles usually winged. Flowers white and exquisitely fragrant but heavy. Fruit with a yellow rind and soft usually delicious pulp. In the districts toward the sea coast in the south and south west of Italy, especially about Sorento and Amalfi, you meet not only with groves of orange and lemon trees, but almost with forests. Lemon trees were first grown in Britain, in the Botanic Garden at Oxford in 1648. They have been cultivated in the open air in England, and for a hundred years they have been seen in a few gardens in the south of Devonshire, trained as peach trees against the walls, and sheltered only with mats of straw during the winter. The fruit of these is stated to be as large and fine as any from Portugal.

The Portuguese had many of the most curious sorts of Lemons, brought from the Indies formerly, which seemed to thrive almost as well there as in their native soil, and yet they have not been increased. There are a few trees still remaining in some neglected gardens near Lisbon, almost unnoticed by the inhabitants. (Martin.)

The useful parts of the lemon are the juice and the outward rind of the fruit, and the volatile oil of the rind. The juice of lemons is analogous to that of the orange, from which it only differs in containing more citric acid, and less syrup. The quantity of the former is indeed so great, that the acid has been named from the fruit, acid of lemons, and is always prepared from it. The simple expressed juice will not keep on

account of the syrup, extractive mucilage, and water, which cause it to ferment; the yellow peel is an elegant aromatic, and is frequently employed in stomachic tinctures and infusions; and yields by expression or distillation with water an essential oil, which is much used in perfumery. Fresh lemon juice is truly specific in the prevention and cure of scurvy; that is, its effects are certain, and cannot be explained, for the crystallized acid, and even the rob or inspissated syrup, do not produce the same salutary effects. It is given freely mixed with water and sugar, and in a short time the symptoms disappear.

The juice is also a powerful and agreeable antiseptic. Its powers according to Dr. Wright, are much increased, by saturating it with muriate of soda. This mixture he recommends as possessing very great efficacy in dysentery, remittent fevers, pains in the bowels, putrid sore throat, and being perfectly specific in diabetes and lientery. Citric acid is often used with great success for allaying vomiting; with this intention it is mixed with carbonate of potass, from which it expels the carbonic acid with effervescence. This mixture should be drunk as soon as it is made, or the carbonic acid gas, on which its antiemetic power chiefly depends, may be extricated in the stomach itself, by first swallowing the carbonate of potass dissolved in water, and drinking immediately afterwards the acid properly sweetened. The doses are about a scruple of the carbonate dissolved in 8 or 10 drachms of water, and an ounce of lemon juice, or an equivalent quantity of citric acid. Don's General System of Gardening.

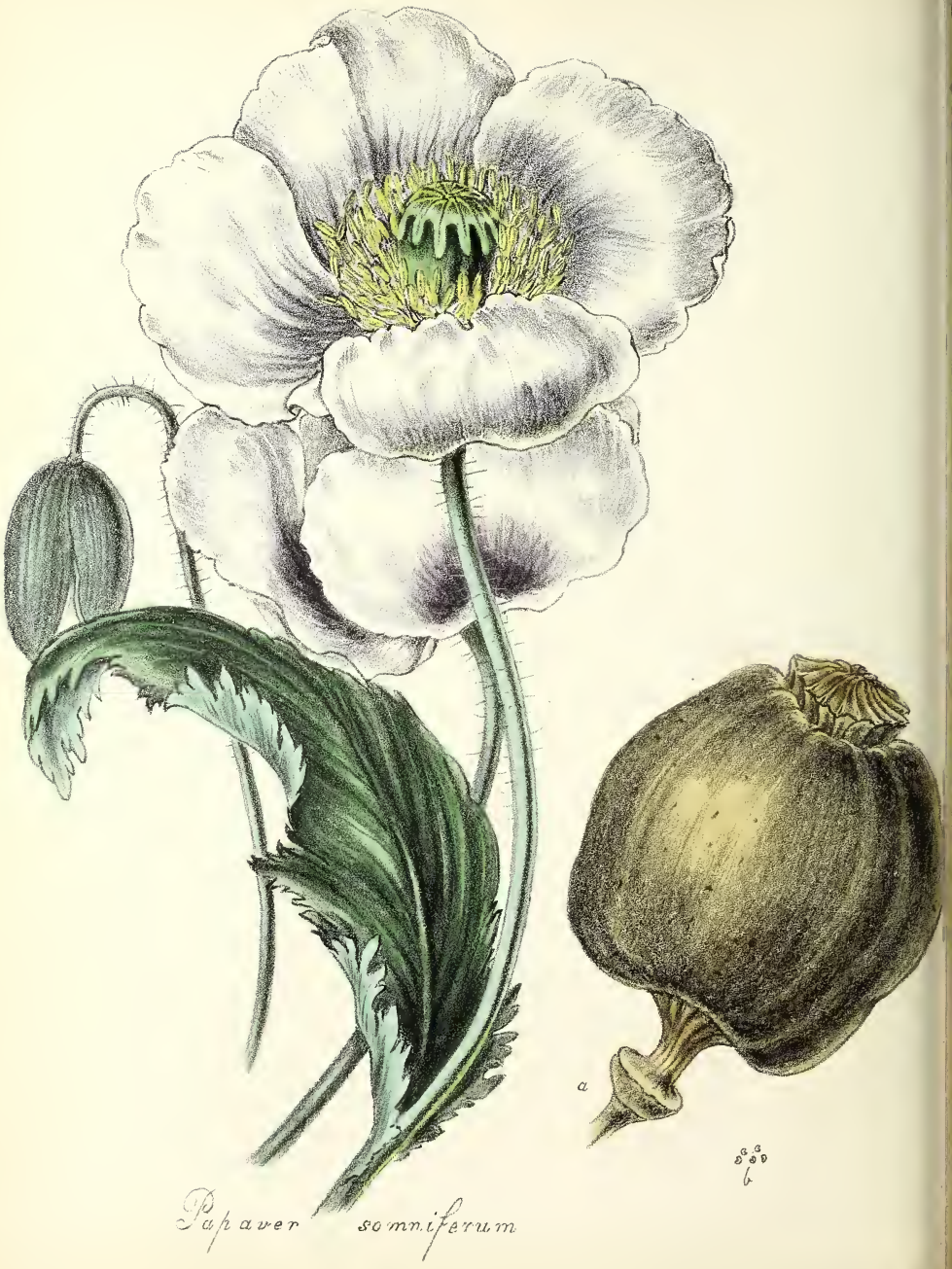
Lemonade is often made unskilfully by pouring boiling water on sliced lemons, instead of squeezing lemon-juice into water. A strong infusion is thus made of the aromatic peel, counteracting in some degree the refreshing effects of the juice. This erroneous method seems to have arisen from motives of economy when lemons were very dear. A veteran fruiterer once told us that he recollected lemons being half-a-crown a piece, and that a still older dealer monopolized lemons during a period of the American war, and sold them at 5*s.* each. (*Penny Magazine, No.* 325.)

The French Pharmacopœia, after giving a formula for making *eau gazeuse simple*, simple carbonated water, adds, that by putting two ounces of syrup of lemons in each twenty-ounce bottle, before pouring in the carbonated water, a very pleasant beverage is formed, called *limonade gazeuse*, or effervescing lemonade. "En variant la nature du sirop, on peut préparer ainsi à volonté un grand nombre de boissons acidules et sucrées." Soda-water will do as well as the plain carbonated water. The following is the method of making citric acid given in the London Pharmacopœia; we borrow the translation, as well as the observations on the properties and uses of the remedy, from Dr. A. T. Thomson's Dispensatory.

Take of lemon juice, four pints; prepared chalk, four ounces and a half; diluted sulphuric acid, twenty-seven fluid ounces and a half; distilled water, two pints. Add the chalk by degrees to the lemon-juice heated, and mix them; set by, that the powder may precipitate; then pour off the supernatant liquor. Wash the citrate of lime frequently with warm water; then pour on it the diluted sulphuric acid and the distilled water, and boil for fifteen minutes; press the liquor strongly through a linen cloth, and filter it. Evaporate the filtered liquor with a gentle heat, and set it aside, that crystals may form. To obtain the crystals pure, dissolve them in water a second and a third time; filter each solution, evaporate, and set it apart to crystallize.

Medical properties and uses. The solution of this acid in water, in the proportion of nine drachms and a half of the crystals to a pint of water, answers nearly all the purposes of recent lemon-juice for forming the common effervescing draught with carbonate of potassa. The following table shows the quantity of citric acid required to saturate one scruple of the alkaline salts mentioned in it.

ALKALINE SALTS.	CITRIC ACID.
Bicarbonate of Soda, gr. xx.	gr. x.
Carbonate of Soda, gr. xx.	gr. xij.
Bicarbonate of Potassa, gr. xx.	gr. xiv.
Carbonate of Potassa, gr. xx.	gr. xvij.
Sesquicarbonate of Ammonia, gr. xx.	gr. xxiv.



Papaver somniferum

PAPAVER SOMNIFERUM.——THE WHITE OR OPIUM POPPY.

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

Natural Order. PAPAVERACEÆ.——THE POPPY TRIBE.

From *Papaver*, the Latin name of this plant, are derived the Anglo-Saxon *papig*, the English *poppy*, and the French *pavot*. It is a generally received opinion, that the common garden or White Poppy is a native of the East, but it has naturalized itself in fields and waste grounds in the south of Europe, and even in England, where it is cultivated, chiefly for the sake of the capsules. These are raised in great quantities at Mitcham, in Surrey, for the supply of the London market; the average price of each bag containing 3000 capsules, being about £4. 10. The white poppy is found growing spontaneously on the sandy banks of the fen ditches in some parts of Norfolk and Cambridgeshire. We found it growing in great abundance, apparently wild, on a chalky bank, by the side of the Thames, in Ingress Park, Kent, and in an adjoining corn-field. It is a hardy annual, flowering in July, and varying in our gardens in the forms and colours of its rich, beautiful double petals; but easily changing, if neglected, to its single state, and to a pale purple or white hue, having a deep violet stain on each petal. The largest heads, for medical use, are obtained from the single-flowered kind, here figured, which is extensively cultivated in Turkey, Persia, India, and other warm climates, not only for the purpose of obtaining opium, but also on account of the bland oil, which is expressed from the seeds.

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

"Two kinds of opium are found in commerce, distinguished by the names of Turkey and East India opium. The Turkey opium is a solid, compact, perfectly transparent substance, of moderate specific gravity, possessing a considerable degree of tenacity, yet somewhat brittle; if half cut through, the section dense and a little shining; of a dark brown colour, becoming softer by the heat of the fingers, with difficulty reduced to powder, unless in the cold, after having been long dried in small pieces. Powder of a light brown, and readily plastic when baked together, when moistened marking on paper a light brown interrupted streak, scarcely colouring the saliva when chewed, at least only tinging it of a greenish colour, and rendering it frothy, exciting at first a nauseous bitter taste, which soon becomes acrid with some degree of warmth, and having a peculiar disagreeable smell. The best kind of opium is in flat pieces; and besides the large leaves in which they are enveloped, they are covered with reddish capsules of a species of rumex used in packing it. The round masses which have none of the capsules adhering to them are evidently inferior in quality. Opium is bad if it is soft or friable, mixed with any impurities, have an intensely dark or blackish

colour, a weak smell, a sweetish taste, or draw upon paper a brown continuous streak. The East Indian opium has much less consistence, being sometimes not thicker than tar, and always ductile. Its colour is much darker, its taste more nauseous and less bitter, and its smell rather empyreumatic. When imported it is considerably cheaper than Turkey opium, and is supposed to be only half the strength. One eighth of the weight is allowed for the enormous quantity of leaves with which it is enveloped. In the East Indies when opium is not good enough to bring a certain price, it is destroyed under the inspection of public officers. No opium of this kind is brought to Europe. Mr. Ker relates, that at Bahar it is frequently adulterated with cow dung, the extract of the poppy produced by boiling and various other substances. In Malava it is mixed with oil of Sésamun, which is often one half of the mass; ashes and dried leaves of the plant are also used. It is also adulterated with the aqueous extract of the capsules; the extracts of Glaucium lùteum, Lactùca viròsa, and Glycyrrhìza glàbra, and sometimes with gum arabic, tragacanth, aloes, and many other articles."

Don's General System of Gardening.

The following is an extract from a Lecture delivered by Dr. Sigmond at the Medico-Botanical Society, on Opium:

"It is a subject," he said, "of vast importance to the commerce of the country, to a great nation in the Eastern world, and indeed to mankind at large. The poppy is indigenous and grows spontaneously in a large tract of Asia, but there is a farm, the *Afiouru Hasa Hissar*, where it is cultivated with great care. At particular seasons of the year incisions are made, and the opium collected with the knife, and thrown into gourds or basins, where it undergoes fermentation — a process which is not absolutely necessary, but is considered important. Description at length of this drug, its management and growth, with other particulars, have been given by a recent French traveller—Texier; but his accounts furnish very little more information than was furnished to the world many years ago by Sir John Chardin, an English traveller. Though the chewing and swallowing of opium are known to have been practised many centuries ago, it is only since the year 1716 that we have become acquainted with the marvellous stories which have been repeated of the extraordinary excitement produced by opium—an excitement totally different from that caused by vinous and alcoholic drinks. Free use of wine and spirits is followed by a high degree of irritation; but the use of opium by calmness and quiescence. There is no ferocity or violence, like that which succeeds the drinking of brandy to excess; nor any of that absolute dejection which is produced by whiskey and gin. It is, however, succeded by a collapse, or re-action, which develops itself in imbecility, a loathing of food, and a repugnance to all the ordinary occupations of life. A grain of opium is a medicinal dose: but the opium-eater is able to increase his quantity until 200 or 300 grains are swallowed daily. The author of the *Confessions of an Opium-eater* admitted that he had taken 320 grains at a time. At the opium shops in Constantinople the drug is administered in pills rolled up by the *marchand*, who knows his customers so well that he can vary the size of the pill to meet their respective appetites. The "patient" reclines on a sofa, takes a glass of water to wash down the pill, and in a few moments those ecstatic dreams and chimerical scenes to which they are accustomed ensue. Sometimes the person makes his way home assuming various grotesque attitudes, being followed by shouts of derision by a mob of boys; or he recites elegant passages of poetry, and generally becomes very eloquent. In fact, the use of opium is said to be so inspiring, that some of our own public orators have had recourse to its use. The excitement having subsided, a stupor, or sopor, which lasts about eight hours, comes on, which is attended by a gnawing of the stomach, but none of that nausea consequent upon the use of vinous or alcoholic drinks. The intoxication of this drug produces an utter listlessness and dislike to everything around the individual, who cannot be happy or easy until he returns to the poison again. At length the appetite for food is destroyed, the mind becomes incapable of pursuing any study, the nervous system is quite unhinged, there is a sort of *delirium tremens*, the muscles become indolent and flaccid and almost incapable of obeying volition, the body becomes deformed, the chest grows out, the ribs are crooked, one shoulder gets higher than the other, the vertebræ are displaced and sunken, the head falls on one side, and all kinds of horrible contortions and distortions take place, until death puts an end to the miserable existence of the opium-eater. Dr. Sigmond then proceeded to describe the practice of opium-smoking among the Chinese, observing that by inhalation the qualities of any substance are more rapidly and effectually infused into the system than by any other mode. The attempts which had been made to cure diseases of the lungs by inhalation had failed, however, and General Gent, who introduced the practice of smoking stramonium for asthma, fell a victim to his nostrum, and died within 24 hours after trying it. The Chinese, when he smokes opium, lies upon a couch with his head elevated, and from a long pipe, into the bowl of which has been placed some of the drug, macerated and prepared for the purpose, he takes only one whiff, and retains the smoke for a time; then, with a skill, of which he is proud, he suffers the smoke to escape from his nostrils, ears, and eyes. The secondary effects upon the China-man are very extraordinary, but opium-smoking is attended with no delightful consequences to the natives of northern climes. The Chinese opium-smoker, on whose countenance the love of opium is written, becomes decrepit in early life, his skin appears like parchment, and if but 25 years old, he looks full twice that age, and all the results of opium-eating become his lot. The Chinese authorities, who have repeatedly forbidden the use of this poison, describe those once accustomed to it as being "totally unable to live without it; they cannot be prevailed upon by any means to relinquish it; their faces become sharp as arrows, and their heads sunk between their shoulders; the

poison falls into their innermost vitals, physic cannot cure them, and repentance comes too late." Gutzlaff, Mr. Earle, and every other traveller who has witnessed the effects of the use of opium, have made similar statements. Dr. Sigmond remarked, however, that morphia, which is obtained from this drug, when medicinally applied, and under proper direction, might be made to produce beneficial effects, not upon the lungs, but upon the nervous system, in certain states and stages of disease. He mentioned that the digestion would become so deadened by the use of opium that the stomach could take substances which, under ordinary circumstances, would destroy life. There was a man named Solyman, the corrosive sublimate eater in Constantinople, who went into a chymist's shop, and took a large quantity of that substance, which he washed down with a glass of water, and went away. The apothecary, fearing that he should be punished for poisoning a Turk, shut up shop and decamped; but, after some days, hearing nothing further of the matter, he returned; and so did his customer the next day, and repeated his dose of corrosive sublimate, without injury; such was the state of inaction to which his stomach had been reduced by the use of opium. Dr. Sigmond having recited some more of the effects of the drug, as described by M. De Quincey, in his "Confessions," concluded by referring to the edicts which had been issued by the Chinese Government for many years past against the use of it, and observed, that though at the meetings of the Medico-Botanical Society it was not to be expected that political feelings would be at all indulged in, yet it must be admitted that no government, having the welfare of a nation at heart, would witness the progress of such demoralizing practice without making efforts to check it; and he did not think himself wrong in saying, that if opium-smoking among the Chinese were continued, there could be little doubt that China would become an object of contempt and pity to the civilized world."

The Earl Stanhope remarked, that

"The debilitating and enervating effects of opium were such, that it appeared when a military expedition was about to be sent out by the Emperor of China, no less than 4,000 men from the immediate vicinity of Canton were obliged to return to their homes, having been rendered utterly unfit for service by the use of opium. It was not to be wondered that a sovereign who watched with incessant anxiety and care for the welfare of upwards of 300,000,000 of subjects should prohibit, under the strictest penalties, the importation of a drug so detrimental and destructive, alike of mind and body, among a people the most ingenious, intelligent, and industrious that ever existed, either in ancient or modern times."

The following description is from Hope's Anastasius, which although a work of fiction, contains in its descriptive scenes, correct and vivid representations of the manners of the East.

"The great mart of that deleterious drug, is the Theriakee Tchartchee. There, in elegant coffee houses, adorned with trellised awnings, the dose of delusion is measured out to each customer according to his wishes. But, lest its visitors should forget to what place they are hieing, directly facing its painted porticoes stands the great receptacle of mental imbecility, erected by Sultan Suleiman for the use of his capital. In this Tchartchee might be seen, any day, a numerous collection of those whom private sorrows have driven to public exhibition of insanity. There each reclining idiot might take his neighbour by the hand and say, "Brother, and what ailed thee, to seek so dire a cure." There did I, with the rest of its familiars, now take my habitual station in my solitary nich, like an insensible, motionless idol, sitting with sightless eyeballs, staring on vacuity. One day as I lay in less entire absence of mind than usual, under the purple vines of the porch, admiring the gold-tipped domes of the majestic Sulimanye, the appearance of an old man, with a snow-white beard, reclining on the couch beside me, caught my attention. Half plunged in stupor, he every now and then burst out into a wild laugh, occasioned by the grotesque phantasm which the ample dose he had swallowed was sending up into his brain. I sat contemplating him with mixed curiosity and dismay, when as if for a moment roused from his torpor, he took me by the hand, and fixing on my countenance his dim, vacant eyes, said in an impressive tone, "young man, thy days are yet few: take the advice of one, who, alas, has counted many. Lose no time, hie thee hence, nor cast behind one lingering look: but if thou hast not the strength, why tarry, even here? Thy journey is but half achieved. At once go on to that large mansion before thee. It is thy ultimate destination; and by thus beginning where thou must end at last, thou mayest at least save both thy time and thy money."

The people of Java are addicted, in a very remarkable degree, to excess in the use of opium. Such of the natives or slaves as have been rendered desperate by the pressure of disappointment or misfortune give themselves up entirely to the baneful indulgence, until their minds are raised to a state of frightful excitement or rather frenzy. In this state they rush forth with dreadful purposes against all by whom they think they have been wronged or offended. They run along shouting "Amok! Amok!" or "Kill! Kill!" and in their blind fury stab at every person they meet, until self-preservation obliges the people to kill them, as we kill a mad dog. This is what is termed "running a muck," and is most commonly the result of the strong propensity of the people to gambling, by which they are often deprived of all they possess in the world, and worst

loss of all, even lose their own self-respect. The immediate destruction of the muck-runners is authorised by the law in Java. Pope alludes to the Javan custom in the well known lines:

> Satire's my weapon, but I'm too discreet
> To run a-muck, and tilt at all I meet.

The subjoined extract from De Quincey's Confessions of an Opium Eater, shows to what a frightful excess it is taken.

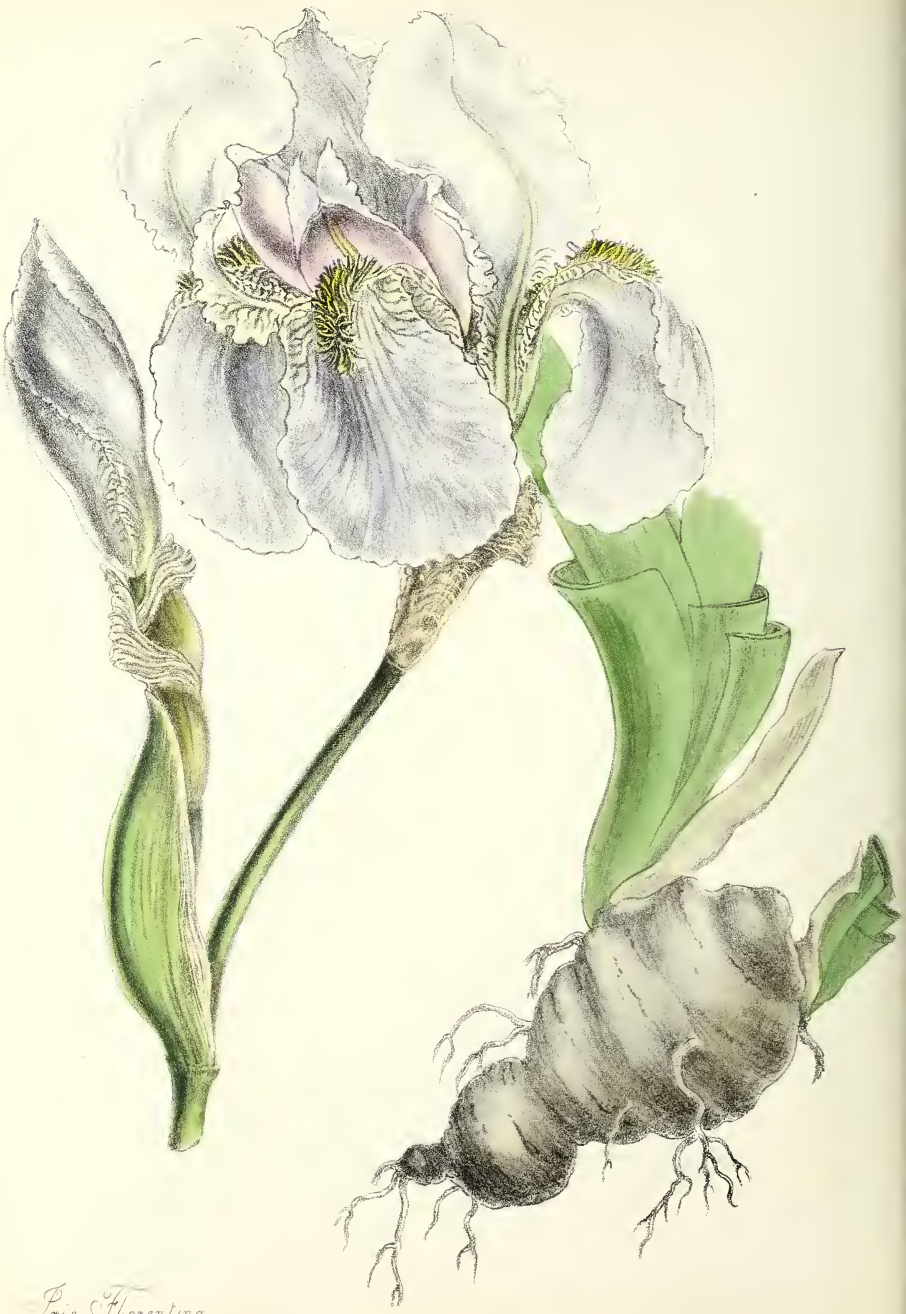
"On the Malay's departure, I presented him with a piece of opium. To him, as an Orientalist, I concluded that opium must be familiar; and the expression of his face convinced me that it was. Nevertheless, I was struck with some consternation when I saw him suddenly raise his hand to his mouth, and (in the school boy phrase) bolt the whole, divided into three pieces, at one mouthful. The quantity was enough to kill three dragoons and their horses: and I felt some alarm for the poor creature, but what could be done? I had given him the opium in compassion for his solitary life, on recollecting that if he had travelled on foot from London, it must be nearly three weeks since he could have exchanged a thought with any human being. I could not think of violating the laws of hospitality, by having him seized and drenched with an emetic, and thus frightening him into a notion that we were going to sacrifice him to some English idol. No: there was clearly no help for it:—he took his leave, and for some days I felt anxious: but as I never heard of any Malay being found dead, I became convinced that he was used to opium: and that I must have done him the service I designed, by giving him one night of respite from the pains of wandering."

In many parts of India, opium is presented at visits and entertainments in the same familiar manner, as the snuff-box in Europe. There is in that country a class of persons who carry letters and run with messages through the provinces, with no other provision than a piece of opium, a bag of rice, and a pot to draw water from the wells. These men perform journeys that would scarcely be credited in this country. In the same manner trackless deserts of the different countries between the Indus and Mediterranean are traversed by foot messengers, by the aid of this drug, with a few dates perhaps, and a piece of coarse bread. The old traveller, Sir Thomas Herbert, very well describes this use of opium. "Opium (the juice of poppy,) is of great use, there also (in Persia,) good, if taken moderately, bad, nay mortal, if beyond measure; but by practice, they make that familiar which would kill us, so that their medicine is our poyson. They chaw it much, for it helps catarrhs, cowardice and the epilepsie, and which is admirable, some extraordinary foot-post they have, who, by continually chewing this, with some other confection, are enabled to run day and night without intermission, seeming to be in a constant dream or giddiness, seeing but not knowing whom they meet, though well acquainted, and miss not their intended places, by a strange efficacy expulsing the tedious thoughts of travel, and rarely* for some days deceiving the body of its reasonable rest and lodging."

Opium is one of the most useful articles in the Materia Medica, for as a narcotic, an anodyne and an antispasmodic it is probably unrivalled. It is prescribed in agues, in typhus fevers, dysentery, diarrhœa, tetanus, and in a great variety of diseases, where pain or watchfulness is a prominent symptom. One of the greatest improvements in modern practice is the use of opium in inflammation, when many of the symptoms continue after repeated blood-letting. In ordinary cases, the dose of opium is from one to two grains at bed time, but in urgent maladies much larger quantities have been given with advantage. The inexperienced, however, should not rashly tamper with so dangerous a drug. Many infants lose their lives every year from the administration of Godfrey's Cordial, and other nostrums containing opium.

In skilful hands opium and its fluid preparations have proved of service when used externally, in the shape of ointment or liniment.

* Rarely—Wonderfully.



Iris Florentina

IRIS FLORENTINA.——FLORENTINE IRIS.

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

Natural Order, IRIDEÆ.——THE CORN FLAG TRIBE.

The Iris is so called from the brilliancy of its colours and the graceful curve of its petals, emulating the arch of Iris or the rainbow. 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, towards the end of the sixteenth century. The flowers are very handsome, and appear early in May.

The Florentine Iris has a thick tuberous creeping stem, usually called its root; externally it is brown, yellowish white within, and sends out numerous fibres, which are the true roots, from the under part; when these are pared off, the stem appears 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 perianth is divided into six segments, the three outer ones being the largest, reflexed and spreading; they 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, white and striated near the flexure; the inner erect segments 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 compound, short, and thread-shaped, and separates into three equal dilated segments, of the texture of petals, which arch over the stamens. These are the stigmata. The capsule is three-celled, and contains many flat brown seeds.

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 read before 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 headach 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. As a dentrifice it is commonly conjoined with burnt hartshorn, charcoal, Armenian bole, dragon's blood, and other substances, as in the following formula:—

℞. Pulv. Cornu Cervi usti ʒ ij.
Pulv. Rad. Iridis Florent. ʒij.
Pulv. Gummi resinæ Sanguis Draconis dicti ʒj.
Olei Rosæ gtt. ij. Misce ut fiat pulvis quo dentes fricentur.

Another species of Iris is called the *Fleur-de-luce*, probably a corruption of *Fleur-de-lis*. Louis the seventh of France adopted it on his shield during the crusades; and Edward the Third transferred this emblem from the plains of Cressy to the arms of England.

The fresh roots have been mixed with the food of swine bitten by a mad dog, and they escaped the disease, when others bitten by the same dog died raving mad. The root loses most of its acrimony by drying. Goats eat the leaves when fresh: but cows, horses, and swine refuse them. The roots are used in the island of Java to dye black. Pennant's Tour, 1772. (Linnæus asserts this plant to be decidedly injurious to all cattle, except goats.) Mr. K. Skrimshire has discovered that the seeds afford an excellent substitute for foreign coffee. Being roasted in the same manner, they very much resemble it in colour and flavour, but have something more of a saccharine odour, approaching to that of extract of liquorice. When carefully prepared, they possess much more of the aroma of coffee than is to be found in any of the leguminous or gramineous seeds that have been treated in the same way. Coffee made of these seeds is extremely wholesome and nutritious, in proportion of half an ounce or an ounce to a pint of boiling water.

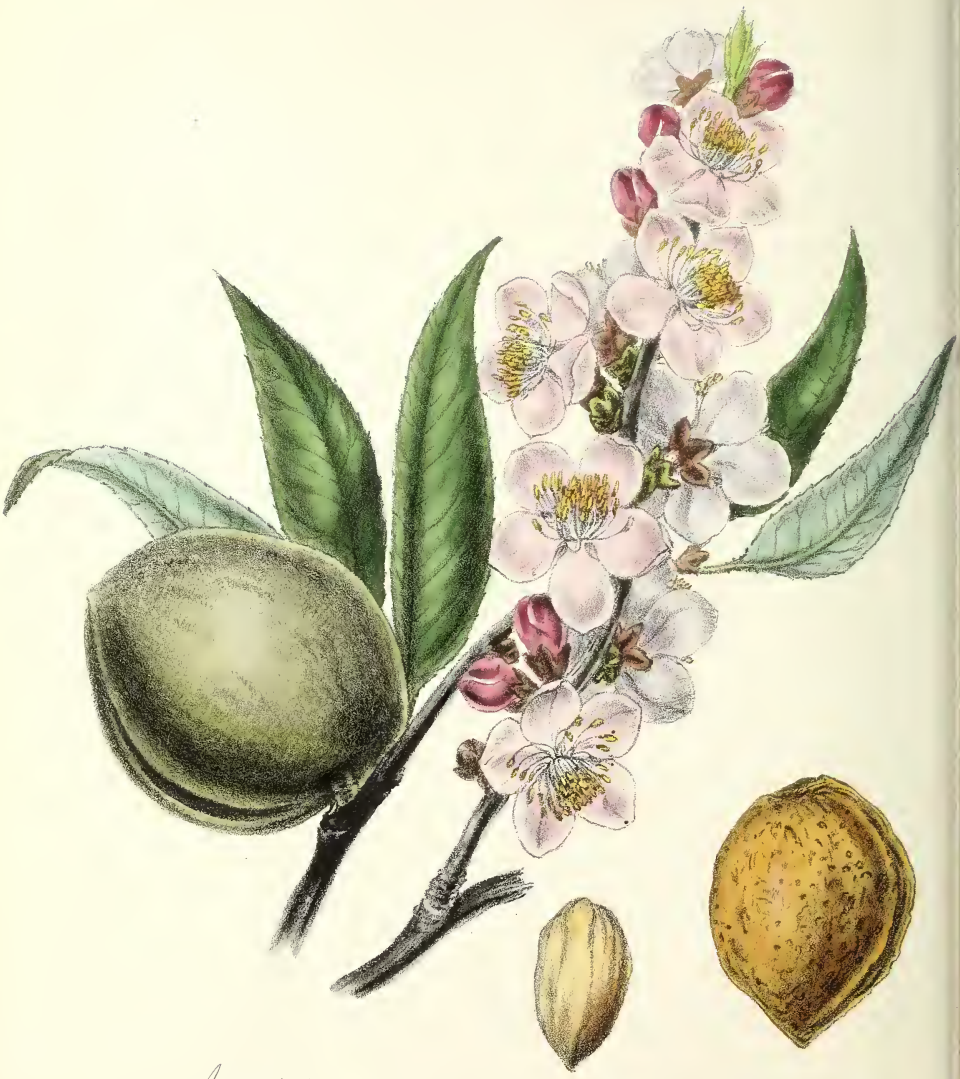
The leaves smell like rancid bacon. Few plants exceed the Iris in elegance of form and colour. Our gardens exhibit a rich variety; nor should we omit to encourage the Water-flag in ornamental grounds, where naturally, beside the limpid stream or translucent lake,

"Amid its waving swords, in flaming gold the Iris towers."

The agency of insects is indispensable to the fecundation of the different species of Iris. In these, as Kölreuter ingeniously remarks, the true stigma is situated on the upper side of a transverse membrane, (arcus eminens of Haller;) which is stretched across the middle of the under surface of the petal, like expansion or style-flag, the whole of which has been often regarded as fulfilling the office of a stigma. The anther being situated at the base of the style-flag which covers it, at a considerable distance from the stigma, and at the same time cut off from all access to it, by the intervening barrier formed by the arcus eminens, it is clear, that, but for some extraneous agency, the pollen could never arrive at the place of its destination. In this case the humble bee is the operator. Led by instinct, or as Sprengel supposes, by one of those honey-marks (saft-maal,) or spots of a different colour from the rest of the flower, which may be considered as destined to guide insects to the nectaries, she pushes herself between the stiff style-flag and elastic petal, which last, while she is in the interior, presses her close to the anther, and thus causes her to brush off the pollen with her hairy back, which ultimately, though not at once, conveys it to the stigma. Having exhausted the nectary she retreats; and, in doing so, is pressed by the petal to the arcus eminens, but it is only to its lower or negative surface, which cannot influence fertilization. She now takes her way to the second petal, and insinuating herself under its style-flag, her back comes in close contact with the true stigma, which is thus fertilized by the pollen of the first visited anther: and in this manner migrating from one part of the blossom to another, and from flower to flower, she fructifies one with pollen gathered in her search after honey in another. Whoever thus endeavours to unravel the wonderful contrivance of nature, cannot but sensibly feel, and feelingly exclaim—

"Author of all! How bright thy glories shine!
How pure, how perfect is thy least design!"

In the language of flowers, the Iris very appropriately signifies a message, for Iris was the messenger of Juno.



Amygdalus communis

AMYGDALUS COMMUNIS.——THE COMMON ALMOND TREE.

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

Natural Order. AMYGDALEÆ.——THE ALMOND TRIBE.

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

This fact is thus delightfully touched on by Moore:

> The hope, in dreams, of a happier hour
> That alights on misery's brow,
> Springs out of the silvery almond flower,
> That blooms on a leafless bough.

This tree rises to the height of about twenty feet, is much branched, and covered with a greyish bark. The leaves, which considerably resemble those of the peach, are three or four inches long, elliptical, petioled, narrow, pointed at each end, serrated, with small glands at the base, and of a bright green colour. The flowers are in numerous pairs, sessile or on very short foot-stalks, varying in colour from rose-red to snow-white, and appear in March and April. The calyx is tubular, reddish externally, and divided at the margin into five blunt segments: the corolla consists of five ovate, concave petals, irregularly notched and waved at the edges, and inserted by narrow claws into the calyx; the filaments about thirty, cylindrical, unequal, shorter than the corolla, inserted into the calyx, and furnished with roundish orange-coloured anthers; the germen is downy at the base, with a short, simple style, supporting a round stigma. The fruit, as well as the leaves, resemble those of the peach-tree, a species of the same genus, or, as some declare, a variety of the same species, but is more flat, and instead of possessing the rich pulp of the latter, has a tough coriaceous covering, which opens spontaneously at the longitudinal furrow, when ripe. The kernel, which is the Almond of the shops, is inclosed in an oblong, flattish, brittle, spongy shell, of a brown colour, pointed at one end and composed of two cotyledons enveloped with a thin brown skin.

The Almond-tree is common in China, and most parts of Asia, as well as in Barbary, where it is a native. In the south of France it is much cultivated, especially in Provence and Dauphiné, for the sake of the fruit, which is rarely matured in England.

It appears to have been known at a very remote period, and is mentioned by Hippocrates, Theophrastus, and other ancient authors. It has been long cultivated in England and is a great favourite in the shrubbery, blossoming sometimes as early as February, and forming a most enchanting harbinger of spring.

Bacon enumerates the almond among the plants which, in the climate of London, blossom in March. He holds that in "the royal ordering of gardens there ought to be gardens for all the months in the year, in which, severally, things of beauty may be then in season." Thus "for December and January, and the latter part of November, you must take such things as are green all the winter; holly, ivy, bays, juniper, cypress trees, yew, pines, fir trees, rosemary, and lavender; periwinkle, the white, the purple, and the blue; germander, flag, orange trees, lemon trees and myrtles, if they be stoved; and sweet marjoram, warm set. There followeth for the latter part of January and February, the mezereon tree, which then blossoms; crocus vernus, both the yellow and the grey; primroses, anemones, the early tulip, hyacinthus orientalis, and chamaïris fritellaria. For March, there come violets, especially the single blue, which are the earliest; the early daffodil, the daisy, the almond tree in blossom, the peach tree in blossom, the cornelian tree in blossom, and sweetbriar. In April follow the double white violet, the wall-flower, the stock gilliflower, the cowslip, flower-de-luce and lilies of all natures; rosemary-flowers, the tulip, the double-peony, the palo

daffodil, the French honeysuckle, the cherry tree in blossom, the damascene and plum trees in blossom, the white thorn in leaf, the lilac tree." *Bacon's Essays. Of Gardens.*

Of the Almond we have two sorts, the sweet and bitter, which are the produce of mere varieties of the same species, although the fruits themselves differ so much in their sensible properties. The kinds of Almond chiefly cultivated for their fruit are, the common sweet Almond; the tender shelled; hard shelled; sweet Jordan; and bitter Almond.

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

Mr. Burnett says, "The genus Amygdalus is now very properly restrained to the several species of almond, of which there are only six or seven at present known. Amygdalus communis, the common almond, is the most important of these, and of it there are several varieties, such as the bitter, the sweet, the sultana, and others. The A. persicoides is believed to be a hybrid, arising from the flowers of the almond having been fertilized by the pollen of the peach. This peach almond is thought by some persons to be the one said to have been sent as a poison by the Persians to the Egyptians; but the tale has probably arisen from the circumstance of the climate of Egypt being unfavorable to the growth of peach trees, and the development of the fruit. The almond is indigenous to the northern parts of Africa and Asia, and is mentioned in Scripture as one of the choice fruits of Canaan, but although now cultivated commonly throughout Italy, France and Spain, it does not seem to have been introduced so early as the peach; for in the time of Cato, almonds were called 'Greek nuts.' Almonds form a very nutritious but not easily digestible food. They are imported in large quantities into this country from Spain, Barbary, and the Levant."

Burnett's Outlines of Botany.

Qualities and Chemical Properties.—The kernel of the fruit of the Sweet Almond is inodorous, and farinaceous, and contains a large proportion of oil, which is more pure, and less rancid, than olive oil.*

M. Boullay's analysis is as follows:

Oil.	54
Albumen.	24
Sugar (fluid)	6
Fibre	4
Gum	3
Pellicles	5
Water	3.5
Acetic Acid and loss . .	5
	100

Bitter Almonds yield less fixed oil (30—35 per cent.) and more albumen.

The *bitter almond* is also inodorous when entire, but when triturated with water, has the odour of the fresh blossom; and the taste is the pleasant bitter of the peach kernel.

M. Vogel, in his experiments on, and analysis of the bitter almonds, gives the following proportions of the substances in 100 parts:

Peelings	8.5
Fixed oil	28
Albumen	30
Sugar	6.5
Gum	3
Parenchyma	5
Essential oil and prussic acid	19

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

"Essential oil of bitter almonds is largely prepared for the use of perfumers, confectioners, and cooks, who generally use what is called the essence of almonds, or a solution of 3ij. of the oil in 3vj. of alcohol; this is also the most convenient form for its pharmaceutical employment. One hundred weight of the bitter almond cake remaining in the press after the separation of the fixed oil, is put into the still with about four hundred gallons of water, this proportion being necessary to prevent the formation of a mucilaginous magma, from which the volatile oil will not pass, and which often, if brought to boil, rises up into the head and worm of the still. The produce of oil is liable to much variation, a cwt. of cake yielding from one ounce to two ounces and three-quarters by weight. It often deposits a considerable portion of white crystallized matter, which is apparently a distinct vegetable compound. The oil appears to be composed of hydrocyanic acid in union with volatile oil. This was proved by Mr. Hennel, of Apothecaries' Hall, who by digesting red oxide of mercury in it, obtained cyanuret of mercury, from which pure hydrocyanic acid was as usual procured by distilling it with muriatic acid."—BRANDE.

POISONOUS EFFECTS. The noxious influence of the oil of bitter almonds has been long known, even as early as the time of Dioscorides, for he mentions that it was then employed for killing wolves; but until Bohm, a German chemist, ascertained the fact, it was not known that its poisonous properties depended upon the presence of hydrocyanic acid. The fact, however, that this oil does contain prussic acid is easily proved both by tests and also by Hennel's process already described. The bitter almond, given in substance, is exceedingly poisonous, and the distilled water causes an action resembling that of laurel water, producing vertigo, headache, dimness of sight, vomiting, and occasionally epilepsy.

Sir B. Brodie gives the following account of the effect of the essential oil of bitter almonds upon himself.

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

In the fifty-seventh volume of the London Medical and Physical Journal, there is an interesting case of poisoning with bitter almonds, recorded by Mr. Kennedy. The person, a stout labourer, appeared to have eaten a great quantity of bitter almonds, which were subsequently found in the stomach. He was seen to drop down while standing near a wall; soon after which the surgeon, who was sent for, found him quite insensible, with the pulse imperceptible, and the breath exhaling the odour of bitter almonds; and death very shortly took place. Coullon has noticed many other instances where alarming symptoms were produced by this poison, but were dissipated by the supervention of vomiting. Several other fatal cases are also on record, and more will probably occur, since this oil, a composition containing prussic acid, is sold too freely by druggists under the name of *peach nut* oil. Indeed, Christison mentions a fatal case which occurred in London, where the patient, intending to compound a nostrum for worms, got by mistake from the druggist's *peach-nut*, instead of, as he wanted, beech-nut oil. Metzdorf also mentions a case, in which 3ij of this oil were swallowed by a hypochondriacal gentleman forty-eight years of age. A few minutes after, his servant, whom he sent for, found him lying in bed with his features spasmodically contracted, his eyes fixed, staring, and turned upwards, and his chest heaving convulsively and hurriedly. A Physician, who entered the room twenty minutes after the draught had been taken, found him quite insensible, the pupils immoveable, the breathing stertorous and slow, the pulse feeble and only thirty in a minute, and the breath exhaling strongly the odour of bitter almonds. Death ensued ten minutes afterwards.—*Journ. Complémentaire*, &c. xvii. 366. CHRISTISON.

MEDICAL PROPERTIES AND USES.—Almonds are demulcent, and the expressed oil is sometimes converted into an emulsion, by triturating it with mucilage and sugar, and gradually adding distilled water; the diffusion is, however, not very perfect, but a combination more complete and permanent is effected, by adding a few drops either of liquor ammoniæ, of liquor potassæ, or a few grains of the subcarbonate of potass, to the oil, swimming on the water, and without the mucilage. A more elegant emulsion is produced by the confection of almonds, which forms a useful vehicle for tincture of squills or of opium; and is advantageously administered for tickling coughs, and likewise for common drink, where the mucous membrane

of the stomach has been irritated by corrosive poisons. By triturating camphor and the resins with almonds, they are rendered miscible with water. Sweet almonds, when fresh and free from rancidity, are much used as an article of diet, and when taken in moderate quantities are sufficiently nutritive and wholesome. Six or eight blanched almonds relieve heartburn; yet too freely indulged in, they are of difficult solution and digestion, and are very apt to disagree. They occasionally bring on an attack of urticaria febrilis, (febrile nettle-rash); indeed, so powerful is this effect on one of our pupils, that three or four produce that disease in a most marked and violent manner; his whole skin being covered with weals. The late Dr. Gregory was also subject to be affected in the same way.

Almond emulsion (mistura amygdalæ of the Pharmacopœia) agrees in many of its properties with animal milk. Thus it is white; when examined by the microscope, is seen to consist of myriads of globules suspended in a liquid, chemically it is composed of fatty matter (oil), held in suspension by albumen, sugar, and gum; lastly, it agrees with milk in possessing nutritive and emollient properties.

Almond oil possesses the medical properties of the fixed oils in general. Thus its local action is emollient; swallowed in large doses it acts as a mild laxative, in moderate quantities it is nutritive, but difficult of digestion.

Oil of sweet almonds.—Notwithstanding its name, this oil is procured by pressure indiscriminately from sweet and bitter almonds. An expressor of oils informs me that the average produce is about 48 per cent., which is rather below the quantity of oil stated by Boullay to reside in their seeds.

Almond oil, when recently expressed, is turbid, but by rest and filtration becomes quite transparent. It usually possesses a slightly yellow tinge, which becomes somewhat paler by exposure to the light. It is inodorous, or nearly so, and has a bland sweetish taste. It congeals much less readily by cold than olive oil.—*Mr. Pereira in the Medical Gazette.*

Officinal Preparations. The Almond confection of the London Pharmacopœia is composed of eight ounces of sweet almonds, an ounce of gum Arabic, and four ounces of white sugar.

The Mistura Amygdalæ, or almond emulsion, is made by rubbing up two ounces and a half of the confection with an imperial pint of distilled water.

It is a soothing and agreeable mixture, belonging to the class of demulcents, but is chiefly used as a vehicle for more active remedies. When employed as a *tisane*, it may be farther diluted with cold water.

The *Sirop d'Amandes*, or *Sirop d'Orgeat* of the French Codex is made with a pound of sweet almonds, five ounces of bitter almonds, six pounds of white sugar, three pounds and four ounces of river water, and eight ounces of orange-flower water.

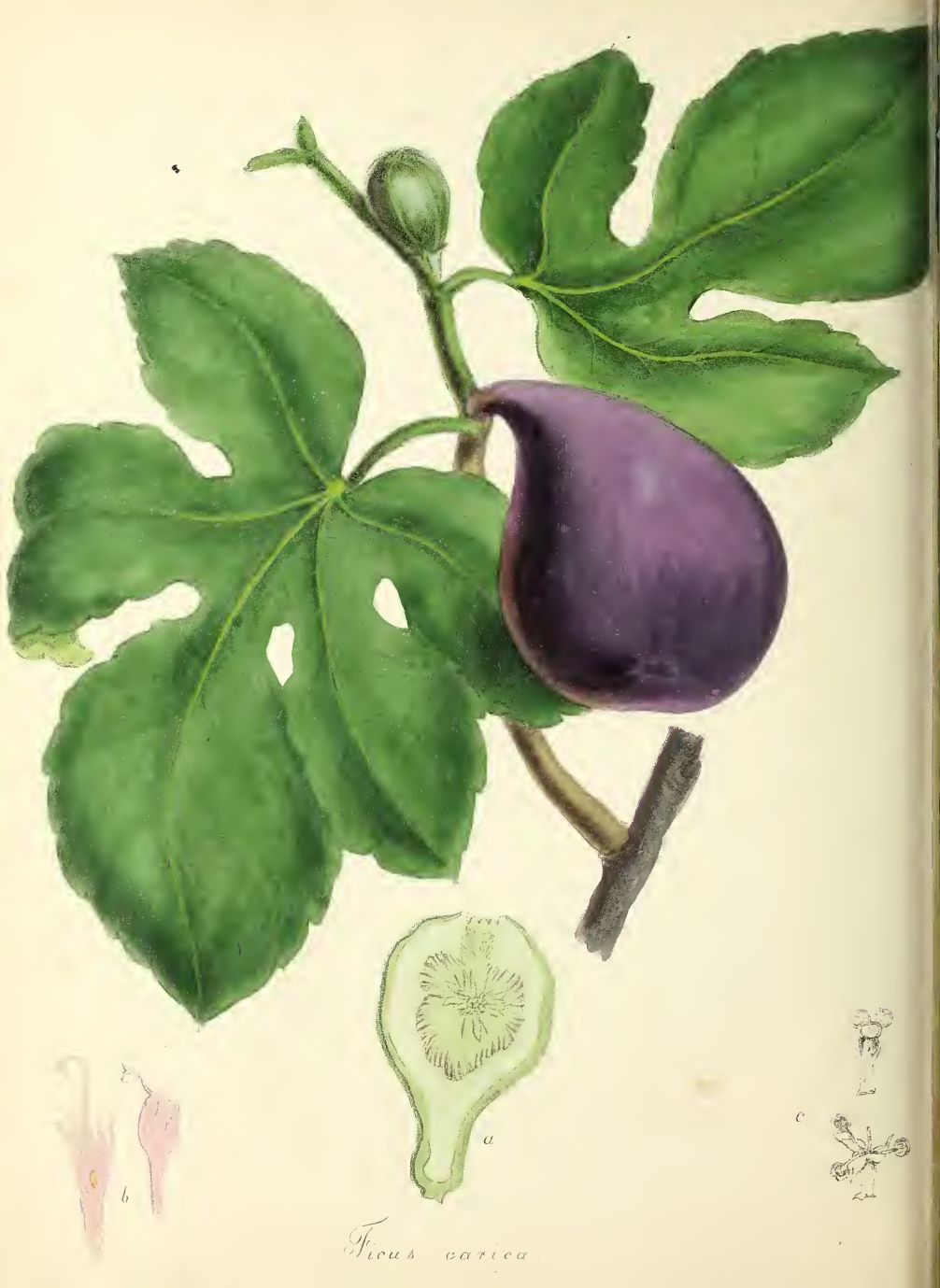
In the following formula, advantage is taken of the property above mentioned which almonds possess, of rendering camphor miscible with water: it is the *Mistura Camphoræ* of the Edinburgh Pharmacopœia.

Take of Camphor one scruple;
Sweet Almonds and
Pure Sugar, of each half an ounce,
Water, one pint.

Steep the almonds in hot water and peel them; rub the camphor and sugar well together in a mortar; add the almonds; beat the whole into a smooth pulp; add the water gradually, with constant stirring, and then strain.

This medicine cannot be taken *ad libitum*, like almond emulsion, as camphor is a drug of considerable power. The dose may be three or four table-spoonfuls four times a day.

In the language of flowers, the almond is the emblem of a promise.



Ficus carica

FICUS CARICA.—COMMON FIG TREE.

Class XXIII. POLYGAMIA.—Order III. TRICŒCIA.

Natural Order, ARTOCARPEÆ.—THE BREAD FRUIT TRIBE.

Fig. (*a*) Exhibits a section of the unripe fruit. (*b*) Two views of the female florets. (*c*) The male florets.

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

In the fructification of the fig there is something very singular. It has no visible flowers; for the fruit arises immediately from the joints of the tree, in the form of little buds, with a perforation or aperture at the end, but not showing any thing like petals. As the fig enlarges, the flower comes to maturity in its concealment, and in eastern countries, the fruit is improved by a singular operation. It is performed by suspending with threads, above the cultivated figs, branches of the wild fig, which are full of insects called cynips. When one of these has become winged it quits its house, and penetrates the cultivated figs for the purpose of laying its eggs; and thus it ensures the fructification by dispersing the pollen, and afterwards hastens the ripening by puncturing the pulp, and causing a dispersion or circulation of the nutritious juices. In France, straws dipped in olive oil are inserted to produce the same effect. Another fact is very remarkable. The fig tree yields fruit through a considerable portion of the year. The first ripe figs are called boccôre, and reach maturity about the latter end of June, though, as in other trees, a few ripe ones are produced before the full season. These few are probably of an inferior value, according to the language of the Prophet Hosea: "I found Israel like grapes in the wilderness; I found your fathers as the first ripe fruit in the fig tree at her first time." When the boccôre approaches perfection, the karmouse, or summer fig, begins to be found. This is the crop that is dried. And, when the karmouse ripens, in Syria and Barbary, there appears a third crop, which often hangs and matures upon the tree after the leaves are shed.

In no country is it found in elevated situations, or at a distance from the sea. Hence its abundance in the islands of the Archipelago, and on the shores of the adjoining continents. It has been cultivated from time immemorial, and indeed, the fig was said to have been the first fruit eaten by man. In the Bible we read frequently of the fig tree, both in the Old and New Testament. Among the Greeks, we find, by the laws of Lycurgus, that figs formed a part of the ordinary food of the Spartans. The Athenians were so choice of their figs, that they did not allow them to be exported; and the informers against those who broke this law, being called sukophantai, from two Greek words, signifying the discoverers of figs, gave rise to our modern word sycophant. The fig tree under which Romulus and Remus were suckled, and the basket of figs in which the asp was conveyed to Cleopatra, are examples familiar to every one of the frequency of the allusions to this tree in ancient history. At Rome, the fig was carried next to the vine in the processions of Bacchus, who was supposed to have derived his corpulency and vigour from this fruit, and not from the grape. Pliny, also, recommends figs as being nutritive and restorative; and it appears from him, and other ancient writers, that they were given to professed champions and wrestlers to refresh and strengthen them.

The first fig trees planted in England are said to have been brought from Italy in 1525, in the reign of Henry VIII. by Cardinal Pole, and placed by him against the walls of the archiepiscopal palace at Lambeth. At Mitcham, in the garden of the Manor House, formerly the private estate of Archbishop Cranmer, there was in Miller's time, the remains of a white fig tree confidently asserted to have been planted by Cranmer himself; but it was destroyed in 1790. Its stem, some years before, was ten inches in diameter; but its branches were very low and weak. The fig tree, though introduced so early, appears for a long time not to have been extensively cultivated in England. Professor Burnett thinks that this was owing to a popular pre-

judice, the fig having been once a vehicle for poison: a singular contrast to the ideas expressed in the Bible respecting this fruit; the best blessing of heaven being typified by every man sitting under his own fig tree.

In Britain, the fig is in general cultivation in first rate gardens, usually against walls; but in some parts of the southern counties, as along the coast of Sussex, and in Devonshire, &c., as standards. In Scotland, it is never seen as a standard; but it ripens its fruit against a south wall, without the aid of fire heat, in some parts of East Lothian and in Wigtonshire, and against a flued wall, even in the neighbourhood of Glasgow. The largest fig tree against a wall, which we have seen in England is at Farnham Castle, where, in twenty-five years, it has reached the height of forty-feet against the walls of the castle.

Figs form an important article of Levantine commerce, and between 800 and 1000 tons are annually imported into Great Britain alone, principally from Turkey, Smyrna is a great fig mart; and Madden, in his travels, gives the following lively and amusing account of the interest they there excite.

"In Smyrna the subject of figs is ever the fruitful theme of conversation; you ask about the gardens of Bournabul, and you hear that figs abound there; you inquire about the curiosities of that place, and they lead you to the fig mart; nay, solicit information on politics, and you are told that figs are low; and when you seek for farther intelligence, you are told that figs are flat. In short go where you will, the eternal cry is figs! figs! figs! and the very name, I apprehend, will be found written on their hearts at their decease."

The fruit is esteemed demulcent and laxative, and it has been long used in domestic medicine as a poultice. King Hezekiah's boil was cured by a poultice made with a lump of figs according to the directions of Isaiah, which, Professor Burnett observes, is the first poultice that we read of in history. In the Canaries, in Portugal, and in the Greek Archipelago, a kind of Brandy is distilled from fermented figs. The leaves and bark of the fig tree abound in a milky acrid juice, which may be used as rennet, for raising blisters, and for destroying warts. This milky juice containing caoutchouc, Indian-rubber might consequently be made from the common fig in England, if it were thought desirable, and, on account of the same property, the very tenderest of the young leaves might be given to the larva of the silkmoth.

Nearly a thousand tons of figs are annually imported into Great Britain alone, so that although fresh figs are not much prized among us, the consumption of dried ones proves them to be greatly esteemed. The fruit in its dried state forms a chief part of the support of the inhabitants of Spain, Italy, and Provence, as it does likewise of the inhabitants of the East. In the countries just named it is also a considerable article of commerce. There are many fig gardens in the northern part of France, and there is no doubt but that the tree might be extensively cultivated in this country, in warm situations, were it desirable to do so. But it is evidently not a favorite fruit amongst us; its flavour is deemed insipid, and few persons can eat it with full relish. In many of our old poets, mention is made of the fig of "Spain," and a commentator on Shakespeare imagines that allusion was made to the custom of giving poisoned figs to those who were objects of Spanish or Italian revenge. And as in Shakespeare we meet with contemptuous expressions, such as "Figs for thy friendship," so in vulgar language it is common to say of insignificant things, that we care not a fig for them. These expressions may partly arise from the little worth attached to the fig in this country.

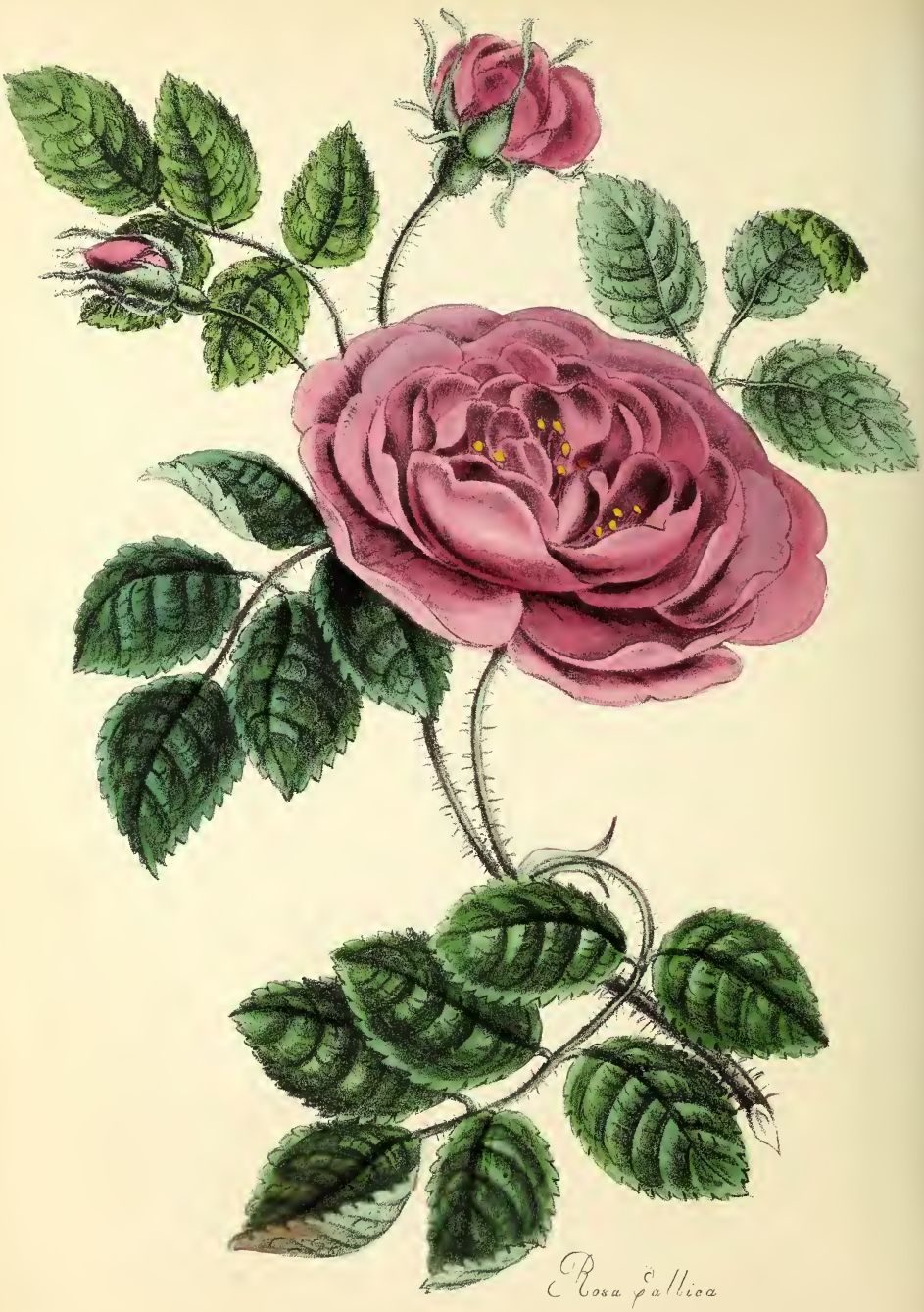
Fresh figs, when ripe, are soft and succulent, and, eaten with moderation, are a digestible, wholesome, and very delicious fruit. If too many be partaken of, they occasion flatulency, and sometimes diarhœa, attended with pain. The dried fruit is too well known, both in appearance and taste, to render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

Figs are used medicinally in what are termed pectoral or demulcent decoctions, which are used as common drinks. Two ounces boiled in half a pint of water, and strained, form a useful gargle for inflammatory sore throat, when suppuration takes place. They are also occasionally eaten to remove habitual costiveness. Roasted and split, they are still employed hot, as applications to gum-boils, and other circumscribed maturating tumours.

Officinal Preparations. The fig enters into two preparations of the London Pharmacopœia; namely, the *Confectio Sennæ* (or, Lenitive Electuary) and the Compound Decoction of Barley Water. The latter is formed by boiling barley-water with figs, liquorice root, and raisins. Dr. Kitchiner gives the receipt for compound as well as for plain barley-water, and says, "these drinks are intended to assuage thirst in ardent fevers, and inflammatory disorders, for which plenty of mild diluting liquor is one of the principal remedies;" and of the compound decoction he says that it "will be received with pleasure by the most delicate palate." (The Cook's Oracle, 5th edit. p. 403.) The *espèces dites fruits béchiques*,* or, *fruits pectoraux*, of the French Codex, are composed of equal quantities of figs, stoned dates, jujubes and raisins.

A *tisane* is directed to be made with two ounces of these pectoral fruits, and such a quantity of water that a quart may remain after an hour's boiling; the decoction is then to be strained, and sweetened at pleasure.

* *Béchique* means "good for a cough." The root is the Greek word $\beta\acute{\eta}\xi$, a cough.


Rosa gallica

ROSA GALLICA.——RED OFFICINAL ROSE.

Class XII. ICOSANDRIA.—Order I. POLYGYNIA.

Natural Order, ROSACEÆ.———THE ROSE TRIBE.

This species of rose is a native of the south of Europe, but is common in our gardens, and flowers in June and July. In its cultivated state, it is scarcely three feet high, sending up, from its creeping roots, many stems, armed with fine, dispersed, short, straight prickles. The leaves consist of two or three pairs of leaflets, with a terminal one attached on very short petioles to a common foot-stalk; the leaflets are ovate, rigid, doubly serrated, smooth, of a fine rather shining green colour on the upper surface, pale, downy, or hairy underneath. The stipules are linear-lanceolate, pointed, entire, downy and glandular. The flowers consist of a few large spreading petals, of a deep peculiar rich crimson colour; their base, like the stamens, of a fine gold colour, and stand on stiff, erect peduncles. The segments of the calyx are downy, sometimes fringed at the margin with a row of linear-lanceolate leaflets, as if pinnate: the stamens are numerous, bearing roundish yellow anthers; the germens are also numerous, with villose styles, united into a cylinder. The fruit is subglobose, and of a pale crimson colour.

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

The rose is mentioned by the earliest writers of antiquity as an object of culture. Herodotus speaks of the double rose, and Solomon of the rose of Sharon, and of the plantations of roses at Jarico. Theophrastus tells us that the hundred leaved rose grew in his time, on Mount Pangæus; and it appears that the Isle of Rhodes (Isle of Roses) received its name from the culture of roses carried on there. Pliny mentions several sorts of roses which were cultivated by the Romans; and that those of Præneste, Campania, Miletus and Cyrene were the most celebrated.

Roses were more highly prized by the Romans than any other flowers; and they had even attained to the luxury of forcing them. Under the reign of Domitian, the Egyptians thought of offering to that Emperor's court, as a magnificent present, roses in the middle of winter; but this the Romans smiled at, so abundant were roses in Rome at that season. In every street, says Martial, the odour of Spring is breathed, and garlands of flowers, freshly gathered, are displayed. "Send us corn, Egyptians! and we will send you roses." (Mart., vi. 80.) The Roman physicians determined the kinds of plants proper to be admitted into the floral crowns put on the heads of the great men whom it was designed to honour at festivals; and these were, the parsley, the ivy, the myrtle, and the rose, which were all considered as antidotes to the evil effects of the vapours of wine.

Rose trees were employed, both by the Greeks and the Romans, to decorate tombs; and instances are given of rose gardens being bequeathed by their proprietors, for the purpose of furnishing flowers to cover their graves. An old inscription found at Ravenna, and another at Milan, prove this custom, which is also alluded to by Propertius and other poets. The bitterest curses were imprecated against those who dared to violate these sacred plantations. Sometimes the dying man ordered that his heirs should meet

every year, on the anniversary of his death, to dine together near his tomb, and to crown it with roses gathered from his sepulchral plantation. The first Roman Christians disapproved of the employment of flowers, either at feasts or on tombs, because they were so used by the Pagans. Tertullian wrote a book against the employment of garlands: and Clement of Alexandria did not think it right that kings should be crowned with roses, as our Saviour was crowned with thorns.

The rose has been a favourite subject with the poets of all countries, in all ages, and a large volume might be formed, if all the poems written on it were collected, as there has, perhaps, never yet existed a poet of any eminence, who has not sung its praises. In mythological allusions it is equally rich. It was dedicated by the Greeks to Aurora, as an emblem of youth, from its freshness and reviving fragrance; to Venus, as an emblem of love and beauty, from the elegance of its flowers; and to Cupid, as an emblem of fugacity and danger, from the fleeting nature of its charms, and the wounds inflicted by its thorns. It was given by Cupid to Harpocrates, the god of silence, as a bribe, to prevent him from betraying the amours of Venus; and was hence adapted as the emblem of silence. The rose was, for this reason, frequently sculptured on the ceilings of drinking and feasting rooms, as a warning to the guests, that what was said in moments of conviviality should not be repeated; from which what was intended to be kept secret was said to be told "under the rose." The Greek poets say that the rose was originally white, but that it was changed to red, according to some, from the blood of Venus, who lacerated her feet with its thorns when rushing to the aid of Adonis; and according to others, from the blood of Adonis himself. The fragrance of the rose is said by poets to be derived from a cup of nectar thrown over it by Cupid; and its thorns to be the stings of the bees with which the arc of his bow was strung. Anacreon makes the birth of the rose coeval with those of Venus and Minerva:—

"Then, then, in strange eventful hour,
The earth produced an infant flower,
Which sprang with blushing tinctures drest,
And wanton'd o'er its parent breast.
The gods beheld this brilliant birth,
And hail'd the Rose—the boon of earth."
Moore's Anacreon.

There are many legends related of roses in the East. The story of the learned Zeb, who suggested by a rose leaf that he might be received into the silent academy at Amadan is well known. The vacant place for which he applied having been filled up before his arrival, the president intimated this to him by filling a glass so full of water, that a single additional drop would have made it run over; but Zeb contrived to place the petal of a rose so delicately on the water as not to disturb it in the least; and was rewarded for his ingenious allusion by instant admission into the society. According to the Hindoo mythology, Pagoda Siri, one of the wives of Vishnu, was found in a rose. Another fable relating to the birth of the rose is, that Flora, having found the dead body of one of her favourite nymphs, whose beauty could only be equalled by her virtue, implored the assistance of all the gods and goddesses to aid her in changing it into a flower which all others should acknowledge to be their queen. Apollo lent the vivifying power of his beams, Bacchus bathed it in nectar, Vertumnus gave its perfume, Pomona its fruit, and Flora herself its diadem of flowers. A beetle is often represented, on antique gems, as expiring surrounded by roses; and this is supposed to be an emblem of a man enervated by luxury; the beetle being said to have such an antipathy to roses, that the smell of them will cause its death. The Romans were very fond of roses. Pliny tells us that they garnished their dishes with these flowers. Cleopatra received Antony, at one of her banquets, in an apartment covered with rose leaves to a considerable depth; and Antony himself, when dying, begged to have roses scattered on his tomb. The Roman generals, who had achieved any remarkable victory, were permitted to have roses sculptured on their shields. Rose water was the favourite perfume of the Roman ladies; and the most luxurious even used it in their baths. The Turks believe that roses sprang from the moisture of Mahomet's skin; for which reason, they never tread upon a rose leaf, or suffer one to lie on the ground; they also sculpture a rose on the tombstones of females who die unmarried.

We read in the history of the Mogul Empire, by Father Catron, that the celebrated Princess Nourmahal filled an entire canal with rose water, upon which she was in the habit of sailing along with the Great

Mogul. The heat of the weather disengaged the essential oil from the rose water: this was observed floating upon the surface of the water; and thus was made the discovery of the essence, otto, or attar, of roses. Formerly it was the custom to carry large vessels filled with rose water to baptisms. Bayle relates, upon this subject, that at the birth of Monsard, his nurse, in the way to church, let him fall upon a heap of flowers; and that at this instant the woman who held the vessel of rose water poured it upon the infant. All this, says Bayle, has been since regarded as a happy omen of the great esteem in which his poems would one day be beheld! Roses were often, in the days of chivalry, worn by the cavaliers at tournaments, as an emblem of their devotion to love and beauty.

Roses are intolerant of smoke, and hence they never thrive, either in or near large towns.

Loudon's Arboretum Britannicum.

Among the similies to which the rose has given occasion, perhaps none is more beautiful than that well known passage of Ariosto: —

La verginella è simile alla rosa,
Che 'n bel giardin su la nativa spina,
Mentre sola e sicura si riposa,
Nè gregge nè pastor se le avvicina;
L' aura soave e l' alba ruggiadosa,
L' acqua e la terra al suo favor s' inchina,
Gioveni vaghi e donne innamorate,
Amano averne e seni e tempie ornate.
Ma non sì tosto dal materno stelo
Rimossa viene, e dal suo ceppo verde,
Che quanto avea dagli uomini, e dal cielo
Favor, grazia, e bellezza tutto perde.

"The maiden is like the rose reposing alone and secure upon its native thorn in a beautiful garden; neither flock nor shepherd approaches it; the sweet breeze and the dewy morn, water and earth, unite in its favour; handsome youths and enamoured damsels desire to have their bosom and temples adorned with it. But no sooner is it removed from the maternal stalk, and from its green support, than it loses all the favour, grace, and beauty, that it had in the eyes of men."

For the following extracts we are indebted to that delightful work the "Flora Domestica." The Rose as well as the myrtle, is considered as sacred to the Goddess of Beauty.

In our country, in some parts of Surrey in particular, it was the custom, in the time of Evelyn, to plant roses round the graves of lovers. It is the universal practice in South Wales to strew roses and other flowers over the graves of departed friends.—We have seen, within these few years, the body of a child carried to a country church for burial, by young girls dressed in white, each carrying roses in their hands. Monestellus cites an epitaph, in which Publia Cornelia Anna declares that she had resolved not to survive her husband in desolate widowhood, but had voluntarily shut herself up in his sepulchre, still to remain with him with whom she had lived twenty years in peace and happiness: and then orders her freed-men and freed-women to sacrifice there to Pluto and Proserpine, to adorn the sepulchre with roses, and to feast upon the remainder of the sacrifice.

Persia is the very land of roses. "On my first entering this bower of fairy land," (says Sir Robert Kerr Porter, speaking of the garden of one of the royal palaces of Persia,) "I was struck with the appearance of two rose trees, full fourteen feet high, laden with thousands of flowers, in every degree of expansion, and of a bloom and delicacy of scent, that imbued the whole atmosphere with exquisite perfume. Indeed, I believe that in no country in the world does the rose grow in such perfection as in Persia; in no country is it so cultivated and prized by the natives. Their gardens and courts are crowded by its plants, their rooms ornamented with vases filled with its gathered bunches, and every bath strewed with the full blown flowers plucked with the ever replenished stems. . . . . But in this delicious garden of Negaaristan, the eye and the smell are not the only senses regaled by the presence of the rose. The ear is enchanted by the wild and beautiful notes of multitudes of nightingales, whose warblings seem to increase in melody and softness, with the unfolding of their favorite flowers. Here indeed the stranger is most powerfully reminded, that he is in the genuine country of the nightingale and the rose!"

(*Persia in Miniature, Vol. iij.*)

Lord Byron has taken advantage of the various fictions and customs connected with the rose, and

has made it spring and flourish over the tomb of Zuleika; while the nightingale sooths his beloved with his sweet and plaintive notes:

A single rose is shedding there
Its lonely lustre meek and pale:
It looks as planted by despair—
So white, so faint—the slightest gale
Might whirl the leaves on high;
And yet though storms and blight assail,
And hands more rude than wintry sky
May wring it from the stem—in vain—
To-morrow sees it bloom again!
The stalk some spirit gently rears,
And waters with celestial tears;
For well may maids of Helle deem,
That this can be no earthly flower
Which mocks the tempest's withering hour,
And buds unsheltered by a bower;
Nor droops, though spring refuse her shower,
Nor wooes the summer beam:
To it the livelong night there sings
A bird unseen, but not remote:
Invisible his airy wings,
But soft as harp that Houri strings,
His long entrancing note.

Bride of Abydos.

The short-lived beauty of the rose has given rise to many reflections and comparisons; as in Crashaw's lines on the death of Mr. Herrys: an instance occurs also in Mr. Bowring's translation from the Russian of Kostrov:

The rose is my favorite flower:
On its tablets of crimson I swore,
That up to my last living hour,
I never would think of thee more.
I scarcely the record had made,
Ere zephyr in frolicsome play,
On his light airy pinions conveyed,
Both tablets and promise away.

Bowring's Russian Anthology.

Roses, when they are associated with a moral meaning, are generally identified with *mere* pleasure; but some writers with a juster sentiment, have made them the emblems of the most refined virtue. In the Orlando Innamorato, the famous Orlando puts roses in his helmet, which guard his ears against a syren; and in Lucian, a man who has been transformed into an ass, recovers his shape upon eating some roses.*

Officinal Preparations. Three kinds of roses are used by the London College: the hundred-leaved rose, the red rose, and the dog rose. There are two formulæ in the Pharmacopœia, where the petals of the hundred-leaved rose are directed to be employed; namely, Rose Water, and the Syrup of Roses.

Rose water is used as a collyrium, or Eye-wash; and Hahnemann asserts that its efficacy in ophthalmia, is owing to the power which rose-leaves possess of exciting inflammation of the eyes in the healthy.†

A grain of the sulphate of copper or sulphate of zinc, is a usual addition in such cases, to an ounce of rose-water.

It is hardly necessary to add that these remedies are useful only when the disease is slight. Rose-water is also used in making the Compound Iron mixture, where it leaves a pleasant flavour on the palate, after the styptic taste of the iron, and the bitterness of the myrrh.

The Syrup of roses is slightly laxative, but is chiefly used to give colour to draughts of an uncertain hue.

The red rose, which is astringent, and of a deeper colour, is used for rose honey, the compound infusion of roses, and the confection of the red rose.

Rose honey may be added to detergent gargles, or employed as an application to the thrush in children.

The compound infusion of roses, which contains sulphuric acid and sugar, is an elegant vehicle for Epsom salts; and the merit of first using it for this purpose is attributed to the late Sir Walter Farquhar. Without this addition it is a pleasant gargle in common sore-throat.

The confection of the red rose is used to form pills, and is also dissolved in draughts, for the sake of its colour.

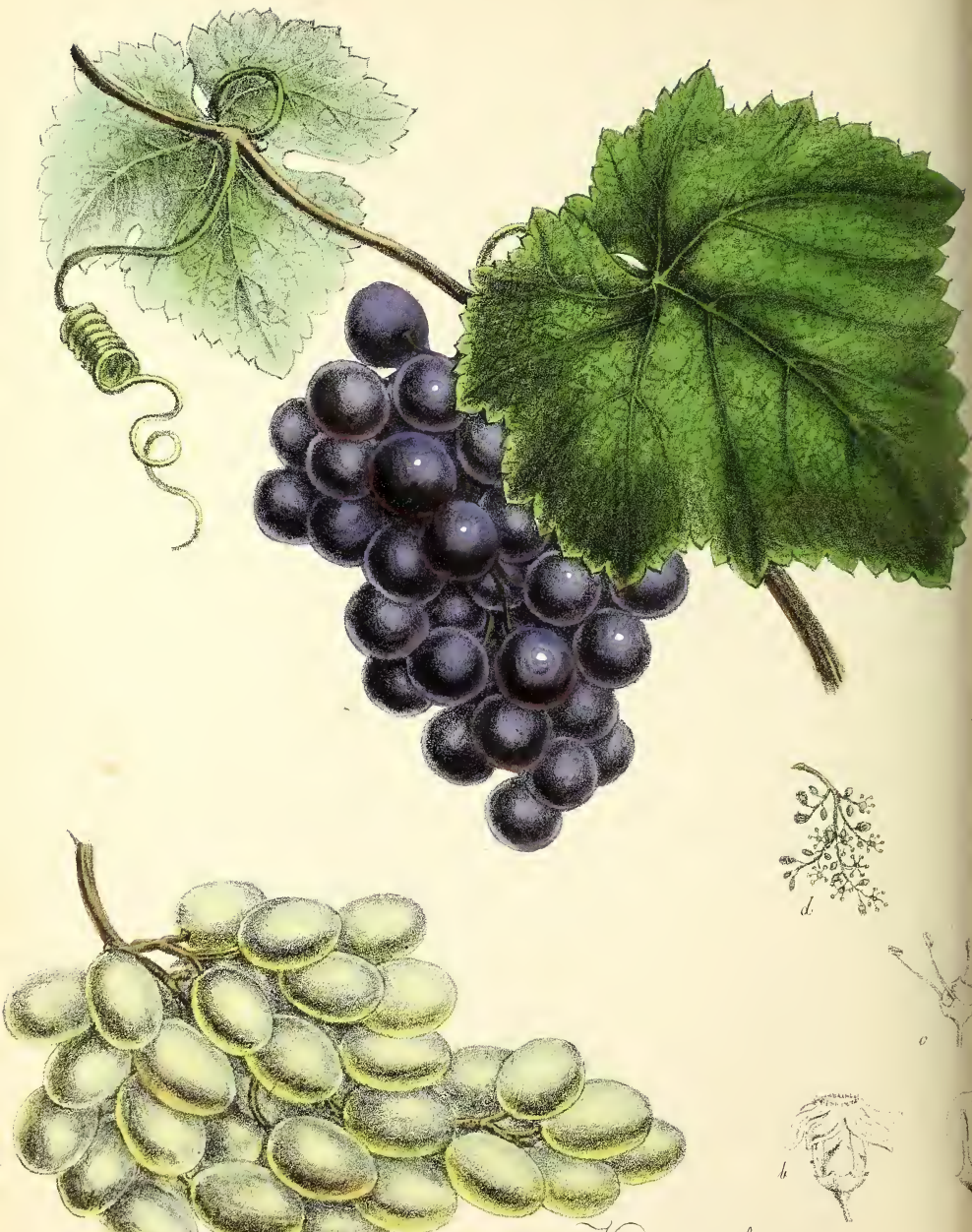
The confection of the dog rose is prepared with the pulp of hips (the fruit) and sugar; in the proportion of twelve ounces of the former to twenty of the latter. This confection is sometimes added to a pectoral electuary or linctus.

The French Codex contains a *tisane* made with two drachms of red roses to a quart of water; this may serve as a pleasant drink in a number of cases where the London infusion would be objectionable, from the quantity of sulphuric acid which it contains.

On the whole, the rose, though not an essential, is an agreeable, aid in pharmacy; and we should be sorry to hear that a dry utilitarianism had succeeding in dismissing it.

* Orlando Innamorato, Canto 33, Stanza 33; and Franklin's Lucian, Vol. iij. p. 236.

† Organon der Heilkunst. p. 9. Ed. 1824.



Vitis vinifera

VITIS VINIFERA.——GRAPE VINE.

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

Natural Order, VITES.—THE VINE TRIBE.

Fig. (*a*) Represents the unexpanded flower.
(*b*) 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.
(*c*) A magnified flower, the petals being removed, showing the calyx, with the germen and stamen. (*d*) A small cluster of flowers.

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 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 'drank 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 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 Phocians 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 Coblentz 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 Mignonette, 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.

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

* *Geschichte der Obst. Cult. v.* 1.

† Humboldt, *Géographie des Plantes*, 4to. *p.* 26.

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 abbeys 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 champagne. 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 vine grew plentifully in Palestine, and was particularly fine in some parts of its districts; one of which has been thus celebrated:—

"In yonder vale, where Eshcol flows along,
Behold, a mountain rising to the skies!
Above it towers the sun—sublimely high;
While its bright beams its lofty top makes bare.
To its steep side the vine, luxuriant cleaves;
Tender in shoot; yet large in leaf, and high.
Its purple fruit, delicious to the taste,
Producing wine to cheer the heart of man,
To heal the sick, and to support the weak—
To comfort all."

The bunch of grapes which was brought by the spies to the camp of Israel astonished the people, and we are assured by travellers that in the valley of Eshcol, there were bunches of grapes of ten and twelve pounds weight. One of them even states, that he was informed by a person who lived many years in Palestine, that there were bunches of grapes in the valley of Hebron so large that two men could scarcely carry one. The prediction of the lot of Judah, in the partition of the Promised Land, included abundance of vines, so hardy that a colt might be bound to them; and in some parts of Persia, it was formerly the custom to turn the cattle into vineyards after the vintage, to browse on the vines, some of which are so large that a man can hardly compass the trunks in his arms. The same custom, too, appears to have prevailed generally in Lesser Asia. Galilee would now be a paradise were it inhabited by an industrious people, under an enlightened government. Vine stocks are to be seen here a foot and a half in diameter, forming, by their twining branches, vast arches, and extensive ceilings of verdure; "A cluster of grapes, two or three feet in length, will give," says Schutze, "an abundant supper to a whole family." In France, the vines are trained on poles, seldom more than three or four feet high; in Spain, poles are not used, but cuttings are planted, which, not being permitted to grow very tall, gradually form thick stout stocks; in Switzerland and the German provinces, the vineyards are as uninteresting as those of France; but in Italy, the vine surrounds the stone cottage with its girdle, flings its plant and luxuriant branches over the rustic veranda, or turns its long garland from tree to tree. In Greece, the shoots of the vine are either trained upon trees, or supported, so as to display all their luxuriance. In Persia, they cause their vines to run up a wall, and curl over on the top; and, in some parts of the east, the stairs leading to the upper apartments of the harem are commonly covered with vines; a lattice work of wood is often raised against the dead walls, for a vine or other shrubs to crawl upon; and not unfrequently appears "the fruitful bough by a well," for a vine may be seen covering the trellis work surrounding it, and inviting the owner and his family to gather beneath its shade.

The *varieties* of the vine are exceedingly numerous; the lists of some of our nurserymen at the present day containing more than 250 names.

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 over-topping 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 one hundred and sixteen square yards: it is of the red Hamburgh sort, and is a most productive bearer, having seldom fewer than 2,000 clusters upon it every season. In the year 1816, there were at least 2,240 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. About 8,000 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 6,000 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 portion 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; but when the fermentation has been conducted on the skins or *marc*, red wines are obtained, both from white and coloured grapes. 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, renders 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

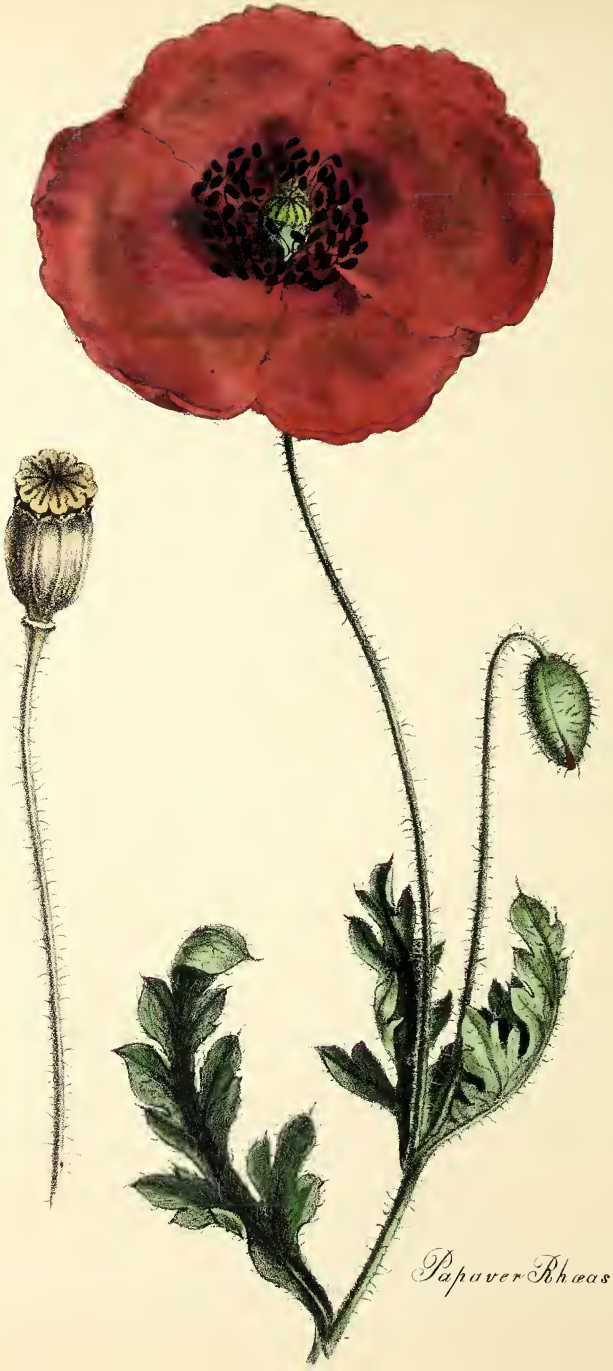
increase of the quantity of alcohol, and the separation of the tartar, which is deposited in considerable quantity in the casks, along with the colouring matter of the wine. It is of a dark red colour, very hard, and is known under the name of *argol.* When this is dissolved in water, and purified by 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 neutralizing 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 flavours 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 depend 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, Schiraz, 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 flavor 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, orris-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 crust; a *volatile oil*, on which the flavour depends; *colouring* matter; and *alcohol.*—*Medical Botany.*

Laborde, in his account of Spain, gives the following description of the mode of drying raisins:—"In the kingdom of Valencia they make a kind of ley with the ashes of rosemary and vine branches, to which they add a quart of slaked lime. This ley is heated, and a vessel, full of holes, containing the grapes is put into it. When the branches are in the state desired, they are generally carried to naked rocks, where they are spread on beds of the field artemisia, and are turned every two or three days till they are dry. In the kingdom of Granada particularly towards Malaga, they are simply dried in the sun, without any preparation. The former have a more pleasing rind, but a less mellow substance; the skins of the latter are not so sugary, but their substance has a much greater relish; therefore the raisins of Malaga are preferred by foreigners and are sold at a higher price: to this, their quality may likewise contribute, they are naturally larger, and more delicate, than those of the kingdom of Valencia."—*The Library of Entertaining Knowledge.*



Papaver Rhœas

PAPAVER RHŒAS.——RED POPPY.

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

Natural Order, PAPAVERACEÆ.—THE POPPY TRIBE.

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

The stem is herbaceous, upright, branched at top, a foot or more in height, and clothed, as well as the flower-stalks, with strong hairs which spread horizontally. The leaves are sessile, pinnate, or bi-pinnatifid, serrated, and covered with short hairs. The flowers are large, solitary, and stand upon long hairy foot-stalks; the calyx consists of two ovate, hairy, concave leaves, which fall before the flowers expand; the petals are four, large, roundish, undulated, of a deep rich scarlet colour, and generally marked with a black spot at the base. The germen, which becomes a smooth, urn-shaped capsule, is ovate and large, without any style; the stigma is shield-shaped, sessile, scolloped on the edges, and having ten or twelve rays. The fruit is a one-celled capsule, crowned with the stigma, and containing numerous kidney-shaped seeds attached to parietal placentæ.

The poets, says Dr. Johnson, among all those that enjoy the blessings of sleep, have been least ashamed to acknowledge their benefactor. How much Statius considered the evils of life as assuaged and softened by the balm of slumber, we may discover by that pathetic invocation, which he poured out in his waking nights: and that Cowley among the other felicities of his darling solitude did not forget to number the privileges of sleeping without disturbance, we may learn from the rank that he assigns among the gifts of nature to the poppy, 'which is scattered,' says he, 'over the fields of corn, that all the needs of man may be easily satisfied, and that bread and sleep may be found together.'—

Si quis invisum Cereri benignæ
Me putat germen, vehementer errat;
Illa me in partem recipit libenter
Fertilis agri.

Meque frumentumque simul per omnes
Consulens mundo Dea spargit oras:
Crescite, O! dixit, duo magna susten—
tacula vita.

Carpe mortalis, mea dona lætus,
Carpe, nec plantas alias require,
Sed satur panis, satur et soporis,
Cætera sperne.

He wildly errs who thinks I yield
Precedence in the well-cloth'd field,
Tho' mix'd with wheat I grow:
Indulgent Ceres knew my worth,
And to adorn the teeming earth,
She bade the Poppy blow.

Nor vainly gay the sight to please,
But blest with power mankind to ease,
The Goddess saw me rise,
'Thrive with the life-supporting grain,'
She cried, 'the solace of the swain,
The cordial of his eyes.

'Seize, happy mortal, seize the good;
My hand supplies thy sleep and food,
And makes thee truly blest:
With plenteous meals enjoy the day,
In slumbers pass the night away,
And leave to fate the rest.'

C. B.

Sleep, therefore, as the chief of all earthly blessings, is justly appropriated to industry and temperance; the refreshing rest, and the peaceful night, are the portion only of him who lies down weary with honest labour, and free from the fumes of indigested luxury; it is the just doom of laziness and gluttony, to be inactive without ease, and drowsy without tranquillity. Sleep has been often mentioned as the image of death; 'so like it,' says Sir Thomas Brown, 'that I dare not trust it without my prayers;' their resemblance is, indeed, apparent and striking; they both, when they seize the body, leave the soul at liberty: and wise is he that remembers of both, that they can be safe and happy only by virtue. *Adventurer*, No. 39.

This species of Papaver is readily distinguished from the *Papaver dubium*, which it closely resembles, by the hairs spreading horizontally on the flower-stalks as well as on the stem, and by the short roundish capsule. Being a very common weed, although probably not a native of this country, but introduced with seed-corn from the east, it has received very numerous names; such as *Corn poppy, Corn rose, Cop rose, Canker rose, Head-wark &c.* And like most other pretty flowers, it has been celebrated by poets in different ways; thus, from flowering amongst the corn, the red poppies have been supposed, by one, to be upon the look out for Ceres:—

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

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

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

In Gerard's Herbal we find the following droll account of the Papaver Rhœas by a curious gentleman.

"Moreover, in the said Leyland fields doth grow our garden Rose wilde, in the plowed fields among the corne, in such aboundance, that there may be gathered daily during the time, many bushels of roses, equal with the best garden Rose in each respect: the thing that giveth great cause of wonder, is, that in a field in the place aforesaid, called Glovers field, every yeare that the field is plowed for corne, that yeare it wil be spred over with Roses, and when it lieth by, or not plowed, then is there but few Roses to be gathered; by the relation of a curious gentleman there dwelling, so often remembered in our history.

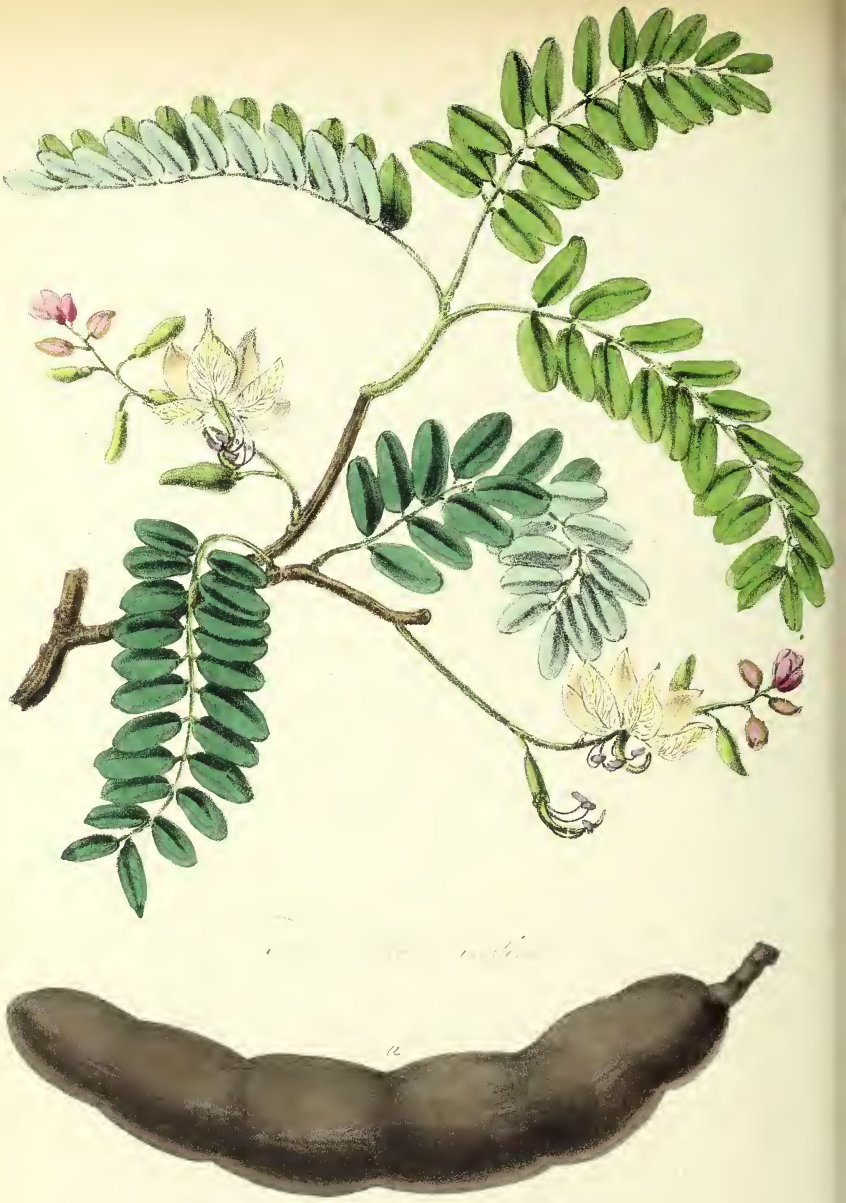
I have heard that the Roses which grow in such plenty in Glovers field every yere the field is plowed, are no other than Corn Rose, that is, red Poppies, however our author was informed."

The flowers of the Red Poppy, says the *Dictionnaire des Sciences Naturelles*, are easily doubled by cultivation; and gardeners have obtained a great variety of them, which are all more or less agreeable, not only from the number of their petals, but on account of their immense variety of shades, from deep purple to white. The flowers of the double red poppy are not only handsome, but have the advantage of remaining in bloom three or four days; while the petals of the single flowers fall off in a few hours.

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

Off. Prep.—Syrupus Rhœados. L. E. D.

In the language of flowers the Red Poppy denotes evanescent pleasure.



TAMARINDUS INDICA.——THE TAMARIND TREE.

Class XVI. MONADELPHIA.—Order I. TRIANDRIA.

Natural Order, LEGUMINOSÆ.——THE PEA TRIBE.

Fig. (*a*) Represents the Pod.

The Tamarind-tree, the *tetul* of Upper Hindustan, is likewise a native of Egypt and Arabia, as well as of the East Indies. In the West India islands, where it has become naturalized, it is cultivated for the sake both of its shade and its acid, cooling, highly grateful fruit; the pulp of which, mixed and boiled with sugar, forms an important article of commerce. It is very abundant in Jamaica, growing to a vast bulk, and thrives well in the Savannahs, but most luxuriantly in a deep rich brick mould. There is perhaps only one known species, the subject of the present article; but the West Indian Tamarind, believed to be only a variety of the East Indian one, differs so much in the form of its fruit, and the number of its seeds, that by some authors it is considered as specifically distinct.

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

This tree, which is common in almost every part of Hindustan, as well as in the West Indies, grows most luxuriantly in all the eastern islands. The soil of Java is said to bring the fruit to very high perfection; but the Tamarinds from the depending island of Madura are reputed to be the best; they are of a dark colour, with a large proportion of pulp to the seeds. The natives of India consider it to be dangerous to sleep under the Tamarind-tree, especially during the night; "and grass," says Dr. Ainslie, "or herbs of any kind, are seldom seen growing in such situations, and never with luxuriance;" which facts have been lately confirmed to us by a gentleman, who spent many years in India.

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

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

Supertartate of potass	300
Gum	432
Sugar	1152
Jelly	576
Citric acid	864
Tartaric acid	144
Malic acid	40
Feculent matter	2880
Water	3364
	9752

Ann. de Chim. lxxiv. 303.

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

It was very early introduced into this country; for Gerarde, makes mention of it as growing here. It does not often flower in England, though it has done so in the Royal Gardens at Kew. It is, however, a common ornament of our hot-houses. Niebuhr says, "the tamarind is equally useful and agreeable. It has a pulp of a vinous taste, of which a wholesome refreshing liquor is prepared; its shade shelters houses from the torrid heat of the sun; and its fine figure greatly adorns the scenery of the country." Its refreshing properties has given it a place in our poetry:—

"The damsel from the tamarind tree
Had pluck'd its acid fruit,
And steep'd it in water long;
And whoso drank of the cooling draught,
He would not wish for wine."

Mandelso, an old traveller, says, that as soon as the sun is set the leaves of the tamarind close up the fruit to preserve it from the dew, and open as soon as that luminary appears again:—

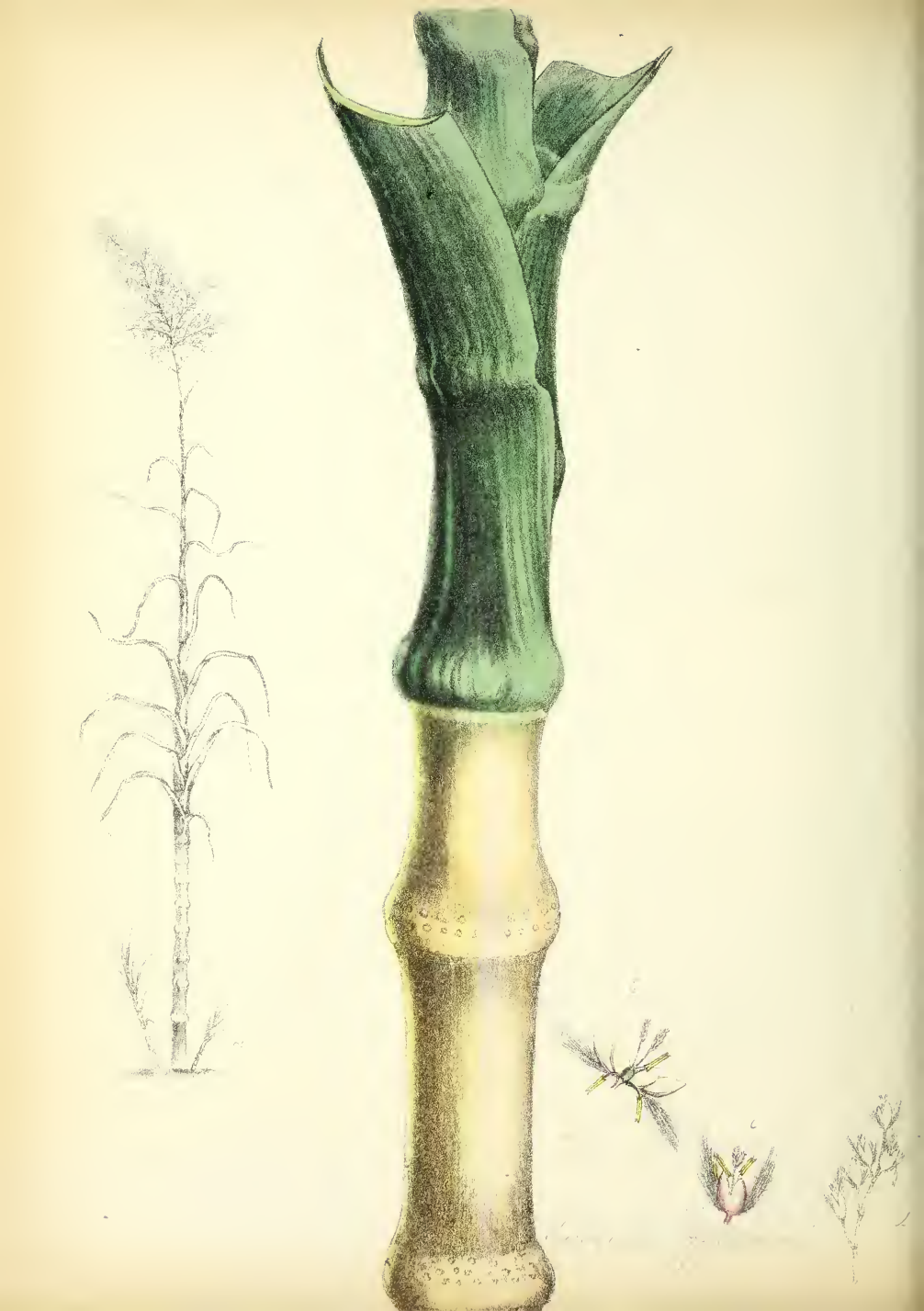
"Tis the cool evening hour:
The tamarind, from the dew
Sheathes its young fruit, yet green."

About forty tons of tamarinds are annually imported into Great Britain.

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

Off. Prep.—Confectio Cassiæ.
Confectio Sennæ *Lond.*
Infusum Sennæ comp. *E.*
Inf. Sennæ cum Tamarindis. *D.*

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



SACCHARUM OFFICINARUM.—COMMON SUGAR-CANE.

Class III. TRIANDRIA.—Order II. DIGYNIA.

Natural Order, GRAMINEÆ.——THE GRASS TRIBE.

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.

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 one of the most beautiful productions of the vegetable kingdom. The Chinese date the cultivation of this precious plant from periods of the most remote antiquity: but Dr. Roxburgh ascertained that the sugar cane of China was different from the *S. officinarum*, and he has published it as the *S. Sinense*. That the sugar-cane is indigenous to the south-eastern parts of Asia, we have the strongest reason to believe, for Marco Polo, a noble Venetian, who travelled in the East, about the year 1250, found sugar in abundance in Bengal. Vasco de Gama, who doubled the Cape of Good Hope in 1497, relates that a considerable trade in sugar was then carried on in Calicut. From the East Indies, the sugar-cane was carried, towards the close of the thirteenth century, to Arabia, whence the cultivation of it soon extended to Nubia, Egypt, and Æthiopia. Mr. Bruce found it in Upper Egypt; and John Lioni says, that a considerable trade was carried on in sugar in Nubia, in 1500; it abounded also at Thebes, on the banks of the Nile, and in the northern parts of Africa about the same period.

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 hermaphrodite, 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.

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 *testali* 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

* 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.

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, surpass 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 Roemer and Schultes, as a distinct species, under the name of *S. violaceum.*

The following account of the History of Sugar is by Mr. Galt—

"I was led to investigate the History of Sugar by a casual remark of the late Sir Joseph Banks, one day at breakfast. I forget now how the conversation arose, but he inquired whether I had met with any of the remains of the sugar cane in Sicily, mentioning that it had been previously produced in the island of Crete, but the sugar manufactured in that island was more crystallized than ours, and was called, from the place where it was boiled, sugar of Candi, otherwise sugar Candy, and it seems never to have been prepared better there than in that form.

It is certain, however, that in the year 1148 considerable quantities of the article were produced in the island of Sicily, and the Venetians traded in it; but I have met with no evidence to support the *Essai de l' Histoire du Commerce,* in which the author says that the Saracens brought the sugar cane from India to Sicily.

"The ancient Greeks and Romans," says Dr. William Douglas, "used honey only for sweetening." And Paulus Ægineta, who calls it cane-honey, says it came originally from China, by the East Indies and Arabia, into Europe. Salmasius says, however, that it had been used in Arabia nine hundred years before. But it is certain that sugar was only used in syrups, conserves, and such like Arabian medicinal compositions, when it was first introduced into the west of Europe; but Mr. Wotton, in his 'Reflexions upon Ancient and Modern Learning,' says that the sugar-cane was not anciently unknown, since it grows naturally in Arabia and Indostan; but so little was the old world acquainted with its delicious juice, that "some of the ablest men," says he, "doubted whether it were a dew like manna, or the juice of the plant itself." It is, however, certain that raw sugar was used in Europe before the discovery of America. Herrera, the ancient historian, observes that sugar grew formerly in Valencia, brought thither by the Moors; from thence it was transmitted to Grenada, afterwards to the Canary Islands, and lastly, to the Spanish West Indies.

About the year 1419, the Portuguese planted the island of Madeira with sugar canes from Sicily; and Giovanni Batero, in an English translation of his book in 1606, on the 'Causes of the Magnificence and Grandeur of Cities,' mentions the excellence of the sugar-cane of Madeira, for which it was transported to the West Indies; and there can be no doubt that Madeira was one of the first islands of the Atlantic Ocean in which this important article was manufactured.

In 1503, two ships arrived at Camperre, laden with sugar from the Canary Islands. As yet, it is said, no sugar canes were grown in America, but soon they were transplanted from those islands to the Brazils.

It was about this time (1503) that the art of refining sugar was discovered by a Venetian, who is said to have realized a hundred thousand crowns by the invention. Our ancestors made use of it as it came in juice from the canes, but most commonly used honey in preference.

From the Brazils and the Canaries, sugar canes were brought and planted in the island of Hispaniola, [St. Domingo, or Hayti,] and in the same year sugar was brought from the Brazils into Europe. The commodity was then very dear, and used only on rare occasions, honey being till then the general ingredient for sweetening of meats and drinks.

When sugar was introduced into this country first is doubtful; but in 1526 it was imported from St. Lucar, in Spain, by certain merchants of Bristol, who brought the article which had been imported there from the Canary Islands.

In the year 1641 the sugar-cane was imported from the Brazils into Barbadoes, and being found to thrive, sugar mills was established. A Colonel James Drax, who began the cultivation with about three hundred pounds, declared that he would never return to England till he had made ten thousand a year; and Colonel Thomas Modyford was still higher in his expectations.

It was from the island of Barbadoes that the slave trade began. The first planters finding such immense profit, induced the merchants at home to send ships with assorted cargoes for the product of the island, but they found it impossible to manage the cultivation of sugar by white people in so hot a climate. The example of the Portuguese gave birth to the negro slave trade, and it flourished till abolished by Act of Parliament; but in that age it was a most flourishing business, and the ports of London and Bristol had the main supply. Bardadoes, in the year 1669, attained its utmost pitch of prosperity. In a pamphlet entitled 'Trade Revived,' it is spoken of as "having given to many men of low degree vast fortunes, equal to noblemen; that upwards of a hundred sail of ships there yearly find employment, by carrying goods and pas-

sengers thither, and bringing thence other commodities, whereby seamen are bred and custom increased, our commodities vended, and many thousands employed therein, and in refining our sugar at home, which we formerly had from other countries."

In 1670 our sugar colonies drew the means of support from what were then our North American colonies, particularly New York, Pennsylvania, and the Jerseys; and the first time that sugar was made subject to taxation at home, was in 1685. Like other merchandize, it was previously subject to a five per cent. poundage

In 1739, the importation of sugar from the West India Islands was so great, that there was a relaxation of our colonial policy towards them; and they were permitted to carry their sugar to any part south of Cape Finisterre, without being obliged to land them first in Great Britain. From this time sugar has continued to increase, and it is needless to pursue its history further; it was then a great article of trade, and, as an ingredient, the consumption has been continually increasing.

Leigh Hunt, in his commentaries on breakfast in the London Journal, says, "You may make a landscape, if you will, out of your breakfast table, better than Mr. Kirk's picture. Here where the bread stands, is its father, the field of corn, glowing in the sun, cut by the tawny reapers, and presenting a path for lovers. The village church (where they are to be married) is on a leafy slope, on one side, and on the other is a woody hill, with fountains. There, far over the water, (for this basin of water, with island lumps of butter in it, shall be a sea) are our friends the Chinese, picking the leaves of their tea trees,—a beautiful plant; or the Arabs plucking the berries of the coffee tree, a still more beautiful one, with a profusion of white blossoms and an odour like jessamine. For the sugar (instead of a bitterer thought, not so harmonious to our purpose; but not to be forgotten at due times) you may think of Waller's Sacharissa,* so named from the Latin word (Saccharum) a poor compliment to the lady; but the lady shall sweeten the sugar, instead of the sugar doing honour to the lady; and she was a very knowing as well as beautiful woman, and saw farther into love and sweetness than the sophisticate court poet; she would not have him, notwithstanding his sugary verses, but married a higher nature.

She married a sincere, affectionate, and courageous man, Robert Spencer, Earl of Sunderland, who was killed four years afterwards, in a cause for which he thought himself bound to quit the arms of the woman he loved. Her second husband was of the Smythe family. In her old age, meeting Waller at a card table, Lady Sunderland asked him, in good humoured and not ungrateful recollection of his fine verses, when he would write any more such upon her; to which the "polite" poet, either from spite or want of address, had the poverty of spirit to reply, 'Oh madam! when your ladyship is as young again.'"

The sugar cane is always propagated from cuttings. When sown in the colonies of America, the seeds have never been known to vegetate; and although there must doubtless be some country where the course of nature could be followed in this respect, we are not acquainted with any place in which the cultivators resort to the sowing of seed, in order to the propagation of the plant. The top joints are always taken for planting, because they are less rich in saccharine juice than the lower parts of the cane, while their power of vegetation is equally strong. The cane plant is possessed of the power of tillering, in a manner similar to that shown by wheat, although not to an equal extent. In preparing a field for planting with the cuttings of cane, the ground is marked out in rows three or four feet apart, and in these lines holes are dug from eight to twelve inches deep, and with an interval of two feet between the holes. Where the ground is level, larger spaces are left at certain intervals, for the facility of carting; but there are many situations at the sides of steep hills where no cart can be taken, and in such cases these spaces are not required. The ripe canes are then conveyed to the mill in bundles on the backs of mules, or are passed down to the bottom of the hill through wooden spouts.

The hoeing of a cane field is a most laborious operation when performed, as it must be, under the rays of a tropical sun.

Formerly this task was always effected by hand labour, but of late years, where the nature of the ground will admit of the employment of a plough, that instrument has been substituted, to the mutual advantage of the planter and his labourers. The planting of canes does not require to be renewed annually; in such a case the utmost number of labourers now employed on a sugar plantation would be wholly inadequate to its performance. The most general plan is for a certain portion of the land in cultivation to be planted annually and in succession, the roots and stoles of the canes of the former year being left through the remaining parts of the plantation. From these, fresh canes, which are ealled rattoons, spring up, and are nearly as large the first year as plant canes. Rattoon canes have a tendency to deteriorate—at least in size—every year they are continued, for which reason the progressive renewal of the plants is adopted. This plan may, however, be continued with very good effect for several years, provided the roots are furnished every year with a liberal supply of manure, that the ground about them is well loosened, and that all weeds are

* Sacharissa was Lady Dorothy Sidney, of the great and truly noble family of the Sidneys.

carefully removed. In this way it is said the same roots have been made to send up canes during twenty years. In some few cases, the planters adopt a different course, and never wholly renew any individual field of canes, but content themselves with supplying new cuttings in such particular spots as from time to time appear to be thin.

The best season for planting is between the months of August and November, the canes being thus less liable to be injured by the heavy rains and high winds with which the West India islands are so frequently visited.

All the precautions, however, which can possibly be taken by the most experienced planter, will not always secure a crop. The sugar-cane is subject to a disease called a blast, for which no remedy has hitherto been found: it consists of millions of little insects, whose proper food is the juice of the cane, in search of which they wound the tender blades, and consequently destroy the vessels. The growth of the plant is thus checked until it withers or dies in proportion to the degree of the ravage.

These insects are not the only enemies which the planters have to contend with. The canes are likewise much damaged by monkies and rats, which however are more easily destroyed. The former come down from their retreats in silent parties, during the night, and having posted sentinels to give the alarm if any thing approaches, they destroy incredible quantities of the cane by their gambols, as well as by their greediness. It is in vain to lay traps for these creatures, however baited, and the only way to protect the plantations is to set a numerous watch, well armed with fowling-pieces, and provided with dogs. The negroes on the different plantations, who think their flesh very good eating, are always ready to perform this part of their service.

In the lowland plantations, the rats also do a vast deal of mischief. They are said to have been introduced from Europe by the shipping, and have since multiplied prodigiously, breeding in the ground under loose stones and bushes. These, also are considered by the field negroes as choice food, and are even said to be sold publicly in the markets of Jamaica.

The canes are cut in the British West India Islands, towards the end of February, or in March and April, as they are then as ripe as the nature of the soil will allow them to be; at this season, the nutritive quality of the sugar at once becomes apparent amongst the working negroes and the different animals employed upon the plantations; such indeed is the pleasure they derive from it, that the time of crop in the sugar islands, is the season of gladness and festivity to man and beast; "so palatable, salutary, and nourishing," says Mr. Edwards, "is the juice of the cane, that every individual of the animal creation derives health and vigour from its use, in a few weeks after the mill is set in action. The labouring horses, oxen and mules, though almost constantly at work during this season, yet, being indulged with plenty of the green tops of this noble vegetable, and some of the scummings from the boiling house, improve more than at any other period of the year."

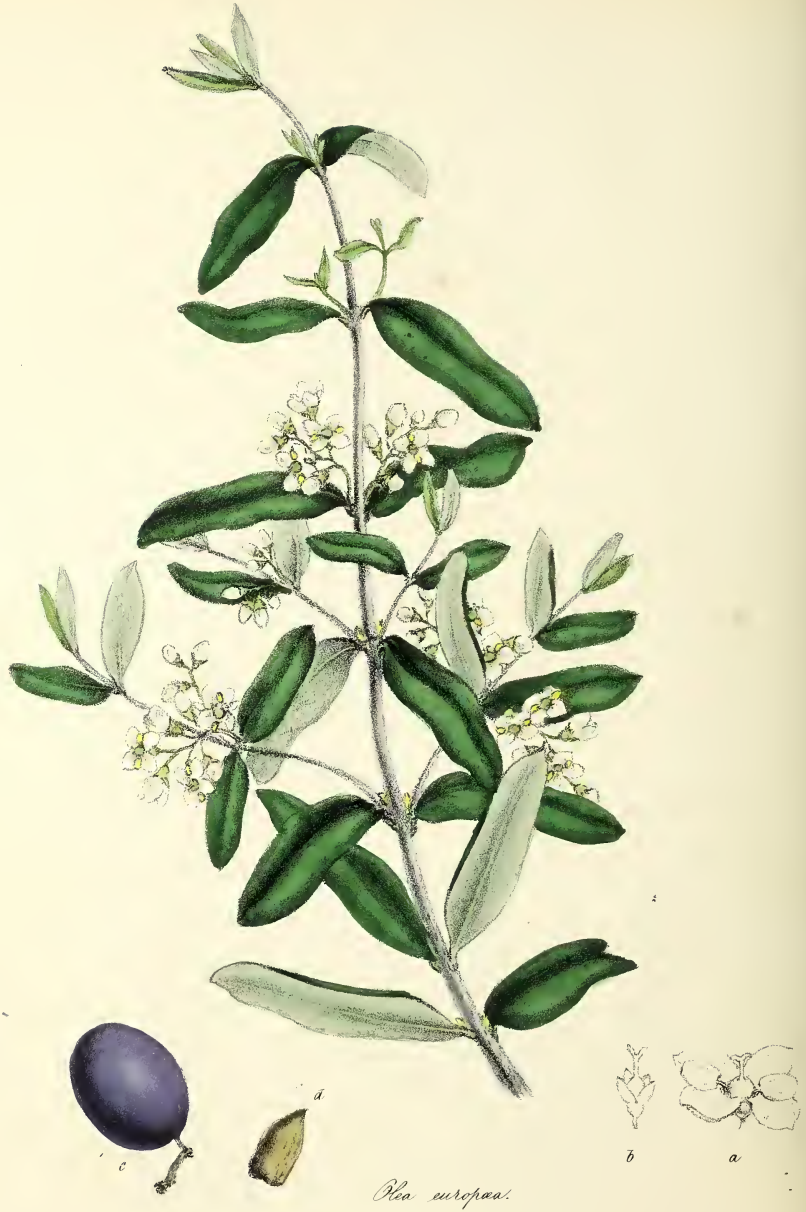
The canes being gathered, are carried to the mill, where the juice is squeezed out by pressing them between huge iron rollers; it is then boiled with lime water, which makes a thick scum rise to the top; the clear liquor is allowed to run off below, and after repeated boilings, which thicken it very much, it is sufferred to crystallize into the appearance of our brown sugar, by standing in a vessel, the bottom of which is pierced with several holes in order that the syrup may drain off; what remains from this process is called molasses, from which rum is obtained by distillation.

To form loaf sugar, which is only the same, cleared of its impurities; the brown sugar is dissolved in water, and being mixed with whites of eggs or bullocks' blood, is again put into the boiler; the liquor thus throws up a thick scum to the surface, and the clear substance, rendered thick by boiling, is poured into moulds of the same shape as a sugar-loaf. An additional process however is required to whiten it; for this effect, the mould is turned point downwards, and its broad end covered with clay, through which water is made to pass; the water slowly trickling through the sugar, unites with and carries off the matter which discolours it, leaving the whole perfectly white.

Sugar candy is made by boiling the liquor, which has been thickened by repeated boiling, to cool slowly. Barley Sugar, is sugar melted by heat, and afterwards cooled in moulds of a spiral form.

Medical Uses.—Dr. A. T. Thomson observes that "raw sugar and molasses are laxative; and refined sugar externally applied is escharotic. All the kinds are extremely nutrient, and more generally used as articles of diet than for medicinal purposes; except it be to cover the taste of nauseous drugs. Sugar, however, is said to be a preventive of worms, and to prove useful in scurvy; but it is hurtful to those of bilious, hypochondriacal, and dyspeptic habits. Milk boiled with fine sugar will keep good for a considerable time."—*(Dispensatory*, 9th edit. p. 638.)

Sugar is used in pharmacy to make syrups, confections, and lozenges. It is remarkable that while the London Pharmacopœia has only thirteen syrups, and those of no great importance, the Parisian Codex contains nearly a hundred, among which are many active remedies.



Rea europæa.

OLEA EUROPÆA.—EUROPEAN OLIVE.

Class II. DIANDRIA.—Order I. MONOGYNIA.

Natural Order, OLEACEÆ.—THE OLIVE TRIBE.

Fig. (*a*) is a perfect flower, magnified; (*b*) the calyx, germen, and bipartite stigma; (*c*) the fruit; (*d*) the nut.

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 seldom 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, gamopetalous, 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.

On the origin of the olive, the Greeks had a fable, which was not only pleasing but instructive. They said that Neptune, having a dispute with Minerva as to the name of the city of Athens, it was decided that which ever gave the best present to mankind should have the privilege of conferring one. Neptune struck the shore, out of which sprang a horse, but Minerva produced an olive tree, and therefore the preference was given to her, because peace of which the olive is the symbol, is infinitely better than war, of which the horse was considered a type. The olive branch of Noah we cannot forget. Some have supposed that the tops of the olive trees might alone be visible from the place where the ark was then floating, though it is only a tree of moderate height; but if the dove saw a great number of other trees appear above the water, it was natural for it to repair to the olive tree in preference to others, because there it had been accustomed to find shelter and food. With peculiar propriety the olive leaf, or branch, was chosen by God as a sign to the patriarch of the abatement of the deluge, and from this, perhaps, it became the emblem of peace to various and distant nations. Thus Milton, in his Ode on the Nativity:—

> But he her fears to cease,
> Sent down the meek-eyed Peace;
> She, crown'd with olive-green, came softly sliding
> Down through the burning sphere,
> His ready harbinger,
> With turtle wings the amorous clouds dividing.

Captain Cook found that green branches carried in the hand, or struck in the ground, were thus regarded by all the islanders, even in the South Sea. True piety has, also, been beautifully exhibited under this figure:—

> "Oh! who could bear life's stormy doom,
> Did not thy wing of love
> Come brightly wafting, through the gloom,
> Our peace-branch from above.
> Then sorrow, touched by thee, grows bright,
> With more than rapture's ray,
> As darkness shows us worlds of light
> We never saw by day."

Species.—Of the genus Olea there are known about a dozen well marked species, the most important of which is the Olea Europæa, now under consideration. In China, the Olea fragrans is much esteemed; its leaves and blossoms are highly aromatic, and are employed by the Chinese at once to adulterate and flavour their teas. The name *Olea* is evidently derived from the Greek appellation, ελαια. *Olea* is commonly applied to the tree, *oliva* to the fruit, and *olcum* to the oil expressed.

Varieties.—Of the European 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 iron-coloured, the twisted-leaved, the box-leaved, African, Lucca, &c.

Culture.—The cultivated Olive came originally from Asia; it grows abundantly about Aleppo and Lebanon. It became early naturalized in various parts of Italy, Spain, and France. In Gibbon's "*Decline and Fall*," chap. i. he quotes Pliny for the following fact: "Two centuries after the foundation 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 Appennines. The suckers are removed from the parent tree at all seasons; but the best is in spring and autumn, when the grounds are ploughed, 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 laid round them.[a] 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 a few years back 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.

According to Humboldt, the Olive is cultivated with success in every part of the old world, where the mean temperature of the year is between 58° and 66°, the temperature of the coldest month not being under 42°, nor that of the summer below 71°-73°. These conditions are found in Spain, Portugal, the South of France, Italy, and Turkey. The Olive also flourishes on the Northern Coast of Africa, but is not found south of the Great Desert. In Europe it extends as far north as latitude 44½°, in America scarcely to latitude 34°, so much greater is the severity of the winter on the other side of the Atlantic. Maillet says, that the olive tree thrives greatly in Egypt, and very commonly produces fruit as large as walnuts. Hasselquist states, that he ate olives at Joppa which were said to have grown on the Mount of Olives, near Jerusalem, and that they were the best he had tasted in the Levant. He saw olive trees in Galilee also, but none further than the mountain on which our Lord's sermon is supposed to have been delivered. They are found, however, in various parts of the earth. In the neighbourhood of Quito, situated under the equator, at the height of eight thousand feet above the level of the sea, where the temperature varies less than even in the island climates of the temperate zones, the Olive attains the magnitude of the oak; but never produces any fruit."

The proper time for gathering olives for the press, is on 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.[b]

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 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.

Olive oil in Spain and Italy supersedes the use of butter and cream, and "the inhabitants of the south of Europe feel at least as much dislike to the produce of the dairy as we may feel to their general use of oil;" *(Barton;)* indeed a line may be drawn which geographically separates the countries of butter and oil, which although admitting some exceptions, is on the whole sufficiently correct.

[a] This does not agree with Virgil, who says, *Georg.* i. l. 507. "No dressing they require, and dread no wound."

[b] See Hillhouse on the Olive Tree.

According to Malte-Brun this line extends from the Pyrenees through the Cevennes, the Alps and the Hæmus. And so marked is the difference of climate on either side of this boundary, as shewn by the change of vegetation, that, as Barton observes in his admirable essay on the geography of plants, "a traveller from the north crossing this chain of mountains for the first time is surprised and delighted at the new aspect of nature. Gigantic plants of the grass tribes (Arundo Donax) are seen rising to the height of twenty feet and upwards, the air is perfumed with the blossoms of the orange and lemon trees; which with the myrtle and pomegranate grow wild among the rocks. The American aloe here blooms in the open air, the Chamærops affords the first specimen of the magnificent tropical family of palms. It may perhaps be asserted without exaggeration that the appearance of vegetation exhibits a less striking change in travelling from Piedmont to Lapland, than in crossing the maritime alps from Piedmont to the gulf of Genoa. On the southern side of those mountains the vivid green of our meadows and forests is replaced by the dusky tint of the olive and the evergreen oak, which might perhaps be termed sombre, if not contrasted with the intenscly dark indigo colour of a deep and tranquil sea, undisturbed by tides and resting on a rocky bottom. Nor is the olive itself by any means destitute of beauty. It has been compared to a willow: it differs however very materially in colour, having none of that sickly hue of blueish green which gives such a peculiar coldness to the landscapes of some of the Dutch painters. The upper side of the leaf has precisely the tint familiarly known as *olive:* the under side is of a shining whiteness, and as the foliage is turned up by the lightest breeze, its progress over the valleys covered with olive gardens becomes visible in the form of a silver cloud gliding across the landscape."

The Tuscans were the first that exported olive oil, and thus it obtained the name of Florence oil. The province of Suse, in Morocco, produces great abundance of what is said to equal in quality the best of this kind, and of the origin of a large plantation of olive trees in the neighbourhood of Messa, Mr. Jackson gives the following singular account. "I learnt from the Viceroy's aid-de-camp, who attended me, that one of the kings of the dynasty of Saddia, being on his journey to Soudan, encamped here with his army; that the pegs with which the cavalry picketed their horses were cut from the olive trees in the neighbourhood; and that these pegs being left in the ground, on account of some sudden cause of the departure of the army, the olive trees in question sprang up from them. I confess, while I acknowledged the ingenuity of the idea (for the disposition of the trees exactly resembled the arrangement of cavalry in an encampment,) I treated it as fabulous: some time afterwards, however, the following circumstance occurred, which induced me to think the story was not only plausible, but very credible. Having occasion to send for some plants for a garden which I had at Agadeer, or Santa Cruz, the foula (gardener) brought, amongst other things, a few bits of wood, without any roots or leaf, about eighteen inches long and three in circumference, which he with a large stone, knocked into the ground. Seeing the fellow thus employed, I asked him what he meant by trifling in that way, 'I am not trifling,' said he, 'but planting your pomegranate trees.' I began to take them out of the ground; but some persons who were near assuring me that it was the mode in which they were always planted, and that they would (with the blessing of God) take root and shoot forth leaves the next year, I was at length prevailed on to leave a few in the ground, merely for experiment; and they certainly did take root, and were in a fair way of becoming good trees when I left Santa Cruz."

The fruit in a pickled state, is sent in great quantities from Leghorn, Naples, Genoa, and Marseilles, to England; that from the two latter places is the most esteemed. *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. The wood of the olive tree is beautifully veined, and has an agreeable smell; it is in great esteem with cabinet-makers, on account of the fine polish of which it is susceptible.

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 with some 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 400°, Fahr., 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 observations of Dr. Clarke, of Cambridge, this oil crystallizes in rectangular four-sided prisms with square bases.

Chevreul, in his *Recherches sur les Corps gras*, has shewn that fixed oils consist of two proximate principles, upon the relative proportions of which in a great measure depend their relative degrees of fluidity, solidity, &c., and therefore that, as afforded by nature, they are doubly compound bodies. By exposure to a low temperature these principles separate, the one solidifying much sooner than the other, which remains fluid at very low temperatures indeed. The first, Chevreul has named Stearine, from στεαρ, suet, in which it is the chief ingredient. It likewise abounds in the butter nut oil, and in the palm oil, which are solid at all ordinary temperatures. The second he has called Elaine (from ἔλαιον oil.) This principle may be obtained in a state of considerable purity by pressing the stearine of frozen oil between layers of bibulous paper, and then squeezing the paper under water, when the Elaine collects upon the surface. In this state of purity it is peculiarly fitted for greasing the wheels of watches, and other delicate machinery, since it does not thicken or become rancid, by exposure in the air, and requires a cold of about 20° F. for congelation.

The olive is remarkable for containing a fixed oil in the pulp of its fruit. Fixed oils are almost invariably confined to the seeds of plants, as in the poppy, almond, linseed, rape secd, &c., &c., the drupes of the olive and the melia being perhaps the only exceptions.

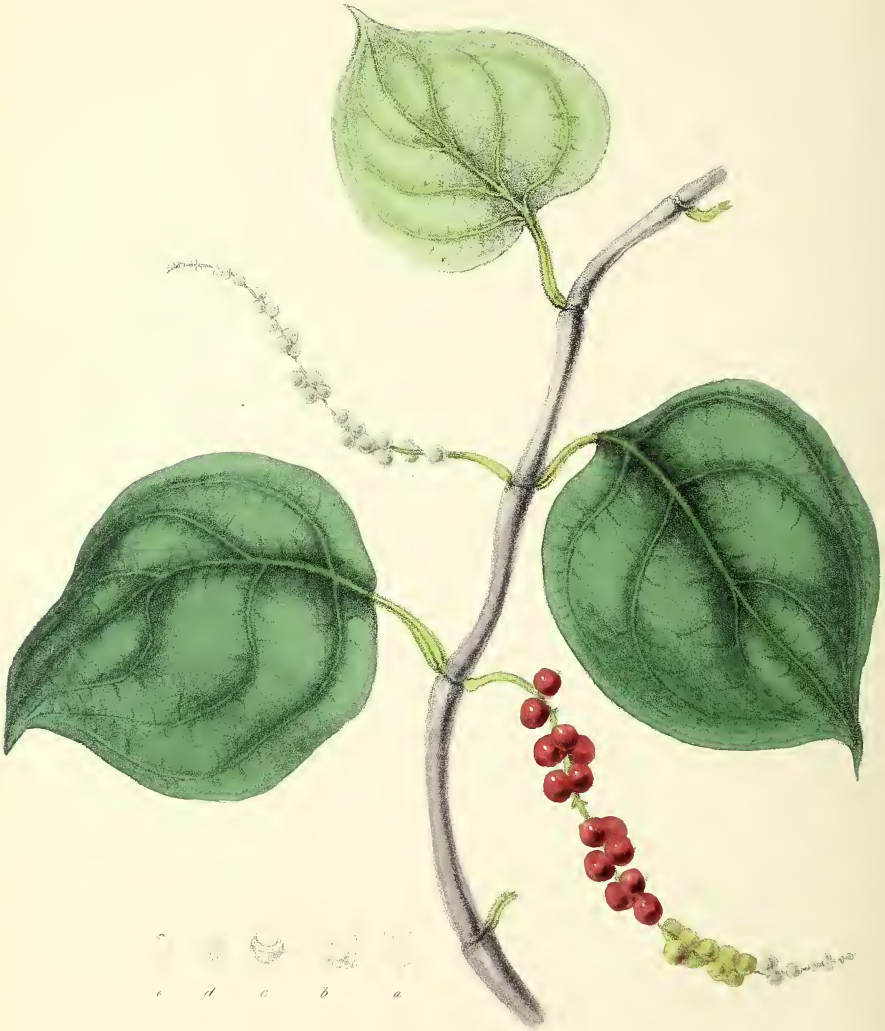
Adulterations.—Olive oil is said to be sometimes adulterated with poppy oil, though such an occurrence is probably rare in this country. Four methods, however, have been proposed for detecting the fraud; and as they have reference to some characteristic properties of olive oil, they deserve notice. The first is the *beading:* if we shake pure olive oil in a phial half filled with it, the surface of the oil soon becomes smooth by repose; whereas when poppy oil is present, a number of air-bubbles (or *beads*, as they are termed) remain. The second method is by *congelation*,—olive oil more readily congealing than poppy oil. The third method is that founded on the conducting power of the oil for electricity. The fourth method is by *nitrate of mercury*. If recently made nitrate of mercury be mixed with twelve times its weight of pure olive oil, and the mixture strongly agitated, the whole mass becomes solid in the course of a few hours. With poppy or other oils, the nitrate of mercury does not form a solid compound, and therefore when they are mixed with olive oil, we judge of their presence and quantity by the degree and quickness of solidification of the suspected oil.

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. And Dr. Whiting has shewn satisfactorily in a communication made to the Medico-Botanical Society of London, that its admixture in small quantities with morphia, renders the peculiar affects of that medicine more regular and certain. At one time it was supposed to possess antidotal properties for arsenical poisons; and Dr. Paris tells us, that the antidote on which the men employed in the copper smelting works and tin burning-houses in Cornwall, rely with confidence, "whencver they are infested with more than an ordinary portion of arsenical vapour, is sweet oil, and an annual sum is allowed by the proprietors, in order that it may be constantly supplied." There is, however, no reason to believe that its agency is more than mechanical. 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 succcss, 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 venemous 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.

Besides these, there are other medicinal uses to which olive oil has been applied, but which it is sufficient merely to allude to. Such are, the internal exhibition of large quantities of it in arthritic pains,—the employment of oil frictions in dropsy, and the anointing the body with warm olive oil as a preventive of plague.

Lastly, we may mention the extensive use made of olive oil in various ointments, cerates, liniments and plasters.

Dose and Administration.—As a laxative, the dose is one or two fluid ounces. As an emollient and demulcent, it is sometimes taken in the form of an emulsion, made with either alkali or gum.



Piper nigrum.

PIPER NIGRUM.—BLACK PEPPER.

Class II. DIANDRIA.—Order III. TRIGYNIA.

Natural Order, PIPERACEÆ.—THE PEPPER TRIBE.

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.

Piper Nigrum,[a] the *tieo-bo* of the Cochin-Chinese, the *melagocodi* 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 1,000 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.

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 moochié wood tree, (Erythrina *indica*;) the mango tree, (Mangifera *indica*;) the jack tree (Artocarpus *integrifolia*;) and the Hyperantha *moringa*; but it has been remarked, that the vines which cling round the two last, thrive the best. The trees commonly preferred in the islands of the Eastern Archipelago, are the Erythrina *coralodendron*, and mánghúdú (Morinda *citrifolia*.)

The plant begins to bear about the third year, and is esteemed in its prime in the seventh, which state it maintains three or four years; it then gradually declines for about the same period. The vines generally yield two crops annually, the first in December, the second in July. As soon as any of the berries redden, the bunch is reckoned fit for gathering, the remainder being generally full grown, although green. When gathered, they are spread on mats in the sun; in this situation they become black and shrivelled, and as the pepper dries, it is rubbed occasionally between the hands to separate the grains from the stalks.

According to Mr. Milburn, the pepper countries extend from about the longitude of 96° 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 Gulf of Siam.

The pepper of Malabar is esteemed the best; next, that of the east coast of the Gulf 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, 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,

[a] For the following account we are chiefly indebted to Churchill's Medical Botany; but we have taken some particulars from Mr. Pereira's lectures in the Medical Gazette.

piperin; 2nd, green concrete very acrid oil; 3rd, 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.[a]

Piperin, a new principle, was discovered some years since, 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 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.

Medical Properties and Uses.—The principal use of pepper is condimentary: it is employed partly for its pungent flavour, partly to stimulate the stomach and promote the digestive process, especially when substances not readily assimilable have been taken as a medicine. Pepper is employed both for its local and constitutional effects; thus, mixed with lard, we employ it in the form of ointment against tinea capitis. In relaxed uvula, paralysis of the tongue, and in other effects of the mouth and throat requiring a powerful acrid pepper may be employed as a masticatory. It may be mixed with mustard to increase the irritant effects of a mustard poultice.

Internally it has been employed in various diseases: thus in dyspepsia, as a gastric stimulant; given in spirit and water it is a popular remedy for preventing the return of a paroxysm of an intermitting fever. Barbier says, in some cases where large doses have been taken, death has occurred, in consequence, as he asserts, of some pre-existent gastritis, which was increased by the spice.

Hippocrates employed pepper in several diseases. Pliny alludes to its uses as a condiment, and expresses his astonishment that it should have come into such general use, since it has neither flavour nor appearance to recommend it. "Quis illa primus experiri cibis voluit," says he, "aut cui in appetenda aviditate esurire non fuit satis?"

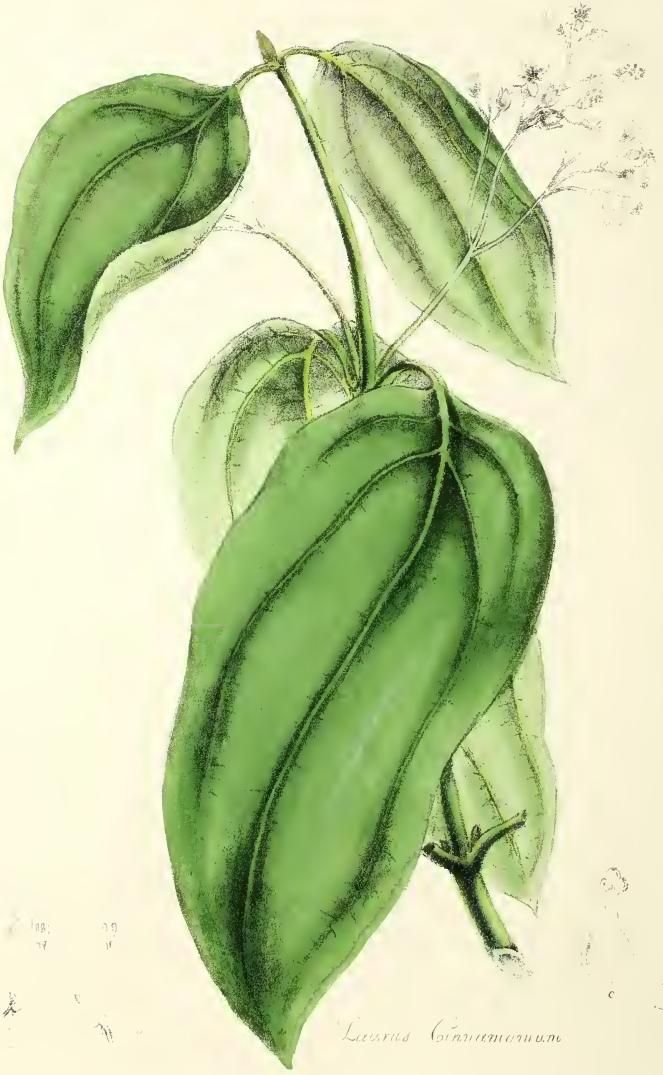
When taken, in excess, it is injurious to persons of full habit. As a medicine it is given to relieve nausea, or check vomiting, to remove singultus, and as a stimulant in retrocedent gout. Its dose is from 10 to 15 grains. Its infusion has been used as a gargle in relaxation of the uvula.

The local effects of pepper are those of a powerful acrid. These are well perceived when we apply it to the tongue. If kept in contact for some time with the skin it causes active inflammation, and brings out a crop of phlyctenæ. The remote effects of pepper are those of a stimulant. "I have seen," says Van Swieten, "a most ardent and dangerous fever raised in a person who had swallowed a great quantity of beaten pepper."

According to Dr. Meli, piperin has the same febrifuge properties as the alkalies of the cinchonas. At the hospital of Ravenna he has cured a great number of cases of intermittent fever by it, and he goes so far as to affirm that its action is more certain, and more prompt than that of the sulphate of quinine. Dr. Elliotson, however, says, "Dr. Roots employed it at this hospital (St. Thomas's) in five or six cases of ague, 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."[b] The *dose* is much smaller than that of the sulphate of quinine. The dose of pepper itself is from five or six grains to a scruple. The *confection of black pepper* is intended to be a substitute for Ward's paste; its dose is one or two drachms. Black pepper is a constituent of the *confection of rue*. The *ointment of black pepper*, of the Dublin Pharmacopœia, is composed of four ounces of black pepper to a pound of lard.

[a] *Jour. Pharm.* vii. 273.

[b] See Clinical Lecture, reported in the "Lancet," page 409, No. 354.


Laurus Cinnamomum

LAURUS CINNAMOMUM.—THE CINNAMON TREE.

Class IX. ENNEANDRIA.—Order I. MONOGYNIA.

Natural Order, LAURINEÆ.——THE LAUREL TRIBE.

Laurus Cinnamomum, the bark of which yields the well known spice cinnamon, is a native of Ceylon, but it is cultivated in other parts both of the East and West Indies. Cinnamon seems to be confined to the torrid zone, or at least we have no good authority for supposing that it flourishes much beyond it. Spielman says, it is found in Tartary, and many authors have asserted that it grows in China. Spielman's assertion is now supposed to be incorrect; and Sir G. Staunton tell us that, with the exception of the camphor-tree, none of the laurel genus grows in China; nor does Osbeck include it in his "Flora Sinensis." It grows abundantly on the Malabar coast; the island of Sumatra, particularly about the Bay of Taponooly; Cochin China; Tonquin, where it is an article of Royal monopoly; the Sooloo; Borneo; Timor; the Nicobar and Philippine islands; the island of Floris, and Tobago. It has been cultivated in the Brazils, the isles of Bourbon and Mauritius, the Seychelle islands, Guadaloupe, Jamaica, and the northern Circars. The cinnamon plant was introduced into Guiana, in the year 1772, from the isle of France; subsequently it was transported into the Antilles. In Guiana the inhabitants cultivate it in their gardens, and round their cottages. They prepare cinnamon sufficient for domestic purposes, and transmit a small quantity to France. Prior to the year 1790, it was introduced into Cayenne by the French government at a very great expense, and recommended to be cultivated by the colonists; cinnamon has been successfully grown in the island of Dominica by a M. Buée, where the same gentleman has succeeded in propagating the clove-tree.

The fullest account of the cinnamon-tree, and of the preparation of cinnamon, that we have seen in the English language, is by Henry Marshall, Esq., Staff Surgeon to the Forces in Ceylon, and the following details respecting the natural history and description of this valuable spice, are principally derived from his interesting paper, published in Thomson's Annals of Philosophy, vol. x. p. 241 and 346. The tree grows to the height of from 20 to 30 feet; has a slender trunk, from 12 to 18 inches in diameter, irregular, knotty, and covered externally with an ash-coloured, thick, rough, scabrous bark; innumerable branches shoot from the stem and give it the appearance of the Portugal laurel. The wood is light and porous like that of the osier, and is used for fuel. Shoots spring up from the roots in great profusion, and form a bush round the stem. The inner bark is reddish. The bark of the young shoots is often beautifully speckled with dark green and light orange colours. The root and branches exude abundance of camphor. The leaves, which stand in nearly opposite pairs on short slightly channelled petioles, are from six to nine inches in length, oblong, smooth, pointed, entire, and three nerved; the lateral nerves vanishing as they approach the point. The young leaves and tender shoots are of a bright red or liver colour, with yellow veins; the former as they acquire maturity become olive, then bright green, and before they fall olive yellow; mature leaves have a strong aromatic odour, and the biting hot taste of cloves. The flowers are in axillary and terminal panicles, white, inodorous, or perhaps somewhat fœtid. The petals are six, ovate, pointed, concave, and spreading; the filaments are in threes, shorter than the corolla, flattish, erect, the three innermost glanduliferous at the base, and the anthers are double. The fruit is an oval berry, larger than a black currant; when ripe, the skin is bluish-brown, thickly scattered with spots; beneath the skin is a greenish pulp, which is slightly acrid, has a terebinthinate odour, and a taste resembling that of the juniper berry. This pulp incloses a nut, which contains an oily, soft, pale rose-coloured, inodorous kernel. Crows and wood-pigeons devour the berries with great avidity; the productive quality of the seeds remains undestroyed, and by this means the plant is disseminated over a great extent of country, and is found even in the thickest and most impassable jungles.

Cinnamon is mentioned, Exod. xxx. 23, among the materials which composed the holy anointing oil; and in Prov. vii. 17, Cant. iv. 14, Eccles. xxiv. 15, and Rom. xviii. 13, amongst the richest perfumes. Our species of cinnamon is brought from the East Indies; but as there was no traffic with India in the days of Moses, it was probably obtained from Arabia, or some neighbouring country. We learn, also, from Pliny, that a species of it grew in Syria. "In Syria gignitur et cinnamomum quod caryopon appellant. Hic est succus nuci expressus, multum a surculo veri cinnamomi differens, vicina tamen gratia."—Nat. Hist. l. xii. c. 38.[a]

Mr. Marshall, whose valuable contributions were published in the Annals of Philosophy, thinks it probable, that from the earliest ages Europe has been indebted to Ceylon for part of its supplies of this article. He thinks that it may have been exported by small vessels belonging to the island, to the Malabar coast, and rom thence to Sabea, on the south coast of Arabia, by the Arabs. Here the ships belonging to the mer-

[a] Salmasius has shown from the authority of MSS., that *camacon*, or *camacon*, is here to be read for In Solinum, p. 922.

chants of Phœnicia and Egypt found large stores of the produce of India; and by this medium the demands from all Europe were supplied. The enormous expense incurred by transporting cinnamon such a circuitous route, must have greatly enhanced its price and prevented its very general use. On some occasions, however, the quantity consumed was considerable. At the funeral of Sylla, 210 burthens of spices were strewed upon the pile; and it is probable that cinnamon formed a great part of the spices used on this occasion, the produce of the Moluccas being then but little, if at all, known to the Romans. Nero is reported to have burned a greater quantity of cinnamon and cassia at the funeral of Poppœa than the countries from which it was imported yielded in one year.

In 1498 Vasco de Gama landed at Calicut. Indian commerce now took a different route, and the Portuguese supplied Europe with the articles which had formerly passed through the hands of the Venetians. Eager to engross the cinnamon trade, the Portuguese, early in the sixteenth century, arrived at Ceylon, and obtained leave to establish a factory, which led to the erection of the fort of Colombo. Shortly after the fort had been built, they concluded a treaty with the king of Kandy, wherein he agreed to furnish them annually with 124,000 pounds of cinnamon, in return for which they were to assist the king and his successors, both by sea and land, against all his enemies. The thriving settlements of the Portuguese in the East, eventually attracted the attention of the merchants of Holland. Soon after they had gained a footing in India, they became anxious to engross the cinnamon trade, and early in the seventeenth century found means to ingratiate themselves with the king of Kandy, who invited them to aid him in expelling the Portuguese from the islands. In 1612, the king engaged to deliver to the Dutch East India Company all the cinnamon he was able to collect. Peace was concluded between the Portuguese and Dutch in 1644. By this treaty a moiety of the trade was ceded to the Dutch. War commenced again in 1652. Colombo surrendered to the Dutch in 1656, and Jaffna, the last place of strength of the Portuguese, fell in 1658. After monopolizing the trade for many years, during which time they extirpated the trees in Malabar to enhance the value of the cinnamon of Ceylon, the Dutch found serious rivals in the Chinese, whose cinnamon is inferior to none. To check, therefore, this rivalship, and to render themselves independent of the king of Kandy, they began to cultivate the cinnamon on their own ground at Ceylon; and Dr. Thunberg, who visited Ceylon in 1778, informs us, that by the unwearied exertions of Governor Falck, exceedingly large plantations of cinnamon had been formed, and that the shoots of some of the early plantations had been already three times barked. Political altercations between the colonial government and the court of Kandy occurred about 1792, during which the peeling of cinnamon in the king's territory was greatly interrupted, and the governor declined to send an ambassador to obtain leave, as the king of Kandy required. By the year 1793, the propagation of the cinnamon plant had so far succeeded, that the governor was enabled to furnish the annual investment from the territory of the company, and in a letter to his successor, he congratulates him, that, in future, they would be under the necessity of flattering the court of Kandy. Ceylon was reduced by a British force in Feb. 1796, and in the latter end of 1797, 13,893 bales of cinnamon were sent to this country. By the treaty of Amiens, concluded in 1802, the Batavian republic ceded to his Britannic majesty all their possessions in the Island of Ceylon, which belonged before the war to the United Provinces. Soon after our countrymen became possessed of Ceylon, they became infected with the Dutch mania, and such serious alarm did they entertain that the market would be overstocked with cinnamon, the produce of the island, that the government, anxious to keep up its price, ordered many of the plantations to be rooted up. In July 1805, General Maitland assumed the government of Ceylon, and one of his first acts was to arrest the destruction of the plantations. He readily saw the propriety of encouraging and increasing the cultivation of cinnamon, and adopted means which have been followed with success. During this government, the annual investments continued gradually to increase, and many hundred acres of new ground were planted. Less dependence was now placed on the supply from the Kandian territory, which was always uncertain and subject to many impediments. To rival the excellence of the cultivated cinnamon of Ceylon, Dr. Marshall thinks it probable that the Dutch will cultivate it in Java, or some of its dependencies, and he strongly urges the propriety of exerting the powerful means, which circumstances have placed in our power, to cultivate, collect, and export a greatly increased quantity of this spice with the view of supplying the markets both of Europe and America; while the trade will be rendered less profitable to our rivals, and less encouraging to them to attempt to monopolize the commerce of this important article.

The ground for planting cinnamon is in the first instance prepared, by cutting down the low brushwood and young trees. The lofty trees are allowed to remain, as the cinnamon is observed to thrive better under their shade, when not too close, than when it is exposed to the direct rays of the sun. The brushwood is collected into heaps, and burned. The planting commences when the seeds are ripe, generally during the months of June, July, and August. The workmen stretch a line upon the ground, along which they with a mammettee (hoe) turn up about a foot square of earth, at intervals of six or seven feet. The ashes of the

burned shrubs and branches of trees are then spread upon the spots of friable earth; and into each of them four or five cinnamon berries are planted with a dibble. Branches of trees are spread upon the ground, to prevent the friable earth from being scorched, and to protect the young shoots. The young shoots appear above the ground in about fifteen or twenty days. Sometimes the berries are sown in nurseries, and the shoots transplanted in the months of October and November.

In favourable situations the shoots attain the height of five or six feet in about six or seven years; and a healthy bush will then afford two or three shoots fit for peeling. Every second year from four to seven shoots may be cut from a bush in a good soil. Thriving shoots of four years' growth are sometimes fit for cutting.

As four or five seeds are sown in one spot, and as in most seasons many of the seeds germinate, the plants grow in clusters, not unlike a hazel bush. In seasons with little rain many of the seeds fail, and a great number of the young shoots die; so that it is frequently necessary to plant a piece of ground several times successively. A plantation of cinnamon, even on good ground, cannot be expected to make much return before eight or nine years have elapsed. The plantations from which a considerable part of the cinnamon is procured are Kaderang, Ekele, Marendahn (Colombo), and Morotta. These are styled protected plantations, to distinguish them from a number of extensive fields that were planted with cinnamon by the Dutch, and which have since been permitted to be overrun with creepers, brushwood, &c., and many of the cinnamon plants rooted up by the natives."

On an average of ten years the quantity of cinnamon deposited annually in the magazine at Colombo from the jungles and abandoned plantations of our own territory, including what has been collected in the Candian country, amounts to 1184 bales; and at Galle, during the same period, 935.

The peeling commences early in May, and continues until late in October. The rains which precede, and occur during the southwest monsoon, produce such a degree of succulency in the shoots as to dispose the bark and wood to part easily. The setting in of the rainy weather immediately produces a fresh crop of scarlet or crimson-coloured leaves.

The cinnamon harvest begins by dividing the peelers into small parties, which are placed under the directions of an inferior superintendent. When they are to peel in the plantations, each party has a certain extent of the plantation allotted to it. A few of the party cut shoots; while the remainder are employed in the wadu (or peeling shed) to remove the bark and to prepare the cinnamon. When the chaliah perceives a bush with shoots of a proper age, he strikes his ketta (which resembles a small bill-hook) obliquely into a shoot; he then gently opens the gash, to discover whether the bark separates easily from the wood. Should the bark not separate easily, the shoot or branch is not deemed fit for cutting. The chaliahs seldom trust implicitly to any external mark of the proper condition of the plant, and rarely try a shoot until the scarlet leaves have assumed a greenish hue. Some plants never acquire a state fit for decortication. Shoots of many years' growth often bear the marks of numerous annual experiments to ascertain their condition. Unhealthy, stunted plants, are always difficult of decortication; and the cinnamon procured from them is generally of an inferior quality.

Cinnamon prepared from the bark of very young and succulent shoots is rejected. It is light straw-coloured, thin, and almost without flavour or taste; and what little aroma it possesses is very evanescent.

Mildewed or half-rotten and smoky cinnamon is rejected. When the peelers are overtaken with rain at a distance from sheds, the bark they have previously collected ferments, becomes decayed, and inodorous. In such situations they frequently retire to caves, or very confined huts, where they kindle fires, to procure warmth and to dress their food. The smoke arising from these fires often greatly injures the bark, and renders it unfit to be manufactured into good cinnamon. To increase the weight, the peelers sometimes stuff the quill of cinnamon with sand or clayey earth, thick ill-prepared pieces of bark, &c. &c. When these impositions are suspected, the quills are undone, often broken, and the foreign mixture removed.

This is one of the many causes which prevents the cinnamon from being in quills of nearly equal length. Cinnamon produced beyond the river Keymel on the north, and the Wallawey on the south, is generally condemned. It is light-coloured, greatly deficient in aromatic flavour, astringent, bitter, and has sometimes a taste similar to the rind of a lemon. Even between these limits the cinnamon produced differs greatly in quality. Differences of soil, and exposure, are very evident causes of a difference in the quality of cinnamon. Shoots exposed to the sun are more acrid and spicy than the bark of those which grow under a shade. A marshy soil rarely affords good cinnamon. It has often a pale yellow shade, approaching to the colour of turmeric. It is loose, friable, and gritty, and its texture coarse-grained. It possesses little of the spicy taste of cinnamon, Very often, however, the cause of the inequality of this spice is not apparent; the bark of different shoots of the same bush have often very different degrees of spiciness.

That which is considered in Ceylon as of the best quality is of a light yellow colour, approaching nearly to that of Venetian gold; thin, smooth, shining; admits of a considerable degree of pressure and

bending before it breaks; fracture splintery; has an agreeable, warm, aromatic flavour, with a mild degree of sweetness. When chewed, the pieces become soft, and seem to melt in the mouth.

The first and second sorts are weighed, and put up into bundles, each weighing 92½ lbs. English. Each parcel or bale is firmly bound round with ropes, and then put into double gunnies.

The outside of the bale is marked with the number of the quality of the cinnamon, and the initial letter of the name of the protected plantation from whence it is procured. The bales of cinnamon which are procured in the neglected plantations, the woods of our own territory, or in the Candian country, are marked A. G. (Abandoned Gardens.) The Company export their cinnamon from Colombo, or Galle, and the interstices between the bales are filled with black pepper."

On some occasions the Ceylon government has directed oil to be extracted from the cinnamon, whose quality did not permit it to form part of the Company's investment. The process is simple: the bark is grossly powdered, and macerated for two days in sea-water, when both are put into the still. A light oil comes over with the water, and swims upon its surface, and a heavy oil, which sinks to the bottom of the receiver. The light oil separates from the water in a few hours; but the heavy oil continues to precipitate for ten or twelve days. The heavy oil, which separates first, is about the same colour as the light oil; but the portion which separates last has a browner shade than the supernatant oil. In future distillations the saturated cinnamon-water is advantageously used, added to sea-water, to macerate the cinnamon. Eighty pounds of newly-prepared cinnamon yield about two ounces and a half of oil, which floats upon the water, and five ounces and a half of heavy oil. The same quantity of cinnamon, if kept in store for several years, yields about two ounces of light oil, and five ounces of heavy oil.

The word cassia is by modern authors used in a variety of senses; but as they do not always define it, or explain the specific nature of the substance they intend to describe, it is often difficult to know what meaning they attach to the term, or to comprehend the nature of the article concerning which they have been writing.

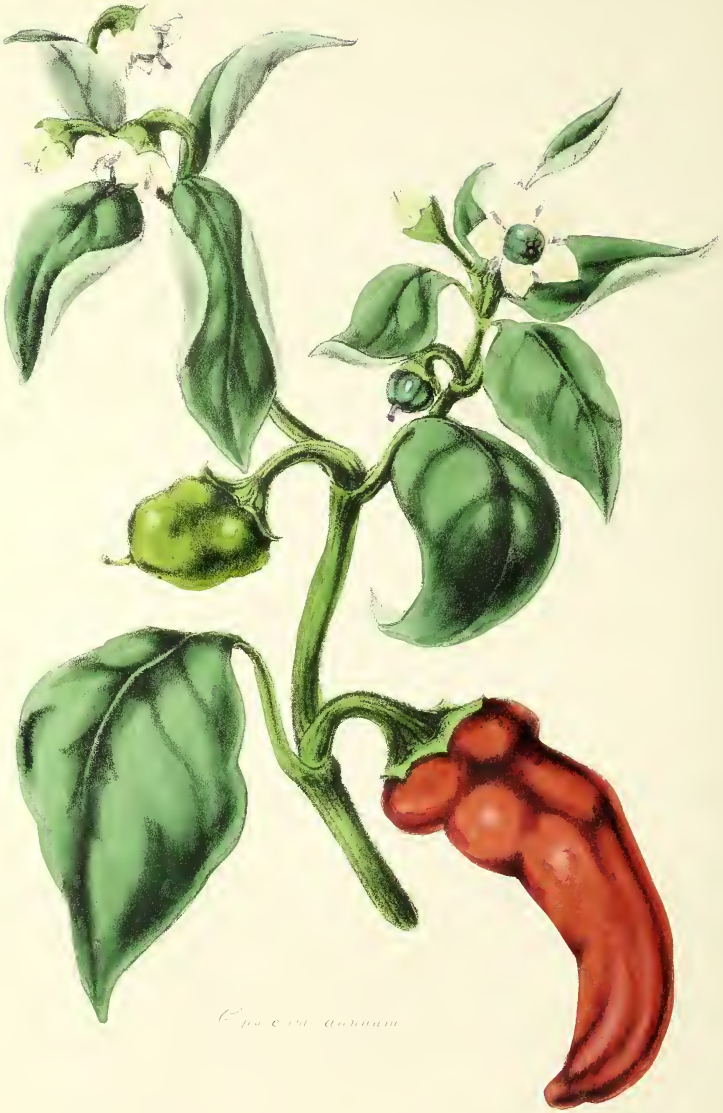
The true cinnamon of commerce, according to Mr. Marshall, is the produce of young shoots of the cinnamon-tree (Laurus *Cinnamomum ;*) and cassia is the prepared bark of the *old branches of the same kind of tree.* Cassia is harder, and more woody than cinnamon. The ancients made use of this kind of bark; but we at present reject it.

The *cassia bud* of commerce is the fleshy hexangular receptacle of the seed of the *L. Cinnamomum.* When gathered young the receptacle completely envelopes the embryo seed, which progressively protrudes, but is continually embraced by the receptacle. The buds have the appearance of nails, with roundish heads of various sizes. If carefully dried, the receptacle becomes nearly black, and the point of the berry light brown. The seeds contract by drying, and often fall out; the receptacle is then cup-shaped. When kept long, they have a dirty brown colour, and possess very little of the flavour of cinnamon. By distillation they yield an essential oil not inferior to that of cinnamon bark.

Qualities and Chemical Properties.—Cinnamon bark has a reddish brown colour, and consists of long rolled pieces which splinter when broken. It has a pleasant aromatic smell, and a pungent but agreeable taste. Its properties are entirely owing to its volatile oil. This oil has a whitish yellow colour, and an extremely pungent taste and smell. It may be separated by infusing the bark in alcohol, and then separating the alcohol from the oil by distillation. When water is distilled off this bark it comes over milky, from the accompanying oil, which it retains with great obstinacy; very little separating till the mixture has stood a considerable time.

Medical Properties and Uses.—Cinnamon bark is one of the most grateful aromatic stomachics that we possess, and is stimulant, astringent, and tonic. It is principally employed, however, as an adjunct to other remedies, to prevent their griping effect, or to cover their nauseous taste. The oil being a powerful stimulant is sometimes employed to allay spasmodic affections of the stomach and bowels, hiccup, and nausea. It is also applied to relieve the pain of decayed teeth.

Off. Prep.—Aqua Cinnamomi. L.E.D.
Spiritus Cinnamomi. L.E.D.
Tinctura Cinnamomi comp. L.E.D.
Pulvis Cinnamomi comp. L.E.



CAPSICUM ANNUUM.——ANNUAL CAPSICUM, OR GUINEA PEPPER.

Class V. PENTANDRIA.—Order I. MONOGYNIA.

Natural Order, SOLANEÆ.——THE NIGHTSHADE TRIBE.

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, mueh 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 synpetalous, 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.

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.

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.

When we gaze on the gorgeous colours of a tropical plant, we naturally think of the climates where it springs up without the aid of culture; imagination makes but few steps from the little to the great; and the pod of a capsicum is sometimes enough to transport us into the glowing scenery of the two Indies. What reader, and still more, what botanist, has not at times wished to wander in the land of the aloe, the palm, the fig, the orange, the cocoa, and the pomegranate? How delightful to cull the wild flowers of a region where every thicket is adorned with plants, whieh, in England, if they exist at all, exist only by the sickly aid of the stove! The painted plumage of the birds, the gales that breathe perfume, and, in short, the luxuriance of nature in all her varied modes, might seem to leave nothing to desire. But, alas! the picture has its dark side, for India is not Paradise. That thicket is the lair of the tiger; each blast which passes over yonder swamp carries fever on its wings. The European, shattered by disease, has little relish for the landscapes around him; and as he tosses on his couch, sighs for the green lanes of his boyhood. The botanist, on the other hand, whose destiny confines him to the less brilliant scenery of Britain, wanders with greater safety and probably, with greater pleasure. The changes of our English climate are to be complained of by

the wasted invalid, but not by the hearty and weather-proof gatherer of plants. While he enjoys a "fine fresh May morning" with as keen a relish as old Walton's *Piscator*, he bears up against the sterner phases of our spring with the elasticity which health and eager pursuit so naturally confer. Indeed, if we might trust the anonymous author of the following sonnet, this same plant-gathering is so captivating, that your gatherer sometimes forgets for a while the smiles of beauty which await him at home. But this we think a libel on botanists, and have no doubt that the poet, when he composed it, was merely indulging in the agreeable license of his guild.

HERBCRAFT.

The botanist, from morn to dewy eve,
Treads the thick forest, and the grassy bank;
And surely would he deem it sore unthank
To Flora sweet, his grateful task to leave,
Ere the shrill bat hath chirped the parting day,
And sleepy flowrets shut their gorgeous lids.
Then to his homely cot he wends his way,
With spoil deep-laden; bright-eyed Daphne chides
His absence: yet so graciously doth blame
Issue from rosy lips with silver sound,
That every soul might wish just such a dame
To chide within his dwelling might be found;
For happiness, if more than empty name,
Is love, by love of nature circled round.

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, and 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 in the West Indies, where 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.

Qualities and Chemical Properties.—Capsicum is of a fiery hot, somewhat aromatic taste, and has an extremely pungent odour. 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.

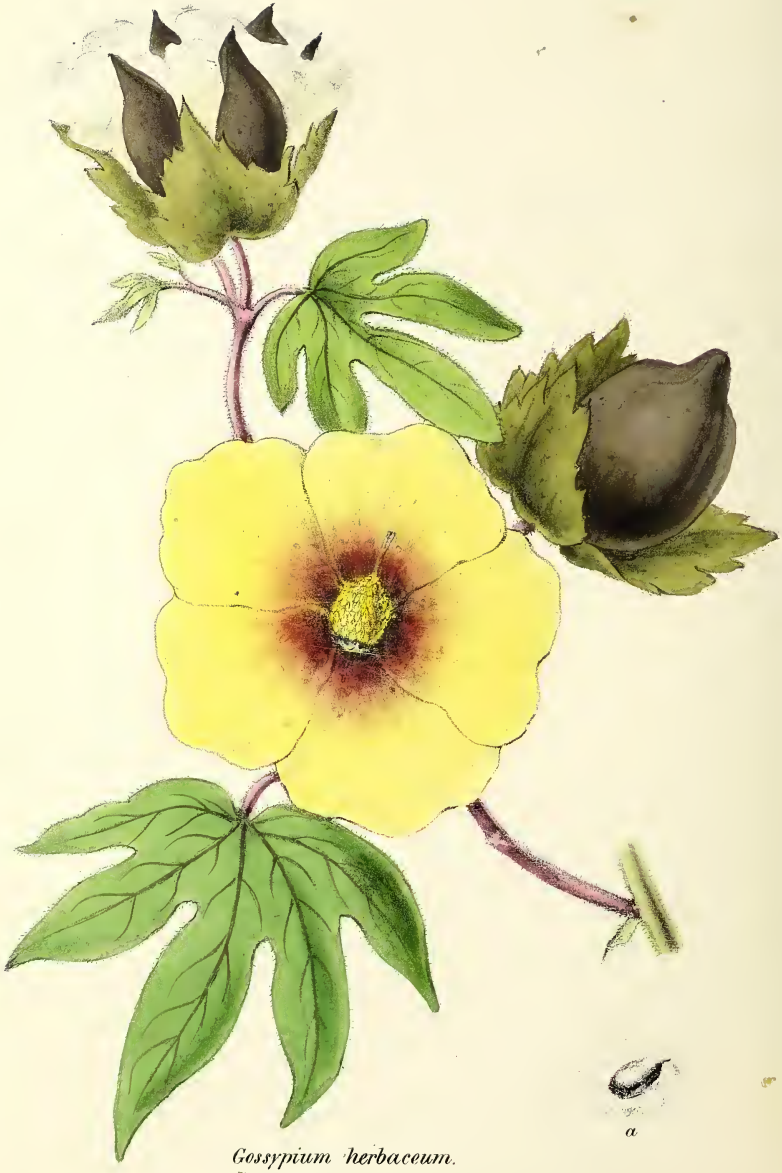
Adulterations.—Red lead, which is sometimes mixed with powdered capsicum, may be detected by digesting it in acetic acid, and adding to the solution sulphuret of ammonia, which will produce, if any lead be present, a dark-coloured precipitate; or the fraud may be discovered by boiling some of the suspected 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.[a]

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 the peppers, it has but little tendency to affect the head: it is therefore a useful stimulant in some forms of dyspepsia. 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. The pods are sometimes employed as an ingredient in rubefacient cataplasms for the feet, to relieve the coma of fever; chronic ophthalmia is sometimes benefitted by a weak infusion; but the gargle, when used in sore-throat, has occasionally produced violent inflammation, not easy to be controlled.

Dose.—From twelve drops of the tincture to half a drachm: and ʒij. to half a pint of water, form a good gargle.

Off. Prep.—Tinctura Capsici. *L. D.*

[a] Accum; Thomson.



Gossypium herbaceum.

GOSSYPIUM HERBACEUM.—THE COMMON COTTON TREE.

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

Natural Order. BOMBACEÆ.—THE COTTON TREE TRIBE.

a Seed.

Calyx cup-shaped, obtusely five-toothed, surrounded by a three-leaved involucel, with the leaves united and cordate at the base and deeply cut or toothed irregularly. Style simple, marked with three or five furrows towards the apex. Stigmas usually three, sometimes five. Capsules three-five-celled, three-five valved at the apex, loculicidal. Seeds numerous, imbedded in cotton. Young branches and leaves more or less conspicuously covered with little black dots; nerves below, usually with one or more glands.

*M. Rohr has long ago pointed out from many years experience in the West Indies, that constant characters could not be obtained from the shape of the leaves, their glands, or the involucel, but must be looked for in the seed. Dr. F. Buchanan Hamilton (Linn. Trans. v. xiii. page 492,) makes the same remark, and adds, that "the plant being annual, or growing to a small tree with a woody stem lasting for years, is a mere accidental circumstance, owing to the manner of treatment. In dividing the genus into species, we therefore follow this last writer, who mentions that the pubescence is a better criterion than either the number and form of the lobes of the leaf, or the number of the glands, for distinguishing the varieties." M. Rohr divides the cotton plants with which he was acquainted into, 1 those with seeds black and rough, 2 with seeds brownish black and veined, 3 seeds sprinkled with short hairs; 4 seeds completely covered with a close down, which characters, combined with the colour of the cotton and its mode of attachment to the seed, and the shape of the seed, we recommend to the attention of those who have the means of studying them in the living state; as it is almost necessary that dried specimens in leaf, flower, and ripe fruit, be accompanied by remarks, before botanists can clear up this genus with any kind of satisfaction.—*Prodromus Floræ Peninsulæ Indiæ Orientalis.*

There are several species of the cotton tree. The common Levant cotton, which is cultivated in several islands of the Archipelago, becomes, in six months, as large as a European quince. It bears rich sulphur-coloured flowers, which are very large and beautiful. After they fall, a head of seed appears, which, when it comes to maturity, bursts open, scatters its contents, and discovers the white cotton. In China the variety is particularly cultivated that produces the cloth called Nankeen. The down covering the seed is called cotton wool, which is white in the common plant, but in this it has the tinge it preserves when spun and woven into cloth. In India the bees find singular habitations. On one cotton tree, say some recent travellers, a gentleman counted a hundred and eighty distinct hives, belonging to as many swarms. It might indeed be called "a realm of bees," comprehending so many towered cities, "filled with the busy hum" of their industrious population. The natives take these nests in the night time, by making a fire under the tree; they ascend the stem, wrapped in a thick woollen cloth, and when they have reached the boughs, they cut off the combs, leaving them to fall upon the ground. The Barbadoes cotton tree has a stem from six to fifteen feet high, is propagated by seed, set in rows, about five feet asunder, and produces two crops annually. Each plant is reckoned to yield about a pound weight. When the pods are nearly expanded, the wool is picked and laid in small quantities on a machine made with two rollers; whence it falls into a sack placed underneath and leaves the seed behind. The cotton is then carefully picked, cleaned, and stowed in bags, where it is well trodden down, that it may be close and compact; the marketable weight of each being three hundred pounds. An acre produces on an average, nearly that quantity. As cotton is easily grown and collected, the patient industry and simple habits of the people by whom it was cultivated enabled them to send to Europe their manfactured stuffs, of a fine and durable quality, even from the time of the ancient Greeks. Before the discovery of the passage to India by the Cape of Good Hope, cotton goods were very costly in Europe. M. Saywell observes, that though cotton stuffs were cheaper than silk, which was formerly sold for its weight in gold, they still could only be purchased by the most wealthy, and

* For the chief part of the following account we are indebted to Dr. Royle's splendid work "Illustrations of the Botany, &c., of the Himalayan Mountains."

that, could a Greeian lady awake from her sleep of two thousand years, her astonishment would be unbounded to see a simple country girl clothed with a gown of printed eotton, a muslin kerchief, and a coloured shawl. In the seventeenth eentury, Franee began to manufaeture into stuffs the raw eotton imported from India, as Italy had done a hundred years before. A cruel aet of tyranny drove the best Freneh workmen, who were Protestants, into England, and we thus learned the manufacture. The same aet of despotism caused the settlement of silk manufaeturers in Spitalfields. We did not make any considerable progress in the art, nor did we use eotton exelusively in making up the goods. The warp or longitudinal threads of the cloth were of flax, the weft only was of eotton, for we eould not twist it hard enough, by hand, to serve both purposes. This weft was spun entirely by hand, with a distaff and spindle—as it is still done by the natives of India. Notwithstanding these disadvantages, our manufacture eontinued to inerease; so that, about 1760, though there were fifty thousand spindles at work in Lancashire alone, the weavers found the greatest diffieulty in proeuring a suffieient supply of thread. Neither weaving nor spinning were then earried on in large factories. They were domestie oeeupations: the women of a family worked at the distaff or hand wheel; and there were two operations neeessary in this department. Roving, or eoarse spinning, reduced the earded eotton to the thiekness of a quill, and the spinner afterwards drew out and twisted the roving into weft fine enough for the weaver: English eotton goods were therefore very dear, and had but little variety. The eloth made of flax and eotton was ealled fustian; and we still reeeive the ealieos and printed cottons from India. But an amazing ehange was about to take plaee. Riehard Arkwright, of Preston, invented in 1769, the prineipal part of the maehinery for spinning eotton, and thus gave bread to about two millions of people instead of fifty thousand; and, assisted by subsequent inventions, raised the importation of cotton wool from India from less than two millions of pounds per annum, to two hundred millions; set in motion six millions of spindles, instead of fifty thousand, and inereased the annual produee of the manufaeture from two hundred thousand to thirty six millions pounds sterling.

The eonsumption of cotton has inereased in proportion to the progress of the arts and eivilization. It appears to have been originally known only as a produee of India, the eountry whieh at the present day is supposed by many ineapable of produeing any but the inferior kinds. As this is an opinion which appears to me to have been hastily formed from the results of experiments in a few situations, instead of after an investigation into the nature and variety of the soils and elimates of the different provinees of this extensive eountry, it will not be, perhaps, irrelevant to enter into a few details on the subjeet. That cotton was originally introdueed from India into Egypt, seems probable from Herodotus not mentioning it among the produets of the latter eountry, which he would hardly have failed doing had it been eommon or eultivated, as its novel and singular appearanee must have struek a traveller from Europe, partieularly as in his aeeount of the Indians, he mentions that they possess a kind of plant, whieh, instead of fruit, produees wool of a finer and better quality than that of sheep: of this the natives make their elothes. In another plaee, he mentions that the Egyptians, as well as the priesthood, are so regardful of neatness, that they wear only linen clothing, and that always newly washed. And again, "their habit is made of linen; over this they throw a kind of shawl made of white wool, but in these vests of wool they are forbidden by their religion to be buried, or to enter any saered edifiee." By some authors, it has been suggested that we ought in some places to read *cotton* instead of *linen;* but this seems to be taking for granted, that the former was as eommon in Egypt in aneient times as it is at present; and it appears to me, that in other plaees we ought to read *linen* instead of *cotton*, as in the account of the Egyptian mode of embalming the body is said to be wrapped up in bandages of cotton. That this was not the ease is proved by all the mummies whieh have been opened and the cloth carefully examined under the mieroseope, having been found to be swathed only in linen eloth; whieh it is not likely would have been the ease, if eotton had been as eommon an artiele of elothing in those, as it is in the present day, partieularly as some used for this purpose appears to have been previously worn, as it is required in some plaees. It is not improbable, however, that eotton fabries were imported into Egypt from India even at the earliest historieal periods, with einnamon, eassia, frankineense. Pliny, writing about 500 years subsequent to the time of Herodotus, mentions, that the upper part of Egypt verging towards Arabia, produces a small shrub, whieh some call *gossypion*, others xylon, and from the latter the eloth made from it, *xylina*, bearing a fruit like a nut, from the interior of whieh a kind of wool is produeed, from whieh eloths are manufaetured inferior to none for whiteness and softness, and therefore mueh prized by the Egyptian priesthood. Dr. Harris, in his natural history of the Bible quotes several authors to show that eotton was known to the Hebrews, adding that the name *buty*, by whieh it is distinguished, is not found among the Jews till the time of their royalty, when by eommeree they obtained artieles of dress from other nations. The author of the *Ruins of Palmyra* has shown that the East Indian trade by that eity into Syria was as aneient as the days of Solomon; and Heeren eoneludes, that eotton fabries formed an artiele of the aneient eommerce with India, as Clesias mentions that the Indians possess an insect, whieh affords a red eolour more brilliant than einnabar, whieh they employ in dying their stuffs.

It has sometimes been considered a subject of doubt, whether the cotton was indigenous to America, as well as to Asia; but without sufficient reason, as it is mentioned by very early voyagers, formed the only clothing of the natives of Mexico; and as stated by Humboldt, is one of the plants of which the cultivation among the Aztee tribes was as ancient as that of the *pili* (Agave), the maize and the *quinoa* (Chenopodium.) If more evidence be required it may be mentioned, that Mr. Brown has in his possession cotton not separated from the seeds, as well as cloth manufactured from it, brought by Mr. Cumming from the Peruvian tombs; and it may be added, that the species now recognized as American, differ in character from all the known Indian species.

In a cultivated state, cotton is now distributed over a very wide expanse of the globe on both sides of the equator: on the north extending as far as the southern shores of Europe, and on the south to the Cape of Good Hope. In the islands of the Pacific Ocean, it is found both in the Friendly and the Society Islands. Nearly under the line it is cultivated in the islands of Celebes, Java, Timor and the Seychelles, as well as in Kutung, where the best is said to be grown, extending northwards up the Malayan Peninsula, along the coast of Tenasserim into the Bushmere territory, and from this westward into Siam and China whence there is a peculiar species. Cotton is common in every part of India; a wild species was found in Ceylon, and another in Silhet by Dr. Roxburgh. From India the cotton seems to have travelled by the way of the Persian Gulf into Arabia as well as into Persia, and from thence to Syria and Asia Minor. From Arabia and from the ancient commerce by the Red Sea with India it was probably introduced into Egypt, whence it seems to have spread into the interior of Africa and to both its western and northern coasts. The island and shores of the Mediterranean long supplied Europe with all the cotton it required; during the reign of Napoleon, he caused it to be introduced into Corsica, Italy, and the southern parts of France; and Mr. Kirkpatrick cultivated it in Spain, near Malaga. In America, cotton is extensively cultivated in the Spanish, Portuguese, Dutch, and English settlements; one species is peculiar to Peru; others are cultivated in the West India islands; also in Mexico, and in the southern states, as Georgia and Carolina of the United States of North America.

The sowing takes place in Georgia from November to April in lines or furrows: the latter may be five feet apart. In America and the West Indies, where the land has not been previously cleared, the practice is to fell and set fire to the timber, and dig holes for sowing the seed. These may vary in distance, but are often eighteen inches apart, and about as deep. From twelve to twenty or thirty seeds are sown in each hole, as soon as possible after ploughing, digging, or hoeing, and are covered with one or one and a half inch soil. The most important operation is weeding; this is repeated every eight or ten days in China, until the bushes put forth blossom, and every month in Guiana, it ought to be carefully performed so as not to injure fibrils; it is useful not only in removing weeds, but also in turning up the soil. When plants are three or four inches high, all, except three or four in each hole, are pulled up: at the end of the third month, all the plants but one are withdrawn; in Georgia, after a month, six or seven are left in each hole, at next hoeing, only, one or two which are most apart. When the remaining plant is eighteen or twenty four inches high, only twelve inches in China, the top is pinched off, that the lateral branches may shoot out, which, after a time, are treated in the same manner to favour the formation of flower and fruit. This process is objected to by Von Rohr. The blossom generally appears about the end of July, or beginning of August; pods open about six weeks after the blossoms, and the crops begin in September, both in Georgia and Guiana; but most of the cotton is ready about the middle of October, and the whole of the first crop is not got in before the end of December in Guiana, when as in India, Christmas rains occur; the plants afterwards sprout out new shoots and blossoms, and about the end of February the picking may be resumed and continued to the middle of April. The ground is carefully weeded between the crops; women and children are employed in picking the cotton out of the pods, and as moisture is injurious, the gathering is not commenced until the dew is dissipated; and as the pods ripen in succession, it is repeated at short intervals; the cotton is then sorted; that which had fallen on the ground is kept separated, the whole cleaned, and then dried in the sun. This hardens the seeds, and enables them to separate more easily from the cotton, and is moreover useful in preventing the latter spoiling from heating. If left too long on the plant, the withered leaves and calyx become mixed with the cotton, as is so frequently the case in India. In Guiana the perennial cotton produces a full crop the second year, and remains productive for four or six years. In China it is kept only three years; young plants are put in wherever deficiencies occur. In Guiana the pruning of the perennial cotton plant takes place in the second year of its growth, after the whole of the produce is gathered in. May is considered the most favourable month, when the trees are cut to about four feet high, premising with a good weeding of the ground. Dry weather and the early part of the day are recommended, that the sun may dry up the wounds.

In addition to the cultivation, it will be interesting to be able to compare the expenses in different countries. In the West Indies, Mr. Edwards states that each able bodied labourer can perform a task equal

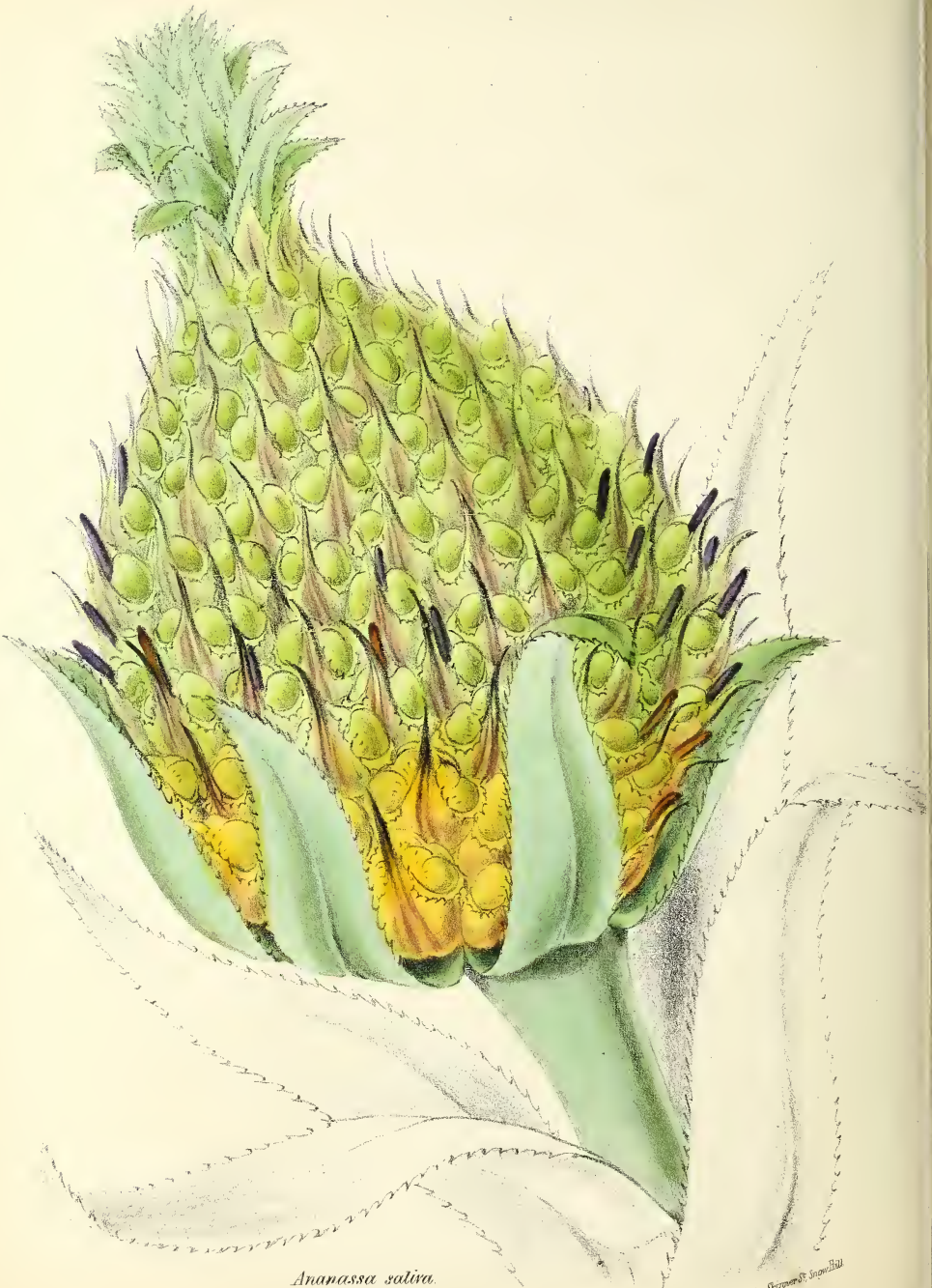
to the cultivation of five acres; and a plantation is considered capable of yielding 1,000 pounds of merchantable cotton for each able-bodied labourer employed. In Georgia it is calculated that the usual expenses on the cultivation of cotton are twopence halfpenny a pound on the produce, but in the West Indies, owing to a less productive species being employed, of which the produce is only one half the weight per acre, the expenses are said to be as high as seven pence a pound. In comparing the careful culture of America with that which is practised in India, we shall find it, as truly stated by Mr. Crawford, no where considered as a matter of primary importance, but made secondary to rice, wheat, and grain generally; and, I may add, that I have never observed any care bestowed on the selection or exchange of seed, the preparation of the soil, or the growth of the plant, and, least of all, in the collection of the produce; being in its earlier periods grown with some other crop, and in the later overgrown with weeds, while the picking does not take place until the leaves are so brittle, that it is impossible to prevent them mixing with the cotton.

The commerce of Great Britain has of late years been peculiarly indebted to the cotton manufactory, which produces clothing for people of all ranks, from Russia to Guinea, and unites elegance with cheapness, in an unrivalled degree. Great quantities of the native fabrics of the East are also imported into Europe; some of these, by the advantage of an excellent material and incomparable manufacture, dexterity and patience in the workmen, though made with very simple machinery, surpass in fineness and beauty, any thing of European manufacture. The natives are said to perform their finest work in moist cool places, under ground, which makes the cotton hold together, so as to draw out to the thinnest threads; and the soft and delicate fingers of the Indian women give them the sense of feeling to a degree of nicety much beyond that of our common people. It is probable that cotton at present clothes more people in the world than any other substance; its peculiar advantages, besides cheapness, is the union of warmth with lightness, whence it is fitted for a great variety of climates; to the hot it is better adapted than linen, on account of its absorbing quality, which keeps the skin dry and comfortable. The woolliness of cotton gives a kind of nap to the clothes made of it, which renders them soft to the touch, but apt to attract dust; in the fine muslins this is burned off, by passing them between red-hot cylinders with such velocity as not to take fire; which, we may conceive, considering the combustibility of cotton, to be a very nice operation; a readiness to catch fire is indeed a dangerous quality of this material, and many fatal accidents have arisen from it, since the prevailing use of muslins in women's dress. Much mischief has also proceeded from colds taken in these delicate garments, which are by no means fitted to protect the wearers from the inclemencies of our variable climate.

The downy matter surrounding the seeds in some other plants, has been employed for the same purpose as cotton, and by proper preparation, has, in some instances, succeeded very well; but in most cases it is too brittle or of too short a staple to be used with advantage, in the form of thread; it has, however, afforded a useful material for stuffing beds and pillows, and for quilting; in this way the down of a plant growing copiously upon some of our bogs, called cotton grass, has been employed by the neighbouring poor.

Having thus given the natural history of the Cotton plant, and briefly described the changes it undergoes in its passage through the hands of the manufacturer, as well as the various uses to which his ingenuity and industry have enabled it to be applied; we shall now add the Travels of a Pound of Cotton, as the best means of showing the prodigious advantages of commerce and manufactures. If many of the improvements of modern life are so many ways of providing luxuries or even superfluities to the rich, we must always, at the same time, recollect, that the preparation of these articles gives employment and support to the industrious artizan, and furnishes him also with an abundance of additional enjoyments.

There was sent off for London lately, from Paisley, in Scotland, a small piece of muslin, about one pound weight, the history of which is as follows:—The cotton came from the East Indies to London; from London it went into Lancashire, where it was manufactured into yarn; from Manchester it was sent to Paisley, where it was woven: it was sent into Ayrshire next, where it was tamboured; afterwards it was conveyed to Dumbarton, where it was hand-sewed, and again returned to Paisley, whence it was sent to a distant part of the county of Renfrew to be bleached, and was returned to Paisley; it was then sent to Glasgow to be finished, and from Glasgow was sent by the coach to London. It is difficult to ascertain the time, precisely, which was necessary to bring this article to market; but it may be pretty near the truth to reckon it three years from the time it was packed in India, till it was fit for sale as cloth in the merchant's warehouse in London. It must have travelled 5000 miles by sea and 900 by land, and perhaps was afterwards shipped for some part of South America, which would add about 5000 miles more to these distances. It contributed to the support of at least 150 different people, whose services were employed in the carryings and manufacture of this small quantity of cotton, by which the value was increased 2000 times.



Ananassa sativa.

Chubb's Lith. graphy, Stevenage & Snow Hill

ANANASSA SATIVA.—COMMON PINE-APPLE.

Class VI. HEXANDRIA.—Order I. MONOGYNIA.

Natural Order, BROMELIACEÆ.—THE PINE-APPLE TRIBE.

A trifid superior calyx, a corolla of three petals, with a scale at the base of each petal, flowers growing in a close spike on a scape, which is leafy at the top; as the spike of flowers ripens it becomes a fleshy, scaly strobile, like the cane of some species of pine tree, crowned at top by the bush of leaves.

The Pine Apple is the Bromelia Ananas of Linneus. The Generic name was originally Ananas, from Nana, its common name in the Brazils; and the Queen Pine is named the Ananas Ovata, in the earlier editions of Miller's Dictionary; but Linneus changed it to Bromelia, in memory of Olaus Bromel, Swedish Naturalist, and included under it the Karatas, or Wild Pine, till then considered a distinct genus.

The genus Bromelia has lost much of its interest and importance since the pine-apple has resumed its original Peruvian name, *Nanas*, now latinized *Ananassa*. The various species are remarkable for their power of subsisting for a long period on the fluids they contain, or on what they can absorb from the atmosphere, without any communication with the earth. Hence they are favourites with those who patronize hanging gardens, and in Mexico are commonly suspended to the balconies, for the sake of filling the houses with their delightful fragrance. Some of the Bromeliæ are planted as hedges, and the leaves of others, as the Grewatha, are made into ropes.

(*The different modes of cultivating the Pine-apple.*—London, 1822.)

The fruit of the *Ananassa sativa*, Lindl., says a writer in the Penny Cyclopædia, is a tropical plant, indigenous to South America and some of the West India Islands. It has become so perfectly naturalized in many parts of the hot regions of Asia and Africa, that it has been thought to be likewise a native of those countries. When the British troops invaded Burma, they found the woods around Rangoon abounding in wild pine-apples, and a variety from the back of the Black Pagoda was in great request for its excellence: in the Malay Archipelago it acquires an enormous size, and sports into a variety called *the double pine apple*, each pip of its fruit growing into a branch bearing a new pine-apple. It was, however, first introduced into Europe from South America, and, as it is recorded by M. Le Cour of Leydon, about the middle of the seventeenth century: from Holland it was brought to this country in 1690, by the Earl of Portland, according to the Sloanean MSS. in the British Museum. There is a painting, formerly in the collection of Horace Walpole, in which Charles II. is represented as being presented with the *first* pine-apple by Rose his gardener; but there are some doubts whether that fruit was grown in England or obtained from Holland. It may, however, be fairly concluded that pine-apples were exceedingly rare in this country, even at the tables of the nobility, in the beginning of the last century; for in 1716, Lady Mary Wortley Montagu remarks that pine-apples were on the electorial table at Hanover when she was there that year, on her journey to Constantinople; and she states that she had never previously seen that species of fruit. (*Letters of Lady M. W. Montagu.*) Since that period the cultivation of the pine-apple has been prosecuted with perseverance in Britain, but frequently the results have been very disproportionate to the expense incurred. Within the last twenty years, however, success has been more general; and in many instances a surprising degree of perfection has been attained, much greater indeed in England, than in any other country having to contend with an extra-tropical climate, for instances are on record of pine-apples weighing 13lbs. and 14lbs. avoirdupois, and from 7lbs. to 8lbs. is by no means an uncommon weight for a single fruit. At the present day the pine-apple in England is so abundantly produced, that although expensive, it is very common. Its delicious flavour, and the noble appearance which a well-grown fruit exhibits, render the cultivation of it a special object of horticultural enterprise and skill.

It has been already stated that this plant is an inhabitant of the tropics, and it may be added, near the level of the sea. The latter circumstance it is necessary to remark, because if it were a mountain plant, even though tropical, it might be natural for it to endure a comparatively low degree of temperature. But according to Beyrich (*Gardener's Magazine,* iii. 442), 'the pine-apple in its wild state is found near the sea-shore, the sand accumulated there in downs serving for its growth, as well as for that of most of the species of the same family. The place where the best pine-apples are cultivated is of a similar nature. In the sandy plains of Praya Velha and Praya Grande, formed by the receding of the sea, and in which no other plant will thrive, are the spots where the pine-apple grows best.' The temperature at the level of the sea, at, or near the equator, varies but little throughout the year; for instance, the mean temperature of the warmest month at Cumana, 10° 27′ N. lat., is, according to Humboldt, 84·38°, and that of the coldest 79·16°. At Havanna, on the skirt of the tropics, the mean of the warmest month is 83·84°; that of the coldest 69·98°. At Vera Cruz the mean temperatures of the warmest and coldest months are respectively 81·86° and 71·06°.

In that charming passage where Thomson calls on Pomona, to convey him to her citron groves, he thus apostrophizes the splendid fruit which we have described:—

> Oft in humble station dwells
> Unboastful worth, above fastidious pomp.
> Witness, thou best Anana, thou the pride
> Of vegetable life, beyond whate'er
> The poets imag'd in the golden age.
> Quick let me strip thee of thy tufty coat,
> Spread thy ambrosial stores, and feast with Jove!

Nor is the following extract from Cowper inapplicable:—

> Grudge not, ye rich, (since luxury must have
> His dainties, and the world's more numerous half
> Lives by contriving delicates for you)
> Grudge not the cost. Ye little know the cares,
> The vigilance, the labour, and the skill,
> That day and night are exercised, and hang,
> Upon the ticklish balance of suspense;
> That ye may garnish your profuse regales
> With summer fruits brought forth by wintry suns.
> Ten thousand dangers lie in wait to thwart
> The process. Heat and cold, and wind and steam,
> Moisture and drought, mice, worms, and swarming flies,
> Minute as dust, and numberless, oft work
> Dire disappointment, that admits no cure,
> And which no care can obviate. It were long,
> Too long, to tell the expedients and the shifts,
> Which he that fights a season so severe
> Devises, while he guards his tender trust;
> And oft at last in vain.

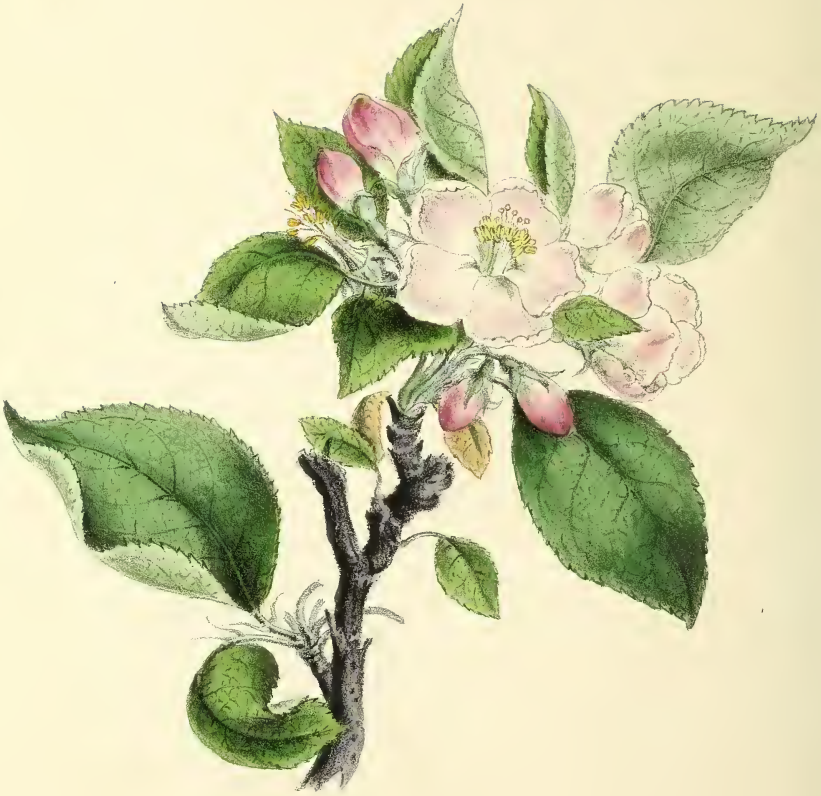
Pine-apple-cream. Infuse the rind of a pine-apple in boiling cream, and proceed as in other creams, only this cream is almost always moulded and freezed [frozen].

Pine-apple water ice of fresh or preserved fruit. Take a half-pint of pine-apple syrup, the juice of three lemons, a pint of water, and a few slices of pine-apple in dice,—freeze. For fresh pine-apple, take a pint of syrup to a pound of grated fruit, and half a pint of water; rub through a sieve and freeze.

Meg Dods' Cookery, 5th edit. pp. 348—9.

In *Les Français. Mœurs Contemporaines,* it is said of the physician, *c'est lui qui a inventé la salade d'Ananas.*

In the language of flowers the Pine-Apple signifies "you are perfect."



Malus. Mêlis.

C. Chabot. Jrncr. Skinner Sc

MALUS MITIS.—SWEET APPLE.

Class XII. ICOSANDRIA.——Order II. PENTAGYNIA.

Natural Order, POMACEÆ.—THE APPLE TRIBE.

*The Apple is a spreading tree, the leaves ovate, the flowers in terminating umbels, produced from the wood of the former year; but more generally from very short shoots or spurs, from wood of two years growth. The fruit is roundish, umbilicate at the base, and of an acid flavour. In its wild state, it is termed the crab, and is then armed with thorns, with smaller leaves, flowers, and fruit, and the pulp of the latter extremely acid. It is a native of most countries of Europe in its wild state, and the improved varieties form an important branch of culture in Britain, France, Germany, and America, for the kitchen, the table, and for the manufacture of cider. From whence we at first received the cultivated apple is unknown, but in all probability it was introduced by the Romans, to whom twenty-two varieties were known in Pliny's time, and afterwards, the stock of varieties greatly increased at the Norman conquest. According to Stow, carp and pepins were brought into England by Mascal, who wrote on fruit-trees in 1572. The apple tree is supposed by some to attain a great age. Haller mentions some trees in Herefordshire that attained a thousand years, and were highly prolific; but Knight considers two hundred years as the ordinary duration of a healthy tree, grafted on a crab stock, and planted in a strong tenacious soil. Speechly mentions a tree, in an orchard at Burton-joyce, near Nottingham, of about sixty years old, with branches extending from seven to nine yards round the bole, which in 1752, produced upwards of 100 pecks of apples. Of all the different fruits which are produced in Britain, none can be brought to so high a degree of perfection, with so little trouble, and of no other are there so many excellent varieties in general cultivation, calculated for almost every soil, situation, and climate, which our island affords. Very good apples are grown in the Highlands and Orkneys, and even in the Shetland Isles, as well as in Devonshire and Cornwall; some sorts are ripe in the beginning of July, and others, which ripen later, will keep till June. Unlike other fruits, those which ripen latest are the best.

For pies, tarts, sauces, and the dessert, the use of the apple is familiar to every one. Duduit, of Mazeres, has found that one third of boiled apple pulp, baked with two thirds of flour, having been properly fermented with yeast for twelve hours, makes excellent bread, full of eyes, and extremely palatable and light. The fermented juice forms cider, a substitute both for grape wine and malt liquor. In confectionary, it is used for comfits, compotes, and marmalades, jellies, pastes, tarts, &c. In medicines, verjuice, or the juice of crabs, is used for sprains, and as an astringent and repellent; and with a proper addition of sugar, Withering thinks, a very grateful liquor might be made with it, little inferior to Rhenish wine. Lightfoot affirms, that the crab mixed with cultivated apples, or even alone, if thoroughly ripe, will make a sound, masculine wine. The apple when ripe, is laxative, and the juice is excellent in dysentery; boiled or roasted apples fortify a weak stomach, and they are equally efficacious in putrid and malignant fevers, with the juice of lemons or currants. In perfumery, the pulp of apples beat up with lard, forms pomatum: and Bosc observes, that the prolonged stratification of apples, with elder flowers, in a close vessel, gives the former an odour of musk, extremely agreeable. In dyeing, the bark produces a yellow colour, and in general economy, the wood of the tree is used for turning, and various purposes, where hardness, compactness, and variegation of colour, are objects.

Nor does apple-wine, as the Germans call cyder, lack its poet. Philips' poem on this subject, is well known, and though it is no longer supposed to rival the Georgics, it still merits the praise of accuracy, as well as a tolerable facility of diction. Dr. Johnson was told by Miller, the famous gardener and botanist, "that there were many books written on the same subject, in prose, which do not contain so much truth as that poem."[a]

After asserting the pre-eminence of the Redstreak apple, Philips says:

——————— See! the numbers flow
Easy, whilst, cheer'd with her nectareous juice,
Her's and my country's praises I exalt.
Hail Herefordian plant, that dost disdain
All other fields! Heaven's sweetest blessing, hail!
Be thou the copious matter of my song,
And thy choice nectar, on which always waits
Laughter, and sport, and care-beguiling wit,
And friendship, chief delight of human life.
What should we wish for more? or why, in quest
Of foreign vintage, insincere and mixt,
Traverse the extremest world? Why tempt the rage
Of the rough ocean, when our native glebe
Imparts, from bounteous womb, annual recruits
Of wine delectable, that far surmounts
Gallic or Latin grapes, or those that see
The setting sun near Calpe's towering height?
Nor let the Rhodian, nor the Lesbian vines
Vaunt their rich must, nor let Tokay contend
For Sovereignty: Phanæus' self must bow
To th' Ariconian vales.

Cider, Book i.

[a] Lives of the Poets.

* For the greater part of the following article, we are indebted to two of Mr. Loudon's excellent works, and the Penny Magazine.

The apple tree was formerly supposed to be the tree of knowledge, the fruit of which was eaten by Eve in Paradise; and it is a curious fact, that the apple tree is also distinguished by legends in the mythologies of the Greeks, the Scandinavians, and the Druids. The Pagans believed that the golden fruit of the Hesperides, which it was one of the labours of Hercules to procure, in spite of the fierce dragon that guarded them and never slept, were apples; though modern writers have supposed them oranges. In the Edda we are told that the goddess Iduma had the care of apples which had the power of conferring immortality; and were, consequently, reserved for the gods, who ate of them when they began to feel themselves growing old. The evil spirit Loke took away Imuna and her apple tree, and hid them in a forest, where they could not be found by the gods. In consequence of this malicious theft, every thing went wrong in the world. The gods became old and infirm; and enfeebled both in mind and body, no longer paid the same attention to the affairs of the earth, and men having no one to look after them, fell into evil courses, and became the prey of the evil spirit. At length the gods finding matters get worse every day roused their last remains of vigour, and combining together, forced Loke to restore the tree. The Druids paid particular reverence to the apple tree, because the misletoe was supposed to grow only on it and the oak; and also on account of the great usefulness of the fruit. In consequence of this feeling, the apple was cultivated in Britain from the earliest ages of which we have any record; and Glastonbury was called the apple orchard, from the great quantity of apples grown there, previously to the arrival of the Romans. Apples were blessed by the priests on July 25; and an especial form for this purpose is preserved in the manual of the church of Sarum.

The custom of bobbing for apples on All Hallow E'en. A kind of hanging beam which was continually turning, was suspended from the roof of the room and an apple placed at one end, and a lighted candle at the other. The parties having their hands tied behind them, and being to catch the apples with their mouths of course frequently caught the candle instead. In Warwickshire, apples are tied to a string, and caught in the same manner, but the lighted candle is omitted; and in the same county, children roast apples on a string on Christmas Eve; the first that can catch an apple, when it drops from the string getting it. In Scotland, apples are put into a tub of water, and bobbed for with the mouth. Apples are used as part of the ingredients of mince pies, which in some parts of the country, would be thought to lose their power of "producing a happy month for every one tasted in the twelve days of Christmas," if this fruit were omitted. The custom of grippling, which may be called apple gleaning, is, or was formerly, practised in Herefordshire. It consists in leaving a few apples which are called gripples, on every tree, after the general gathering, for the boys who go with climbing poles and bags to collect them.

Thomson, in his Seasons speaking of the apple gathering, says—

> "The fragrant stores, the wide projecting heaps
> Of apples, which the lusty handed Year,
> Innumerous, o'er the blushing orchard shakes.
> A various spirit, fresh, delicious, keen,
> Dwells in their gelid pores; and, active, points
> The piercing cider for the thirsty tongue:"

Apples often fall prematurely, from being worm eaten. The cause of this is a beautiful little moth, with wings studded with silvery shining specks, the economy of which has been satisfactorily pointed out by a writer in the *Entomological Magazine*. This insect leaves the chrysalis state about the middle of June, about which time the apples are well set. The moth now lays its eggs in the eye of the apple, one only in each, by introducing its long ovipositor between the leaves of the calyx, which forms a tent above it that effectually shields it from the inclemency of the weather, or any other casualty. "As soon as the egg hatches, the little grub gnaws a hole in the crown of the apple, and soon buries itself in its substance; and it is worthy of remark, that the rind of the apple, as if to afford every facility to the destroyer, is thinner here than in any other part, and consequently, more easily pierced. The apple most commonly attacked is the codlin, a large early sort, which ripens in July and August. "The grub controlled by an unvarying instinct, eats into the apple obliquely downwards, and, by thus avoiding the core and pips, in no way hinders its growth: at first it makes but slow progress, being little bigger than a thread; but, after a fortnight, its size and its operations have much increased. It has now eaten half way down the apple; and the position of the hole at the top, if the apple continue upright or nearly so is inconvenient for a purpose it has up to this time been used for, that is, for a pass to get rid of its little pellet, which is sometimes like fine sawdust or coarse sand. Another communication with the outer air is therefore required; and it must be so constructed as to allow the power of gravity to assist in keeping it clear: it is accordingly made directly downwards, towards that part of the apple which is lowest; and thus the trouble of thrusting the pellets upwards through the eye of the apple is saved, and a constant admission given to a supply of air without any labour. The hole now made is not, however, sufficiently open for an observer to gain by its means any knowledge of what is going on within, this is only to be obtained by cutting open a number of the apples, as they gradually advance towards ripening, the hole is, however, very easily seen, from its always having adhering to it, on the outside, an accumulation of the little grains which have been

thrust through. Having completed this work, the grub returns towards the centre of the apple, where he feeds at his ease. When within a few days of being full fed, he, for the first time, enters the core, through a round hole gnawed in the hard horny substance which always separates the pips from the pulp of the fruit; and the destroyer now finds himself in that spacious chamber, which codlins, in particular, always have in the centre. From this time he eats only the pips, never again tasting the more common pulp, which hitherto had satisfied his unsophisticated palate; now nothing less than the highly flavoured aromatic kernels will suit his tooth, and on these in a few days, he feasts in luxury. "Some how or other, the pips of an apple are connected with its growth, as the heart of an animal with its life; injure the heart an animal dies; injure the pips, an apple falls. Whether the fall of his house gives the tenant warning to quit, I cannot say, but quit he does, and that almost immediately. It leaves the core, crawls along his breathing and clearing out gallery, the mouth of which, before nearly closed, he now gnaws into a smooth round hole, which will permit him free passage, without hurting his fat, soft, round body; then out he comes, and for the first time in his life, finds himself in the open air. He now wanders about on the ground till he finds the stem of a tree: up this he climbs, and hides himself in some nice little crack in the bark. I should remark that the fall of the apple, the exit of the grub, and his wandering to this place of security, usually take place in the night time. By burning weeds in your garden, at this time of the year, June, you will effectually drive away this little moth. If you have trees the crop of which you value, make a smoking (mind not a blazing) fire under each. It will put you to some inconvenience if your garden be near your house, but the apples will repay you for that."

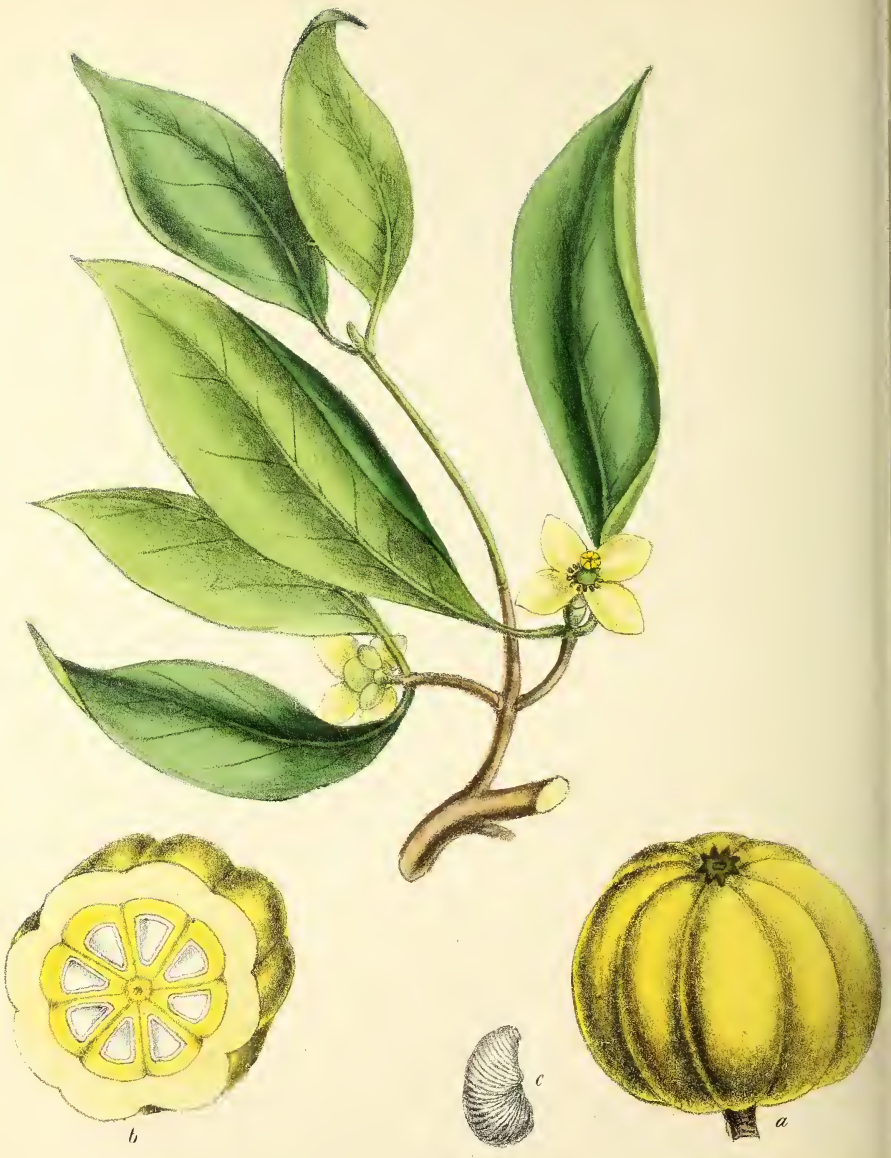
The apple paring is looked forward to by the inhabitants of the northern and middle states of the Federal Union, with as much anticipated pleasure as the harvest home used to be by the rural population of several districts of our own island: I say "used to be," because this is one of the many old English customs which are fast falling into disuse amongst ourselves. Apple paring is probably derived from an old German custom, and therefore not so exclusively American as many have supposed it; but since the sedate and calculating sons and daughters of brother Jonathan seldom enter with much spirit upon anything mirthful or merry-making, and as I conceive that the mode of preserving apples here described might be advantageously introduced into some of our own apple districts, it may not be uninteresting to state the way in which it is managed.

Though the apple paring is resorted to as a "frolic," or an amusement, amongst the Americans, yet it is the means of getting a valuable price of work performed at the same time that it passes for a recreation. These frolics for the most part take place in the early part of the autumn; for in order to ensure complete success, the rays of the sun should still possess considerable power. It is a general remark that the Americans are peculiarly fond of preserves and sweetmeats of every description, and it is a fact, that hardly a single meal passes without its accompaniment of "pies,"—"sweet sauce," and "preserve." Now in every part of those states before alluded to there is a great abundance of apples; hence the ingenuity of the people is laudably exerted in rendering them, as much as possible, subservient to the general purpose of house keeping. In all the forms they may be made to assume, the apples have first to be "pared" before they are subjected to the necessary process, so that apple paring becomes a matter of some consideration. Among the several preparations are included preserved apples, apple butter, apple sauce, and dried apples; the last of which being quite an article of trade amongst the Americans, it is principally for the preparation of *dried* apples that "the apple-parings" are held. Although America produces abundance of excellent apples, yet, owing to the great extremes of heat and cold, it has been found impossible to secure a supply adequate to the general demand throughout the season by any means that the horticulturist has yet discovered. In a great measure this has been remedied by adopting the plan of "drying" the apples, and as it is pursued upon an extensive scale, "the apple-paring," has hence become a matter of considerable importance. There are two methods of drying apples practised by the country people. In one case they are pared and cut into pieces (the cores being extracted) of half or three fourths of an inch in thickness, and then spread upon a platform, or temporary scaffoldings of boards, to dry in the sun. The scaffolding is erected a little sloping, with a southern aspect, on which the cut apples are spread to the depth of three or four inches, where they are kept for several days undergoing the necessary turnings and movings in order that every part may be exposed to the sun's influence. Should the weather be fine and settled, they remain upon the scaffolds during the night, their only protection being clean linen cloths thrown over them; but if there be a prospect of rain, then they have to be removed to some place of shelter. During the operation of drying the bulk of the mass greatly diminishes; so that in the various processes of paring, coring and drying, seven or eight bushels become reduced to about one. When the apples have remained upon the platform until they are sufficiently dry, they are then removed to an upper room, and piled up in one of its angles; and if the drying process has been thoroughly accomplished, they will continue sound and good for a couple of years.

It is in preparing for the commencement of this system of drying that "The Apple Paring" takes

place; when all the neighbours have been duly "notified," it is expected they will attend at the time appointed. It is what the Americans call an "after supper frolic," but then it should be borne in mind that that repast usually takes place at five or six o'clock in the afternoon. Probably before seven o'clock the "parers" will have assembled, and without further ceremony they form themselves into small parties, each party surrounding a large basket for the reception of the cuttings, while the owner of the establishment takes care to supply his assistant labourers with plenty of the raw material. While fingers and knives are busily employed, the evening is occasionally enlivened with songs and cider, and not unfrequently with something of a more potent and exciting character. Although as has been previously remarked, they are after-supper frolics, yet five or six hours of diligent apple paring restores lost appetites, so that about midnight, tea and coffee, with their manifold accompaniments of Johnny-cakes, buck wheat cakes, dough-nuts, Yankee biscuits, pumpkin-pie, apple-sauce, &c. &c., are spread out in their usual profusion for the use and benefit of the whole party. After the parers have been replenished with this *second* supper many of the younger people brandish their knives anew; while the more sedate portion of performers betake themselves off to their respective homes.

A few years ago, two brothers very respectably connected, but eccentric young Irishmen, purchased a farm in the vicinity where I resided, and commenced keeping "bachelors hall" in a log cabin which the late Yankee owner had occupied. As there was a pretty good orchard upon the premises, they had far more apples than they knew what to do with, for they were entire strangers to the customs of the country. However, in the autumn, which was but two or three months subsequent to their entering upon their new possession, they collected thirty or forty bushels of the best of their apples, and stowed them away without any definite view as to the uses to which they might be applied. It seemed that their neighbours had been aware of the storing away the apples, and not altogether unmindful of the young men's welfare. After the close of a dull autumnal day, while the brothers were quietly seated by a blazing fire, that lit up their lonely habitation, they were somewhat startled by a gentle tapping at their door, on the opening of which, two strapping daughters of a Yankee settler, at some distance, stepped forward, rather unceremoniously, and "guessed they had come to pare apples." The young men were taken by surprise: but possessing the gallantry so natural to well bred Irishmen, invited the *ladies* to be seated, which invitation was unhesitatingly complied with. Presently, another and another "tapping" announced more strangers, and the arrival of three or four small parties in quick succession completely bewildered the two bachelors; and what *bothered* them not a little was the difficulty of making three old chairs, and a short rude form, (the whole of the seats their establishment afforded,) accommodate so large a party. The visitors were all young persons, and mostly females; and although appearances were certainly against them inasmuch as the visit was unsolicited, and a nocturnal one withall, a short explanation served, in a great measure, to silence suspicion. They informed the "young Irishers," that in consequence of their being strangers to the customs of the country, that they (the visitors) had arranged among themselves to give them the benefit of an apple-paring; and having learned that they (the bachelors) had housed a quantity of apples, an arrangement had been made by the people of the neighbourhood to meet that evening for the purpose of apple-paring. The young Irishmen acknowledged their obligations to those neighbours who seemed so much interested in their behalf, but as they were wholly ignorant of the method of drying apples, they would neither trouble neighbours nor themselves by entering upon the process. This piece of information seemed far from being satisfactory; but as seats were scarce, and as there appeared no prospect of a "frolic" at the expense of the "young Irishers," the parties were obliged to trudge homewards, consoling themselves under their present chagrin and disappointment with the prospect of meeting again on the following night at a regular Yankee apple paring to attend which they had all been duly "notified."



Garcinia Cambogia.

C. Chabot, Zeneo, Steinseer Sc

GARCINIA CAMBOGIA.—GAMBOGE MANGOSTAN.

Class XI. DODECANDRIA.—Order I. MONOGYNIA.

Natural Order, GUTTIFERÆ.—THE MANGOSTEEN TRIBE.

(*a*) Fruit; (*b*) Section of the same; (*c*) Seed.

Garcinia Cambogia is one of the plants which yield the well known and valuable gum-resin called Gamboge, from *Camboge*, or *Cambodge*, the name of the East Indian province whence it is chiefly procured. This tree is a native of Malabar, growing in the forests of Travancore, where it is known to the natives by the name *Ghorkapli;* flowering in March, and ripening its fruit in June and July.

It is a tall tree, with a trunk about four inches in diameter, and widely spreading, round, smooth branches. The leaves are opposite, three or four inches long, elliptical, entire, tapering at each extremity, smooth, paler beneath; their lateral veins few and distant, forming very acute angles with the midrib, and placed on short channelled footstalks. The flower stalks, which are nearly an inch long, grow in pairs just below the insertion of each leaf, and are by no means terminal. The calyx is 4-leaved, consisting of two opposite pairs of leaflets, the exterior pair rather smaller; all nearly round, firm, fleshy, smooth on both sides, and permanent. The petals are four, roundish, twice the length of the corolla, and of a yellow colour. The filaments are from fifteen to twenty, shorter than the germen, slightly united at the base, and bearing roundish anthers. The germen is superior, round, 8-10 lobed, 8-10 celled, with one ovule in each cell. There is no style. The stigma is peltate, with as many divisions as there are cells in the germen. The fruit is pendulous, the size of a small orange, but furrowed like a melon, and crowned with the tumid crenate remains of the stigma; it is of a yellow colour when ripe, and containing a sweetish pulp, with some degree of acidity. The seeds are said to be from eight to ten, each enveloped in its own proper, succulent, yellowish aril.

From the trunk and branches, when wounded, exudes a viscid, but tasteless juice, which hardens into a brownish yellow gum-resin.

In the East Indies it is believed to be a provocative of appetite, and is much esteemed, and enters into the composition of many sauces. Its chief consumption is, however, as a yellow pigment. "Gamboge," says Mr. Field in his ingenious work entitled Chromatography "is a concrete vegetal substance, of a gum-resinous nature, and beautiful yellow colour, bright and transparent, but not of great depth. When properly used, it is more durable than generally reputed, both in water and oil: it is deepened in some degree by ammoniacal and impure air, and somewhat weakened, but not easily discoloured, by the action of light. Time effects less change in this colour than on other bright vegetal yellows; but white lead and other metallines injure, and terrene and alkaline substances redden it. It works remarkably well in water with which it forms an opaque solution, without grinding or preparation, by means of its natural gum; but it is with difficulty used in oil, &c., in a dry state. In its natural state it, however, dries well, and lasts in glazing when deprived of its gum. It is perfectly innocent with regard to other colours, and though it is a strong medicine, is not dangerous or deleterious in use. * * * * * *

It has also been employed as a yellow lake prepared upon an aluminous base; but a much better way than either is to dissolve it into a paste in water, and mix it with lemon yellow, with which pigment being diffused it goes readily into oil or varnish."

In the Pharmacopœia of the London College the Stalagmitis cambogiöides is supposed to be the plant which produces gamboge. According to the Edinburgh College, it is a species of Hebradendron. For the greater part of the following observations we are indebted to Dr. Pereira's excellent lectures in the Medical Gazette.

SIAM GAMBOGE PLANT.

Gamboge was first mentioned by Clusius in 1605, who received it in 1603 from Peter Garet of Amsterdam, where it had been lately brought from China by Admiral Van Neck and his companions. Hitherto the

plant yielding Siam Gamboge has not been ascertained; for no competent European botanist has seen either the tree, or specimens of it. That it is a guttiferous plant cannot be doubted, but the precise species, or even genus is still uncertain. It is not impossible that it may be some plant which yields Ceylon Gamboge (Hebradendron cambogioides); but at present we are deficient of proofs of this notion, though several circumstances favor it. The only account which we possess of the method of obtaining Siam Gamboge, is that given to König by a Catholic Priest residing in Cochin China. According to this account, when the leaves or branchlets are broken a yellow milky juice issues *guttatim* (hence the origin of the term *Gummi Guttæ* applied to this substance,) and is received either on the leaves of the tree or in cocoa nut shells, and from thence is transferred into large flat earthen vessels, where it is allowed to harden during the summer season, and is afterwards enveloped by leaves. From another authority we learn that the cylindrical form of some of the pieces is owing to the juice being run into the tubular cavities of bamboo canes. *Resin of Gamboge: Gambogin or Gambogic acid.* This resin is brittle, in thin layers, of a deep orange colour, in thicker masses, of a cherry red tint. When reduced to this state of fine powder, its colour is lively gamboge yellow. "Its colour is so intense "says Dr. Christison," that it communicates an appreciable yellowness to ten thousand times its weight of spirit." A thin film of gamboge emulsion is an excellent microscopic object for observing the *active molecules*, described by Mr. Brown in the *Philosophical Magazine* for September 1828 and 1829.

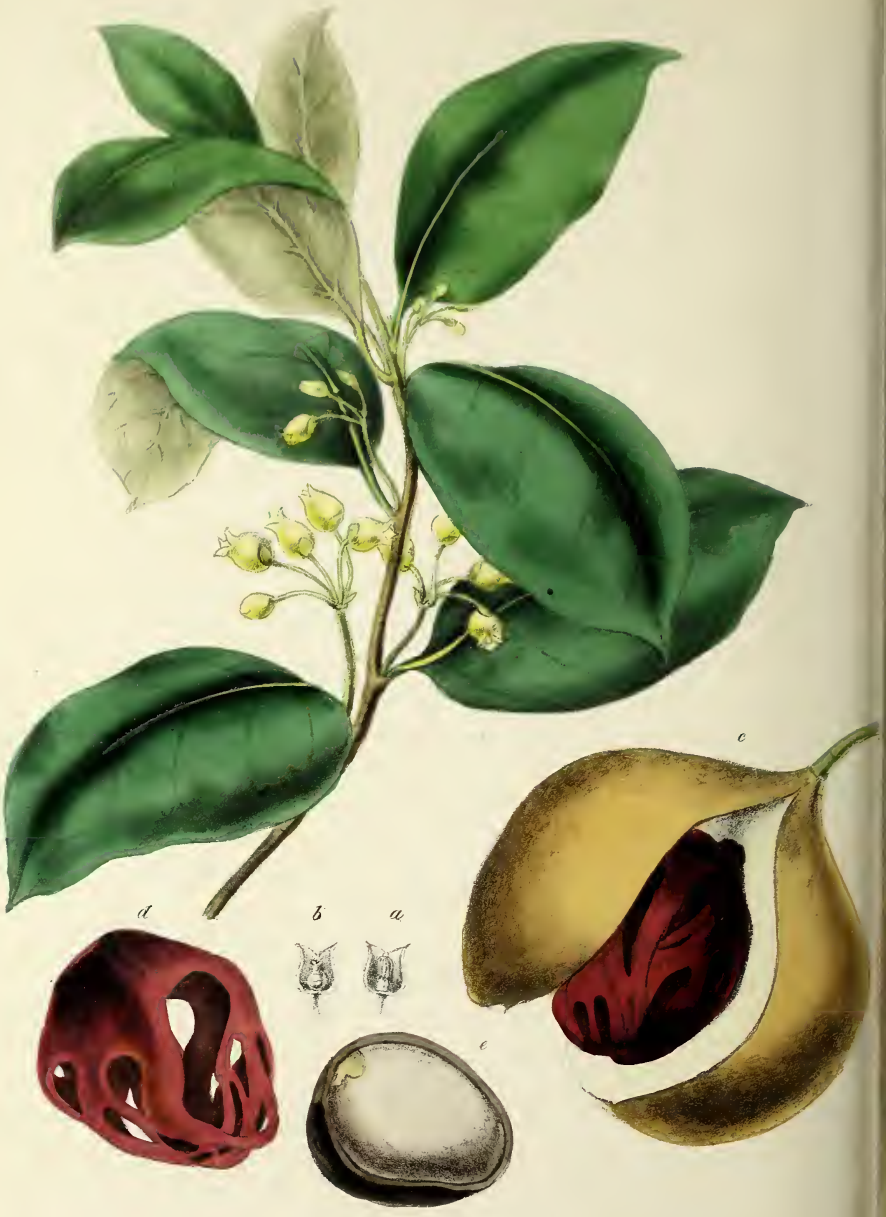
Detection of Gamboge.—Sometimes the detection of gamboge becomes an object of medico-legal inquiries, as in the trial of Joseph Webb, for manslaughter, at the York Assizes, 1834 *(see Frazer's Report)*. A few remarks, therefore, may not be useless as to the mode of proceeding, more especially as the subject is not noticed by Dr. Christison. To recognize gamboge in any substance supposed to contain it, proceed as follows: digest one portion of the suspected substance in alcohol or rectified spirit, and another portion in rectified æther. *The alcoholic solution of gamboge* possesses the following properties; its colour is orange red; on the addition of water it forms a bright yellow opaque emulsion; if to this emulsion we add a few drops of liquor potassæ, the yellow colour changes to bright red, and the liquid becomes immediately transparent and forms characteristic precipitates with the following substances: with the acids, or salts of gold, silver, palladium, lead, cobalt, or uranium, the precipitate is yellow; with the persalts of mercury, greenish yellow: with the chloride of manganese, orange red; with sulphate of copper, brown; with the protosalts of iron, a very dark precipitate. The precipitates produced with these metallic salts are *gambogiates* of the respective metals. The *ætherial solution of gamboge* has an orange red colour: dropped on water, it forms, when the æther evaporates, a thin bright, yellow, opaque film or scum, which dissolves in caustic potash, forming a transparent red solution which conducts itself, with the above mentioned metallic salts, like the alcoholic solution. The only substance which, from its external appearance, might be confounded with gamboge is the substance improperly called *Botany Bay-gum* (*Resin of Xanthorræa hastile.*) The yellow colouring matter of saffron, rhubarb, turmeric, or zedeory, may, under some circumstances, be confounded with that of gamboge. The action of the before mentioned tests, however, readily distinguishes it.

Medical Properties and Uses.—Gamboge is a violent cathartic, and is apt to produce vomiting, griping, and other symptoms, which in certain constitutions have terminated in death, as proved in the conviction of two vendors of Morrison's pills; into the composition of which it enters pretty largely. To obviate its unpleasant effects Cullen was accustomed to give it in small and frequently-repeated doses, as three or four grains, rubbed with a little sugar, every three hours, and found it operate gently. Great caution is required in its administration. It is as a hydragogue purgative that it is prescribed in dropsical affections, and is then generally combined either with calomel, cream of tartar, or squills. It has been supposed to be peculiarly efficacious in expelling the tape-worm; but as a remedy in this case, its use is now very generally superseded by the oil of turpentine. It is soluble in a solution of potass, and is sometimes preferred in this form in doses of from thirty to forty drops, twice a day.

Orfila classes it amongst the acrid poisons, and considers that it does not produce death by being absorbed, but by its exerting a powerful local action, in which the nervous system sympathizes.

Dose.—The usual dose is from two to five grains.

Off. Prep.—Pilulæ Cambogiæ compositæ. L. E.



Myristica moschata

MYRISTICA MOSCHATA.—THE NUTMEG TREE.

Class XXII. DIŒCIA.—Order XII. MONADELPHIA.

Natural Order, MYRISTICEÆ.—THE NUTMEG TRIBE.

Fig. (*a*) Stamineous flower cut open to show the column of stamens. (*b*) Pistilline flower cut open to show the pistil. (*c*) Ripe fruit in the act of bursting, showing the nut included in the mace, natural size. (*d*) The mace from which the nut has been removed. (*e*) the seed or nutmeg with part of its shell.

Spec. Char. *Leaves* elliptic-oblong, smooth, pointed, paler beneath, with simple parallel nerves. *Perianth* of one leaf, coriaceous, urceolate. *Peduncles* with few flowers.

The Nutmeg, called *Nux myristica*, or balsam nut, by the old writers, from the Greek μυριστικος, *balsamica*, is a diœcious tree, a native of the Moluccas, or Spice Islands; but is principally confined to that group denominated the islands of Banda, lying in lat. 4° 30′ south, where it bears blossoms and fruit all the year.

This tree is compared by Rumphius to a common pear-tree with respect to size and appearance; it is said to bear fruit at ten years' growth, which improves in quality, and increases in quantity, until the tree attained the age of an hundred years. The trunk rises to the height of twenty-five feet, clothed with a greyish-brown and tolerably smooth bark, abounding in a yellow juice, and bearing many whorls of spreading branches. The leaves, which stand alternately on short petioles, are from three to six inches long, subbifarious, oblong, glabrous, pointed, rather obtuse at the base, undulated, entire, of a dark green colour, and somewhat glossy above, beneath much paler, but neither pulverent nor downy; with simple, parallel nerves, a little branched at the extremities towards the margin, prominent, and of a brownish colour beneath. When bruised, the leaves are slightly aromatic. The flowers are present at the same time with the fruit, in axillary, subumbellate racemes, and are supported on smooth, subclavate foot-stalks, each pedicle or flower-stalk having a quickly deciduous bractea at the summit. The stamineous flowers are from three to five or more on a peduncle. The perianth is single, urceolate, petaloid, and not inaptly compared by Rumphius to the flower of the *Lily of the Valley*, which it resembles in size and form; it is of a thick fleshy texture, clothed with a very indistinct pubescence, of a dingy pale yellowish colour, and cut into three, rarely into four erecto-patent teeth at the extremity.

According to Dr. Ainslie, the nutmeg-tree has of late years been cultivated at Batavia, Sumatra, and Penang. An inferior and long-shaped kind of nutmeg is common in the island of Borneo, and there is a wild sort (*cat jadicai*) frequently to be met with in the woods of southern India, especially in Canara, which Dr. Buchanan thinks might be greatly improved by cultivation.

The nutmeg has been supposed to be the κώμακον of Theophrastus, but there seems little foundation for this opinion; nor can it with more probability be affirmed to be the χρισοβαλανος of Galen. Our first knowledge of the nutmeg, as well as the clove, was evidently derived from the Arabians, long before the East India Islands were discovered by the Portuguese. By Avicenna, who flourished about the year 1160, it was called *Jiansiban* or *Jansiban*, which signifies *Nut of Banda*.

In 1602, the Dutch, having subjected the original inhabitants, were the first European occupiers of the Banda isles. In 1609, they entered into a treaty with the Oraucais or natives, who bound themselves to send all their nutmegs and mace to the Dutch fort of Nassau, in the island of Nera, at a fixed price, while the Dutch pledged themselves to defend the natives against enemies, and particularly against the Portuguese. The breach of this agreement by the natives, and the murder of the Dutch commissary, occasioned hostilities between the two powers. In 1616, a similar treaty was entered into with the English, who were then at war with the Dutch; but this also was broken by the inhabitants of Banda. The English having refused, after they had made peace with the Dutch, to join them in the reduction of the Banda isles, the latter attacked them in 1621, and compelled the natives to deliver up their towns, their forts, their arms, and all their islands. In order to secure to themselves the nutmegs and mace which these islands produced, the Dutch erected forts in all of them, and divided the soil into orchards, which they distributed among the Dutch colonists in proportion to the number of their slaves. The Banda isles were taken from the Dutch by the English Admiral Ranier in 1796, and in 1801 were restored to them by the treaty of Amiens.

When crops of spice have been superabundant, and the price likely, in consequence, to be reduced, the same contracted spirit has actuated the Dutch to destroy immense quantities of the fruit, rather than suffer the markets to be lowered. A Hollander, who had returned from the Spice Islands, informed Sir William Temple, that, at one time he saw three piles of nutmegs burnt, each of which was more than a church of ordinary dimensions could hold. In 1760 M. Beaumare witnessed at Amsterdam, near the Admiralty, the destruction, by fire, of a mass of spice, which was valued at one million of livres, and an equal quantity was condemned to be burnt on the day following: and Mr. Wilcocks, the translator of Stavorinus's Travels

relates, that he himself beheld such a conflagration of Cloves, Nutmegs, and Cinnamon, upon the little island of Newland near Middleburgh, in Zealand, as perfumed the air, with their aromatic scent, for many miles round.—*Curtis's Botanical Mag.*

In our West-Indian colonies, the nutmeg was introduced about thirty years ago; and first, to the island of St. Vincent, from Cayenne, though not without great difficulty, on account of the extreme jealousy of the inhabitants of that colony, the two countries being then at war with each other. The three trees which were originally imported, have borne fruit for many years, and have attained the height of twenty feet, with a trunk eight or nine inches in diameter. It does not, however, appear, that the culture of the nutmeg succeeds so well in the west, as in the East Indies. Mr. Lockhart, who has the charge of the plants introduced into the islands of Trinidad, by his excellency Sir Ralph Woodford, observes, in a letter to me, that the plants flourish best in the rainy season; even when moderate showers fall requiring constantly artificial watering; although a soil saturated with moisture is injurious. For a long time, though the trees introduced into St. Vincent produced abundance of flowers, they bore small crops of fruit, until Mr. Guilding recommended the same process as is employed with the caprification of the fig, when the crops were much more productive, two trees at one period bearing three hundred ripe fruits.[a]

Qualities and Chemical Properties.—Nutmegs should be chosen large, of the shape of an olive, *heavy*, and firm, of a lightish grey colour on the outside, beautifully striated, and reddish within: of a strong fragrant odour, warm aromatic taste, and of an unctuous feel. The oblong kind, and the smaller ones, should be rejected. Distilled with water, they yield a large quantity of essential oil, resembling the spice itself in flavour.

Oil of Nutmegs is expressed from imperfect nutmegs, and such as are unfit for the European market: there are three sorts of it, commonly called *oil of mace*. The best is brought in stone jars; softish, of a yellow colour, an agreeable fragrant smell, greatly resembling that of the nutmeg. This is denominated Banda soap, and should be chosen free from impurities, and of a good colour. The next comes from Holland, in solid masses, generally flat, and of a square figure: paler coloured, weaker in smell, and inferior in its quality to that of India. The last is the worst, and seems to be a composition of suet, palm oil, or some such matter, flavoured with a little genuine oil.

Mace is a thin, flat membranaceous substance enveloping the nutmeg; of a lively reddish brown or saffron colour, of a pleasant aromatic smell, and a warm, bitterish pungent taste. Mace should be chosen fresh, tough, oleaginous, of an extremely pungent smell, of a bright reddish yellow, the brighter the better; the smaller pieces are esteemed the best. The state it is in when packed, should be particularly attended to: if it be too dry, it will be broken, and lose much of its fragrance; if too moist, it is subject to decay and to breed worms. It should be packed in bales, pressed down close and firm, whereby its fragrance and consistence will be preserved.

Medical Properties and Uses.—Nutmegs, which are universally known as a spice, are chiefly employed in medicine to impart their grateful aromatic flavor, and to obviate the irritating effects of drastic purgatives. They are supposed to be cordial, carminative, anodyne, and astringent; and with a view to the last mentioned effects, they have been used in diarrhœa and dysentery. Given in large quantities, the nutmeg produces stupor, drowsiness, and other symptoms of narcotic poisons, in consequence of which Cullen warns us not to administer it to patients disposed to apoplexy. Bontius also speaks of their anodyne effects as a frequent occurrence in India. The *volatile oil*, possessing the taste and odour of the fruit in a concentrated degree, is occasionally used as an external stimulant; and the *expressed oil*, improperly called oil of mace, is generally prescribed in the same manner.

Dose.—The dose of the nutmeg (which is sometimes employed to relieve nausea and vomiting, or to check diarrhœa, when given in wine) is from four grains to a scruple: of the *volatile oil*, from two to eight drops. Custom, however, reconciles the constitution to much larger quantities than could be borne by untutored stomachs. In India, the consumption of nutmegs as a condiment, is immense: in the Moluccas, the natives mix them with all their food, and drink, and medicines; they even chew them as a masticatory, and eat them preserved both in salt and sugar.

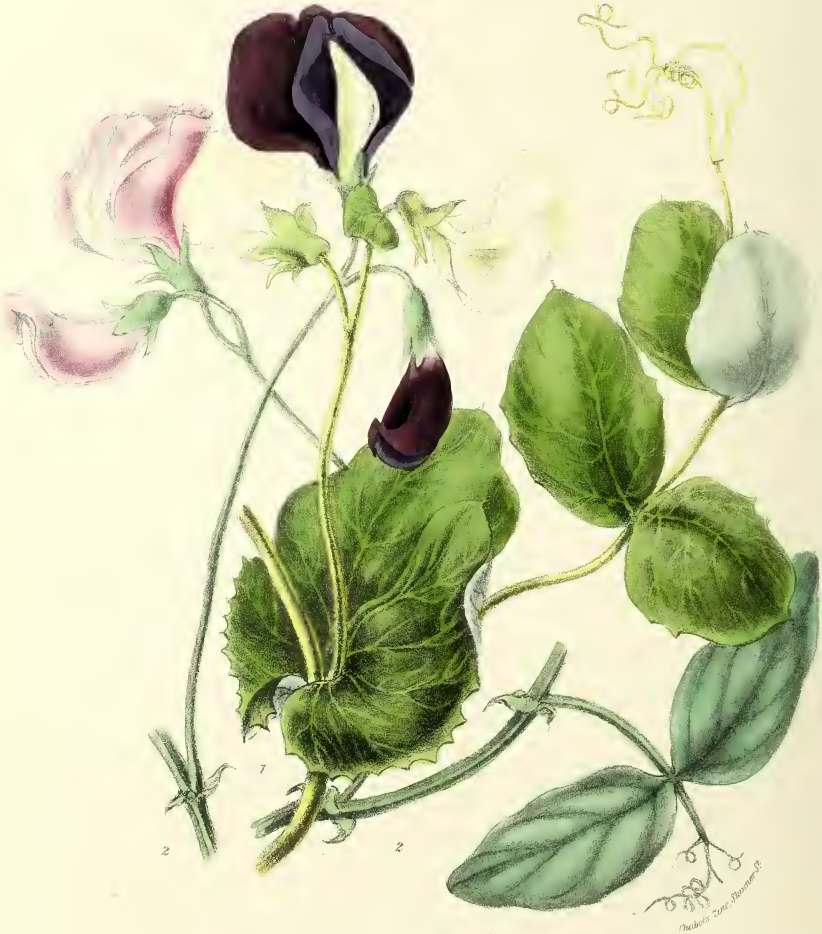
Mace is also chiefly used for culinary purposes; but, according to Dr. Ainslie, it "is a favourite medicine with the Hindoo doctors, who prescribe it in the low stages of fever, in consumptive complaints, and humoral asthma; and also, when mixed with aromatics, in wasting and long-continued bowel complaints, in doses of from eight to twelve grains, and sometimes to as much as half a drachm; but they generally administer it cautiously, from having ascertained that an overdose is apt to produce dangerous stupor and intoxication."

Tinctura Nucis Moschatæ.

℞. Nucis Moschatæ contritæ, ℥iii.
Spirit. vini ten. lbij. M.

Off. Prep.—Spiritus Myristicæ. *L. E.*
Tinctura Lavandulæ comp. *L.*
Mistura Ferri composita. *L.*

[a] Curtis's Botanical Magazine, M.S. Vol. 1.



1. Pisum Sativum. 2. Lathyrus Odoratus.

LATHYRUS ODORATUS, SWEET PEA.—PISUM SATIVUM, CULTIVATED PEA.

Class XVII. DIADELPHIA.——Order III. DECANDRIA.

Natural Order, LEGUMINOSÆ.—THE PEA TRIBE.

Lathyrus Odoratus, plant hairy; stems winged; leaflets ovate, mucronalate; stipulas semi-sagittate, lanceolate, and shorter than the petioles; peduncles 2-3-flowered, much longer than the leaves, calycine teeth broad, longer than the tube; legumes oblong-linear, compressed, hairy; seeds roundish. Native of Sicily. Flowers sweet scented.

Sweet Peas are a great ornament to flower borders in autumn. The seeds only require to be sown in drills or clumps in April. Gardeners who raise *sweet peas* for the London markets, sow them in the autumn in pots, and secure them from severe weather by placing them in hot-bed frames, by which means they can bring them early to market. They may be continued in flower the whole summer by repeated sowings in the spring. When sown in pots, they require to be frequently refreshed with water.

General History of the Dichlamydeous Plants, by George Don, F.L.S.

The Sweet pea has several varieties, greatly differing in colour: the common sort which is blue and dark purple, sometimes with a tinge of red, is a native of Sicily. The more delicate kind, white and blue, or white and deep rose colour, sometimes with a mixture of pale blue, is a native of Ceylon, and is called the painted lady.

The Tangier pea is a native of Barbary, its colours purple and red: it is an annual plant, and grows to the height of four or five feet, and blossoms in June or July, and dies in the autumn. Although the Sweet pea is now so common in this country, that we seldom see a garden without it, it is not more than a hundred years, since it was numbered among our rare and curious plants, and in the time of Parkinson and Evelyn, it was not known in our gardens. This pea blows in June, and continues in blossom till killed by the frost. It may be sown about half an inch deep, and it may be well to scatter the seeds pretty thickly; if they all grow, the weaker ones may be removed, and the stronger left. They may be sown in October, and kept in doors till spring, or may be sown and placed abroad in March or April. In cold weather, the earth should be just kept moist: in hot or dry summer weather, it must be watered every evening, and if necessary, in the morning also. When the plants are about three inches high, sticks should be placed to support them, three or four feet in length. This plant should not be kept within doors in warm weather or it will grow very tall and weakly and produce few flowers.

There is a variety of this pea entirely white, but the most beautiful is the red and white. But that I fear to confess so great a heresy, I would say this flower need not yield to the rose. Nothing can exceed the elegance of its form, nor can there be a more delicate contrast of colour. They are justly termed Papilionaceous, for they do indeed look like butterflies turned to flowers. It is sometimes difficult to believe that the little white butterflies which reel about in the sunshine, are not white violets or peas which have broken their bonds. It is equally difficult to believe that these flowers want anything but will to fly: and we almost expect to see them start from their stalks as we look at them.

Both these fancies are authorized by the poets.

> "In their own bright Kathaian bowers,
> Sparkle such rainbow butterflies,
> That they might fancy the rich flowers,
> That round them in the sun lay sighing,
> Had been by magic all set flying."
>
> *Lalla Rookh.*

These beautiful butterflies, Mr. Moore tells us, are called, in the Chinese language, Flying leaves. "Some of them" continues he, "have such shining colours, and are so variegated, that they may be called Flying flowers; and indeed they are always produced in the finest flower-gardens."

> "Here are sweet peas on tip-toe for a flight,
> With wings of gentle flush, o'er delicate white,
> And taper fingers catching at all things,
> To bind them all about with tiny rings."
>
> *Keat.*

In his Calendar of Nature, Mr. Hunt speaks of sweet peas, as looking like butterflies turned to flowers. In short, it seems scarcely possible not to feel this. They seem only to linger to sip their own honey. *Arboretum Botanicum.*

Pisum Sativum, petioles terete, bearing three pairs of ovate, entire, glaucous leaflets, with undulated margins, usually opposite and mucronulate; stipulas ovate, somewhat cordate, crenated at the base; pedunculs two or many flowered; legumes rather fleshy. Natives of the south of Europe, and now cultivated in fields and gardens, throughout the world. Flowers white or red.

The *pea* has been cultivated in this country from time immemorial. It was not, however, very common in Elizabeth's time, when as Fuller informs us, peas were brought from Holland, and were "fit dainties for ladies, they came so far, and cost so dear." The use of the pea in cookery is familiar to every one. In one variety, called the *sugar pea,* the inner tough film of the pods is wanting, and such pods when young are frequently boiled with the seeds or peas within them, and eaten in the manner of kidney-beans. This variety is comparatively new, having been introduced about the middle of the seventeenth century.

Estimate of sorts. The varieties, besides differing in the colour of the blossoms, height of stalks, and mode of growth, are found to have some material differences in hardiness to stand the winter, time of coming in, and flavour of the seeds. *The Charltons* are not only very early, but great bearers, and excellent peas for the table, and are therefore, equally well fitted for the early crop, and forward succession crops, and inferior to few even for the main summer crops.

The *frame pea* may, indeed, be raised without the assistance of heat for a forward crop, and if a genuine sort will fruit a few days sooner than the *Charltons,* but it grows low and bears scantily. The *Hotspur* is hardy and prolific, and makes returns nearly as quick as the *Charlton,* and about a fortnight before the *marrow-fat. Bishop's dwarf-pea* is an early kind and a great bearer. The sorts already specified, therefore, embrace the best for sowings made from the end of October till the middle of January, and for late crops raised between the middle of June and the beginning of August. The fine flavour of the marrow-fat is well known. A few dwarf *marrow-fats* may be sown in December and January, as mild weather may occur; but the time for sowing full crops of the larger kinds of *peas* is from the beginning of February till the end of April. The *egg,* the *maratto,* the *prussian-blue,* and the *rouncivals,* the *large-sugar,* and the *crown,* are all very fine eating peas in a young growth, and like the *marrow-fat* may be sown freely according to the demand, from the third week in February to the close of April, and in smaller crops, until the middle of June. For late crops, in addition to the early sorts already mentioned, the *dwarf* sugar, Leadman's dwarf, Bishop's dwarf, are small delicious peas, great bearers, and in high request at genteel tables, but as the fruit of *Leadman's* as well as *Bishop's dwarf* is long of coming in, it is not advisable to sow it after the third week in June; rather sow it in March, April, and May, and then it will be later than the *Charltons* raised five weeks afterwards. The *Charltons* and *Hotspurs* may be sown in May, for late full crops, in June for a smaller supply, and in July along with the *frame* for the last returns.

Soil and situation. The soil should be moderately rich, and deeper and stronger for the lofty growers. Peas are not assisted, but hurt by unreduced dung, recently turned in. A fresh sandy loam or road stuff; and a little decomposed vegetable matter, is the best manure. The soil for early crops should be very dry, and rendered so where the ground is moist, by mixing sand with the earth of the drills. For early crops, put in from October till the end of January, let the situation be sheltered and the aspect sunny. Before the end of December, every one or two rows should stand close under a south or south eastern fence. In

January, several parallel rows may be extended under a good aspect, further from the fence. After January till the end of May, sow in an open situation. For the late crops, return again to a sheltered sunny border.

Subsequent culture. As the plants rise from half an inch high to two or three inches, begin to draw earth to the stems, doing this when the ground is in a dry state, and earthing gradually higher as the stems ascend. At the same time with the hoe loosen the ground between the young plants, and cut down rising weeds. Early crops should be protected during hard frosts by dry straw or other light litter, laid upon sticks or brush-wood, but remove this covering as soon as the weather turns mild. If in April, May, and the course of summer, continued dry weather occurs, watering will be necessary, especially to plants in blossom and swelling the fruit, and this trouble will be repaid in the produce. Rows partly cut off may be made up by transplanting. This is best done in March. In dry weather, water, and in hot days shade, until the plants strike. All *peas* fruit better for sticking, and continue longer productive, especially the larger sorts. Stick the plants, when from six to twelve inches high, as soon as they begin to vine. Provide branching sticks, of such a height as the sort will require; for the *frame* and *Leadman's dwarf* three feet high, for the *marrow-fat* and larger kinds, six or eight feet. Place a row of sticks to each line of the plants on the sunny side, that the attraction of the sun may incline the plants towards the sticks. Place about half the number on the opposite side, and let both rows stand rather wider at top than at the ground. Some gardeners stop the leading shoots of the most early crop when in blossom, a devise which accelerates the setting and maturing of the fruit.—*Abercrombie.*

Field-peas. The *pea* is the most esteemed legume in field cultivation, both for its seed and haulm, and was cultivated by the Greeks and Romans, and in this country from time immemorial, though its culture appears to have diminished since the more general introduction of herbage plants and roots; and, excepting near large towns for gathering green, and in a few places for boiling, the *pea* has given way to the bean, or to a mixture of *peas* and beans. There are various inducements, however, to the cultivation of *peas* in dry warm soils near large towns. When the crop is good and gathered green, few pay better. The ground after the *peas* have been removed is readily prepared for turnips, which also pay well as a retail crop near towns, and the haulm is good fodder. *The varieties of peas* cultivated in fields are numerous, but they may be divided into two classes, those grown for the ripened seed, and those grown for gathering in a green state. The culture of the latter is chiefly near large towns, and may be considered as in part belonging to horticulture rather than agriculture.

The use of peas for soups, puddings, and other culinary purposes is well known. In some places porridge, brose, and bread are made of pea-flour, and reckoned very wholesome and substantial. In Stirlingshire, it is customary to give pease or bean biscuit to horses while in the yoke as a refreshment. The portion of *peas* that is not consumed as human food is mostly appropriated to the purposes of fattening hogs and other sorts of domestic animals, and in particular instances they are given to labouring horses in place of beans, but care should be taken when used in this way that they be sufficiently dry, as they are otherwise apt to occasion bowel complaints in those animals. For feeding swine the pea is much better adapted than the bean, it having been demonstrated by experience that hogs fatten more kindly when fed with this grain than on beans; and what is not easy to be accounted for, the flesh of swine which have been fed on *peas*, it is said, will swell on boiling, and be well tasted, whilst the flesh of the bean fed hog will shrink on boiling, the fat will boil out, and the meat be less delicate in taste. *Peas straw cut green* and dried is reckoned as nourishing as hay, and is considered as excellent for sheep.

The diseases of peas are few, and chiefly the worm in the pod, and the fly on the leaves and flowers. They are also liable to be mildewed or blighted. None of these evils, however, are very common, and there is no known method of preventing them but by judicious culture.

In the sowing of any particular sorts of seed, they should be carefully looked over while in flower, in order to draw out all such plants as are not of the right sort, which, if left to mix, will degenerate the kind. As many rows as may be thought sufficient to furnish the desired quantity of seed should be marked out, and left till their pods turn brown and begin to split, when they should immediately be gathered up with

the haulm, they may then be either stacked or threshed out as soon as they are dry; but care should be taken not to let them remain too long abroad after they are ripe, as wet would rot them, and heat after a shower of rain making their pods burst in such a manner, that the greater part of their seeds would be lost.

General History of the Dichlamydeous Plants, by George Don.

Young Green Peas well dressed, are one of the most delicious delicacies of the vegetable kingdom. They must be young; it is equally indispensable that they be *fresh gathered, and cooked as soon as they are shelled*, for they soon lose both their colour and sweetness.

If you wish to feast upon PEAS IN PERFECTION, you must have them gathered the same day they are dressed and put on to boil within half an hour after they are shelled. Pass them through a riddle, *i.e.* a coarse sieve, which is made for the purpose of separating them. This precaution is necessary, for large and small peas cannot be boiled together, as the former will take more time than the latter.

For a peck of peas, set on a saucepan with a gallon of water in it; when it boils, put in your peas with a table spoonful of salt, skim it well, keep them boiling quick from twenty to thirty minutes, according to their age and size: the best way to judge of their being done enough, and indeed the only way to make sure of cooking them too, and not beyond the point of perfection, or, as Pea-eaters say, of "*boiling them to a bubble*," is to take them out with a spoon and taste them.

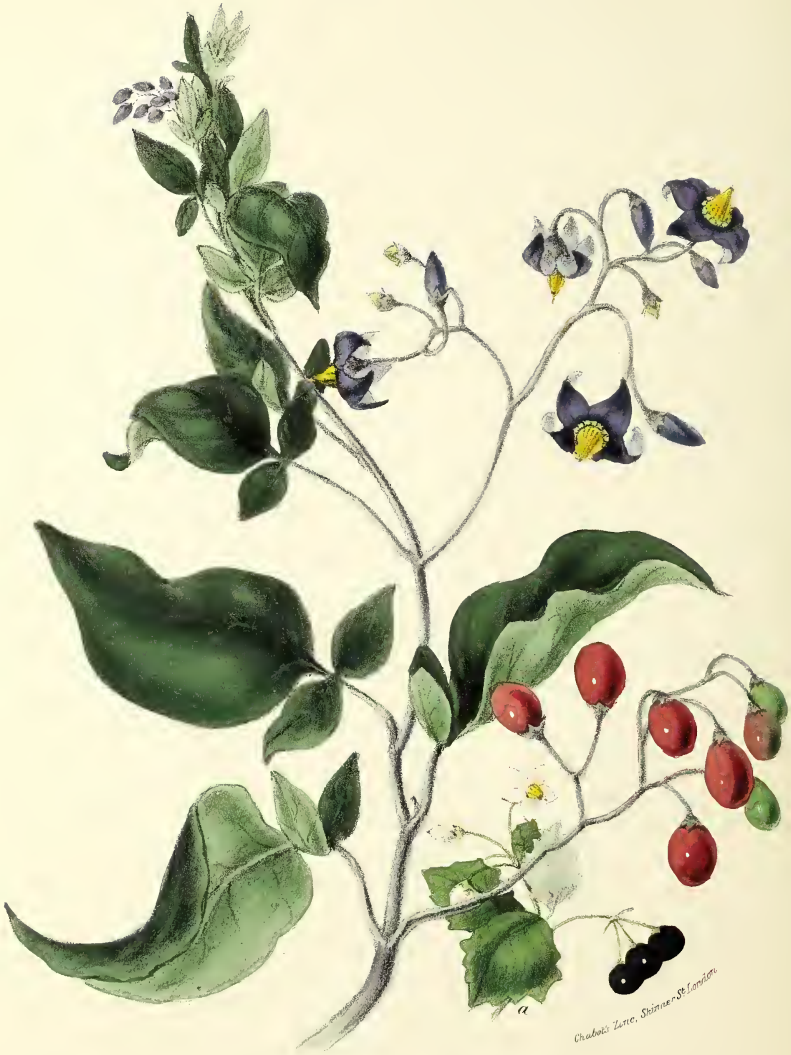
When they are enough, drain them on a hair sieve. If you like them buttered, put them into a pie dish, divide some butter into small bits, and lay them on the peas; put another dish over them, and turn them over and over, this will melt the butter through them, but as all people do not like buttered peas you had better send them to table plain, as they come out of the saucepan, with melted butter in a sauce tureen. It is usual to boil some mint with the peas, but if you wish to garnish the peas with mint, boil a few sprigs in a saucepan by themselves.

N.B. A peck of young peas will not yield more than enough for a couple of hearty pea-eaters; when the pods are full, it may serve for three.

Plain Pease Soup.—To a quart of split peas, and two heads of celery, (and most cooks would put a large onion,) put three quarts of broth or soft water; let them simmer gently on a trivet over a slow fire for three hours, (stirring up every quarter of an hour to prevent the peas burning at the bottom of the soup kettle, if the water boils away, and the soup gets too thick, add some boiling water to it;) when they are well softened, work them through a coarse sieve, and then through a fine sieve or a tammis, wash out your stew-pan, and then return your soup into it, and give it a boil up; take off any scum that comes up, and it is ready. Observe this is an excellent family soup produced with very little trouble or expense;—that is,

	s.	*d.*
Quart of Peas	0	8
Two Heads of Celery . .	0	2
Pepper and Salt	0	1
Dried Mint	0	1
	1	0

Kitcheher (No. 221.)



Solanum Dulcamara.

SOLANUM DULCAMARA.—WOODY NIGHTSHADE, OR BITTER SWEET.

Class V. PENTANDRIA.—Order I. MONOGYNIA.

Natural Order, SOLANEÆ.——THE NIGHTSHADE TRIBE.

Fig. (*a*) Solanum Nigrum, Common or Garden Nightshade. The whole Plant poisonous.

Woody Nightshade, called also Bitter-sweet, from the flavour of the herb when chewed, and in Cumberland, *Fellonwood*, is an indigenous climbing 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 corymbiform racemes opposite to the leaves, or terminal; drooping, divaricate, and alternately subdivided. The calyx is small, 5-10-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, subcoalescent into a sort of cone. The germen is roundish, having a thread-shaped style projecting beyond the anthers which dehisce by pores. The berries, which ripen in autumn, are oval, scarlet, full of a nauseous juice, and contain several whitish, plano-convex seeds.

The origin of the word *Solanum* is extremely doubtful; some ingenious etymologists derive it from *Solamen*, (*a solari*,) comfort or consolation, in allusion to the relief afforded by some species as medicines, while other commentators believe the name to be a corruption of "*Sulanum* a suibus qu. suillum, quod suibus adversus venenosos morbos exhiberi solet;" and others again, a *sole*, referring to the splendour of the fruit.

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 names *Glycypicros* 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, give precipitates from both, though most from the water. An ounce of the twigs, according to Hartmann and Kühn, when treated with alcohol, afforded two drachms and two scruples of extract. The same quantity treated with water, gave three drams and thirty-five grains.

Poisonous Effects.—Belonging to the same natural order with hyoscyamus, the different species of Solanum are considered by Orfila and others, to be possessed of similar properties; although in a much less potent form. Indeed we are inclined to think the identity of name with the *deadly nightshade*, (Atropa belladonna,) which was formerly called likewise, Solanum, (it being the Solanum furiosum, lethale, somniferum, and melanoceros of the older writers,) has contributed not a little to exaggerate the poisonous character of the *Dulcamara* and other species of the modern genus Solanum. Schlegel, (Hufeland's journal 54, ii. 29,) says, that those persons are in error who have believed Solanum *Dulcamara* to possess distinct narcotic

properties. And M. Duval states, in his treatise on the Solaneæ, that he found a dog might take 180 berries, or four ounces of the extract, without inconvenience; and furthermore, he quotes an experiment on the human subject, where thirty-two drachms of extract were taken in two doses, also without injury. Upon which evidence Christison concludes, that "if it has any power at all, it must possess too little to be entitled to the name of a poison." A conclusion which seems justified by the previous evidence, and one in which we should have concurred, had not counter experience, such as we shall immediately adduce, led us to question its propriety, and to doubt whether some undetected error may not attach to the observations of M. Duval. We therefore must warn our readers, that, given in an over dose, 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 by 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 for the younger, which were followed by a mixture of castor oil, manna, and laudanum, in proper portions. 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 considered 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 the work already referred to 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 Linnæus, Carrere, and others, for its efficacy in herpetic diseases, scabies, &c.

Murray, in his "Apparatus Medicaminum," says it promotes all the secretions; and Bergius recommends its use in rheumatism. 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 the stalk 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 a 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 be 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 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 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.*

We do not know if any one has ever written a panegyric on digressions; if not, it should be done forthwith. How could didactic poets get on without them? Cowper's Sofa is all digression, and if the Georgics had merely taught us how to clip vines, and rear bees, they would not have been the delight of every man of taste for nearly two thousand years. These considerations prompt us to wander from *dulcamara* to the spring; though, indeed, there is a strong analogy between the subjects; are not the bright skies and sharp winds of April so many alternatives of sweets and bitters? Let us indulge ourselves, then, with a quotation from one who writes upon the spring at once like a lover of nature and a scholar.

"Spring while we are writing, is complete. The winds have done their work. The shaken air, well tempered and equalized, has subsided; the genial rains, however thickly they may come, do not saturate the ground, beyond the power of the sun to dry it up again. There are clear crystals mornings; noons of blue sky and white cloud; nights, in which growing moon seems to lie looking at the stars, like a young shepherdess at her flock. A few days ago she lay gazing in this manner at the solitary evening star, like Diana, on the slope of a valley, looking up at Endymion. His young eye seemed to sparkle out upon the world, while she bending inwards, her hands behind her head, watched him with an enamoured dumbness.

But this is the quiet of Spring. Its voices and swift movements have come back also. The swallow shoots by us, like an embodied ardour of the season. We have not yet heard the nightingale or the cuckoo; but we can hear them with our imagination, and enjoy them through the content of those who have.

Then the young green. This is the most apt and perfect mark of the season. The trees and bushes are putting forth their crisp fans; the lilac is loaded with bud; the meadows are thick with the bright young grass, running into sweeps of white and gold with the daisies and buttercups. The orchards announce their riches, in a shower of silver blossoms. The earth in fertile woods is spread with yellow and blue carpets of primroses, violets, and hyacinths, over which the birch trees, like stooping nymphs, hang with their thickening hair. Lilies of the valley, stocks, columbines, lady-smocks, and the intensely red pioney which seems to anticipate the full glow of summer-time, all come out to wait upon the season, like fairies from their subterraneous palaces.

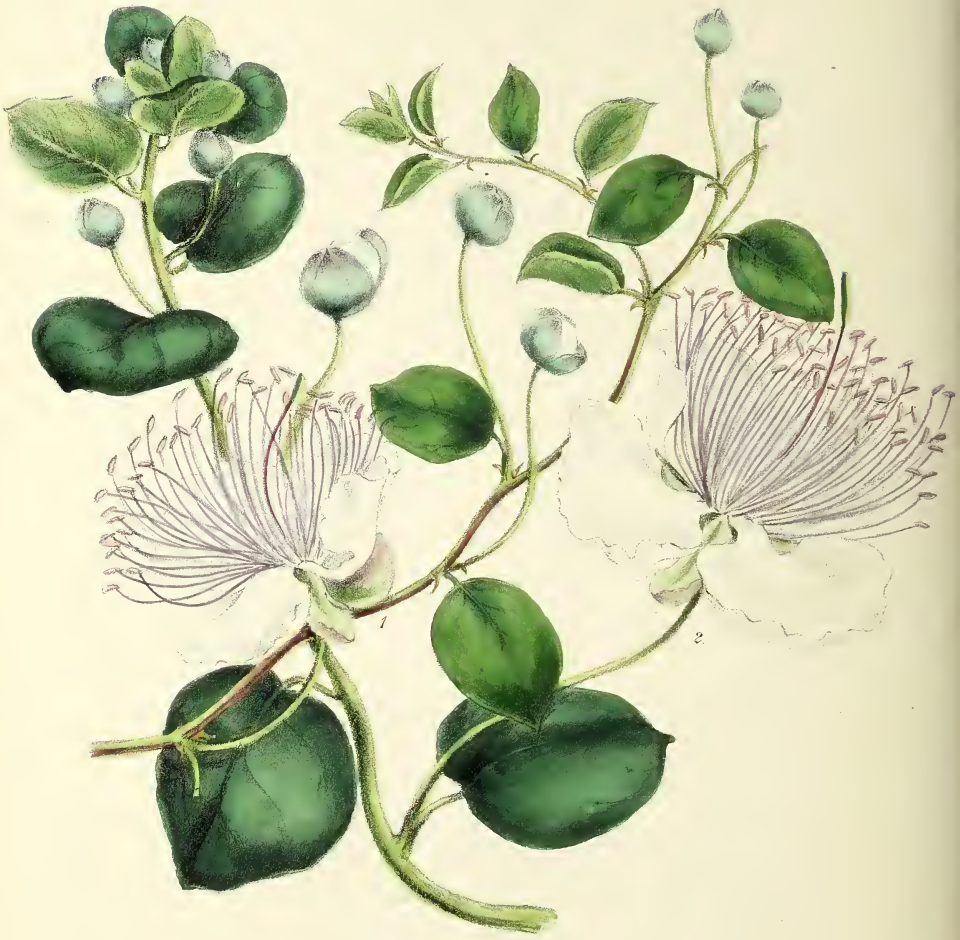
Who is to wonder that the idea of love mingles itself with that of this cheerful and kind time of the year, setting aside even common associations!

All our kindly impulses are apt to have more sentiment in them, than the world suspects; and it is by fetching out this sentiment, and making it the ruling association, that we exalt the impulse into generosity and refinement, instead of degrading it, as is too much the case, into what is selfish, and coarse, and pollutes all our systems. One of the greatest inspirers of love is gratitude,—not merely on its common grounds, but gratitude for pleasure, whether consciously or unconsciously conferred. Thus we are thankful for the delight given us by a kind and sincere face, and if we fall in love with it, one great reason is, that we long to return what we have received. The same feeling has a considerable influence in the love that has been felt for men of talents, whose persons or addresses have not been much calculated to inspire it. In spring time, joy awakens the hearts: with joy, awakens gratitude and nature; and in our gratitude, we return, on its own principle of participation, the love that has been shown us." *The Indicator*, by Leigh Hunt.

Milton (no bad authority) desires that boys should leave their books in this delightful season, and have a peep at the country. This is from one of his prose works, the Tractate on Education, but we observe that a man of rhyme has dressed up the thought, as follows:

Oh! in that vernal season of the year,
When the kind air breathes soft and wooingly,
It were a sullenness and injury
Against great Nature's self, who doth appear
Most brightly then, to pine in bookish gloom,
Holding communion with spirits bold
Of Greece, or Araby, or haughty Rome.
Rich in sweet-thoughts, and leisure-giving gold
Then let the high-born youth leave the fair page
Of Tully, or of Plato, for a while;
And guarded by some never-sleeping sage,
As serpent wise, but free as dove from guile,
Dear England's inmost spirit let him seek,
In wood, and plain, and hill, and sheltered creek.

In the language of flowers, the Bitter-sweet is the emblem of Truth.



1. Capparis spinosa. 2. Capparis rupestris

CAPPARIS SPINOSA.—THE COMMON CAPER.

CAPPARIS RUPESTRIS.—ROCK CAPER.

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

Natural Order, CAPPARIDEÆ.—THE CAPER TRIBE.

Sepals 4, either nearly distinct, equal, or unequal, or cohering in a tube, the limb of which is variable in form. Petals 4, cruciate, usually unguiculate and unequal. *Stamens* almost perigynous, very seldom tetradynamous, most frequently arranged in some high multiple of a quaternary number, definite or indefinite. *Disk* hemispherical, or elongated, often bearing glands. *Ovarium* stalked; *style* none, or filiform. *Fruit* either pod-shaped and dehiscent, or baccate, 1 celled, very rarely 1 seeded, most frequently with 2 polyspermous placenta. *Seeds*, generally reniform, without albumen, but with the lining of the *testa* tumid, attached to the margin of the valves; *embryo* incurved; *cotyledons* foliaceous, flattish. *Herbaceous plants shrubs* or even *trees*, without true stipula, but sometimes with spines in their place. *Leaves* alternate, stalked, undivided, or palmate. *Flowers* in no particular arrangement.

Capparis Rupestris, unarmed; leaves roundish, fleshy, deciduous; pedicles 1 flowered, solitary, longer than the leaves. Native of Crete and Mycon on rocks by the sea side. Flowers large, with white petals and red stamens.

Capparis Spinosa, stipulas spinose, hooked; leaves ovate roundish, deciduous; pedicles solitary, 1 flowered. Native of southern and eastern Europe on walls and rocks. In the Grecian islands on rocks by the sea side. There is a variety with abortive stipulas and ovate leaves, which are more or less hoary. Flowers white, tinged with red on the outside; filaments red. The flower bud of this plant is the well known pickle the *Caper*.

The chief supply of caper buds is from Sicily, but the plant is cultivated in the neighbourhood of Toulon in orchards, in the intervals between fig and olive trees, and in the neighbourhood of Paris, where it is trained on low walls, and the shoots during the winter laid down and covered with earth, to protect them from the frost. The plant is cultivated on a large scale between Marseilles and Toulon, and in many parts of Italy. The plant is raised from suckers or cuttings, which are planted about 10 feet distance from each other. They require shelter from severe winds, and favourable exposure to the sun, and scarcely ever suffer from drought or heat. In spring they need only one dressing; in autumn they are cut down to within six inches of the ground, and covered with the surrounding earth, which is raised about them on all sides. In the succeeding spring they are laid bare to the crown of the stump, and they soon throw out fresh shoots. In the early part of the summer they begin to flower, and a succession of them continues till they are destroyed by the cold of the advancing winter. In this country it is generally treated as a frame plant, though it has stood the winter in the open air in some situations. A plant stood near a century against the wall of the garden of Camden House, Kensington; it produced many flowers annually, though the young shoots were frequently killed to the stump during winter. As a pickle, the flower buds of the caper are in great esteem throughout Europe. In Italy the fruit is prepared in the same way as the flower buds; both are bitterish, acrid, and aromatic to the taste. In the Isles of the Mediterranean, and near Toulon, the flower buds of the caper are gathered while very young, for as they enlarge they decrease in value; this forms a daily occupation for six months, while the plants are in a flowering state. As the buds are gathered they are thrown into a cask among as much salt and vinegar as is sufficient to cover them, and as the quantity of capers is increased more vinegar is added. When the caper season closes, the buds are then sorted according to their

size and colour. The smallest and greenest being the best, are separated and put into small casks of fresh vinegar for commerce. They will in this state keep fit for use for many years. It is said to be a common practice to put filings of copper in the first pickle to give the buds a green colour. The best capers are called *nonpareils* and the second best *capacines*. The *caper* is called in France *caprier*, in Italy *capriolo*, or cappero, and in German *Kapernstrauch*. Capers have the character of being anti-scorbutic, and of removing hepatic and other obstructions; but the part of the plant which has been chiefly recommended for medicinal purposes, is the bark of the root. *Dichlamydeous Plants by George Don, F.L.S.*

The following account is from that curious and interesting work Gerard's Herbal.

The Caper groweth in Italy, Spaine, and other hot regions, without manuring, in a lean soile, in rough places amongst the rubbish, and vpon old walls, as Dioscorides reporteth.

Theophrastus writeth,—That it is by nature wilde, and refuseth to be husbanded, yet in these our dayes diuers vie to cherish the same, and to set it in dry and stony places. Myselfe at the impression hereof planted some seeds in the bricke walls of my garden, which as yet doe spring and grow green; the success I expect.

Capers, or the floures not yet fully growne, be of temperature hot, and of thin parts; If they be eaten green they yield very little nourishment, and much lesse if they be salted: and therefore are rather a sauce and medicine, than a meat.

The Vertues.—They stir up an appetite to meat, are good for a moist stomacke, and stay the watering thereof; cleansing away the flegme that cleaueth vnto it. They open stoppings of the liuer and milt: with meat they are good to be taken of those that haue a quartan ague and ill spleens. They are eaten boiled (the salt first washed off) with oile and vinegar, as other sallads be, and sometimes are boiled with meat.

The rinde or bark of the root consisteth of diuers faculties, it heateth, clenseth, purgeth, cutteth and digesteth.

This barke is a singular remedie for hard spleenes, being outwardly applied, or inwardly taken: and the same boiled with vinegar or Oxymel, or beaten and mixed with other simples, expelleth thick grosse humors, and conveyeth away the same mixed with bloud, whereby the milt or spleen is helped; and the pain of the huckle bones taken away: more ouer, it bringeth downe sicknesses and draweth flegme out of the head, as *Galen* writeth.

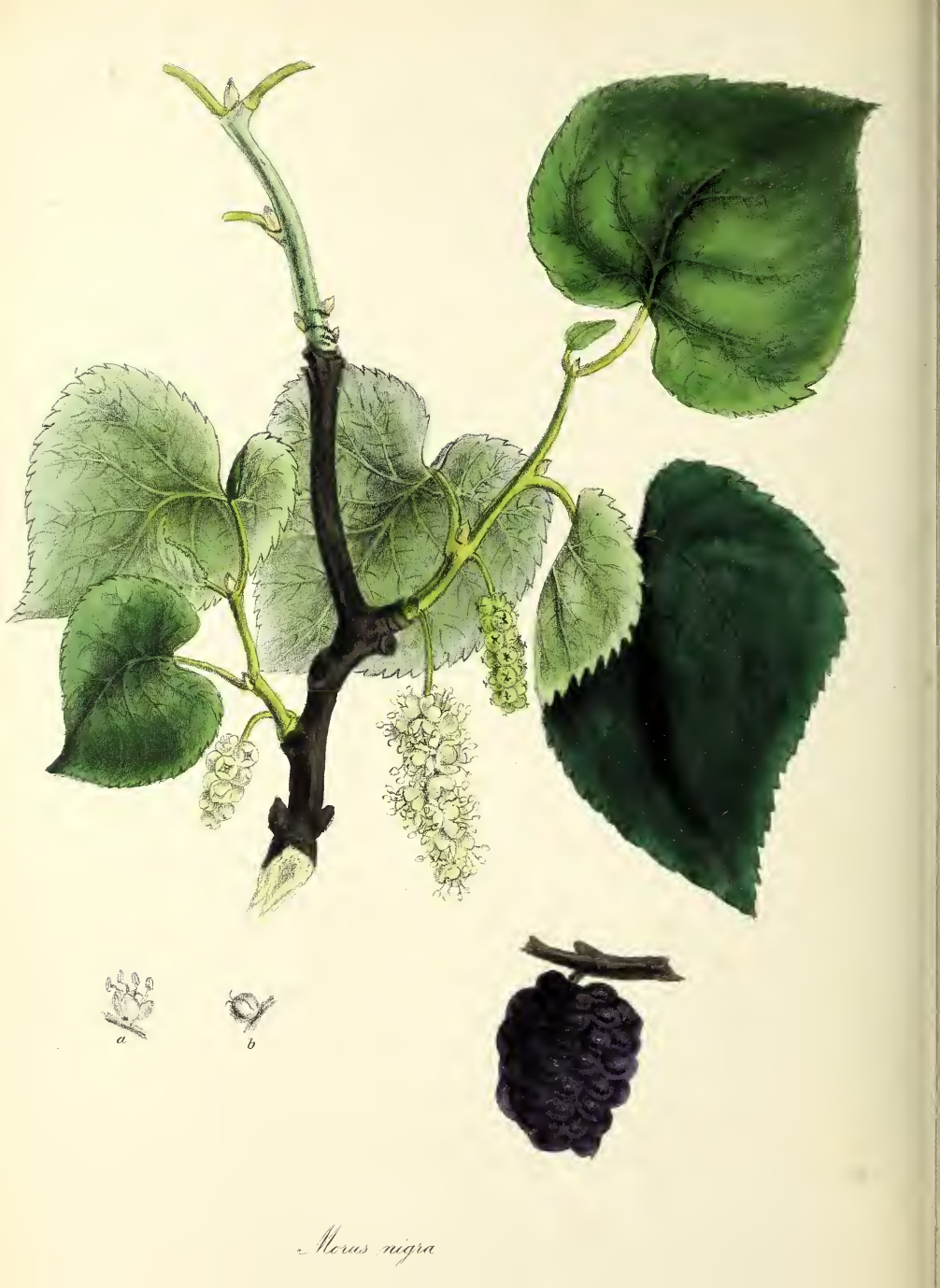
The same bark (as Dioscorides teacheth) clenseth sores, and scoureth away the thicke lips and crusts about the edges, and being chewed it takes away the tooth-ache.

Professor Burnett says, the caper is raised with us by sowing the seeds upon old walls, where they take root betwixt the bricks, and endure for many years. The bark of the root (cortex capparis) is pretty thick, of an ash colour, with several transverse wrinkles on the surface; cut in slices and laid to dry, it rolls up into quills. This bark has a bitterish acrid taste; it is reckoned aperient and diuretic.

The chief consumption of the caper in this country is as an ingredient in sauces to be eaten with boiled meats especially mutton.

For the following receipts we are indebted to Meg Dod's Cookery Book. Take two table spoonsfuls of capers and a little vinegar. Mince the one half, and stir the whole of them into a half pint of melted butter, or of strong thickened gravy. To prevent the butter from oiling, stir the sauce for some time. When wanted very poignant, lemon juice may be added to this simple and tasteful sauce, or it may be flavoured with tarragon or burnt vinegar, instead of plain vinegar. If for fish, steak, &c., a little essence of anchovy will be found an improvement with pepper and salt to taste.

Mock Caper Sauce is made of gherkins or nasturtiums cut in bits with lemon juice and melted butter; and also radish seed-pod.



Morus nigra

MORUS NIGRA.—THE COMMON MULBERRY TREE.

Class XXI. MONŒCIA.——Order IV. TETRANDRIA.

Natural Order, ARTOCARPEÆ.—THE BREAD FRUIT TRIBE.

The Mulberry-tree grows naturally on the coast of Italy and in Persia; but has been cultivated in England since the end of the sixteenth century. It is generally grown as a standard, and flourishes best in a rich deep light soil. The flowers are produced in June, and the fruit ripens in September.

The tree is not lofty, is much branched, and covered with a rough brown or greyish bark. The leaves, which stand upon short foot-stalks, are about five inches long, and four inches and a half broad; numerous, cordate, serrated, rough, of a deep green colour on the upper surface, and paler and tomentose underneath. Both the male and female flowers are produced on the same plant. The *male* flowers are disposed in close cylindrical catkins, about an inch and a half long, and composed of several florets; each floret consists of a calyx divided into four deep, ovate, concave segments, inclosing four awl-shaped filaments, having simple anthers. The *female* flowers consist of a calyx, which is permanent, resembling that of the male; and both are destitute of a corolla; the germen is roundish and supports two reflexed styles furnished with simple stigmas. The fruit is a large succulent false berry, or more properly a compound berry, composed of a number of smaller berries, or *acini*, each containing a single seed, and attached to a common receptacle. Fig. (*a*) represents the male florets.

There are several species of the Mulberry; the M. *alba*, being the one which is cultivated to feed the silk-worm, the silk of which is more coarse when they are fed on the M. *nigra*. Another variety is cultivated in Japan, for the sake of its inner bark, from which paper is manufactured. This plant has lately been generically distinguished from the Mulberry, and is now called the *Broussonetia papyrifera*. The generic name *Morus* is derived immediately from the Greek Μορέα, and that from the Celtic *Mor*, which signifies black, the most common colour of the fruit. *Morus tinctoria* affords the fustick wood of the dyer, of which considerable quantities are brought into Europe.—*Medical Botany*.

The black mulberry has been known from the earliest records of antiquity. It is twice mentioned in the Bible; viz. in the Second Book of Samuel, and in the Psalms. The same difficulty however exists in tracing its history distinctly from that of the white mulberry, as in its geography, and it is only when spoken of as a fruit tree, or when its colour is decidedly mentioned, that we can be sure which species is meant. Ovid however, evidently points out the black mulberry as the one introduced in the story of Pyramus and Thisbe; and Pliny seems also to allude to it, as he observes that there is no other tree that has been so neglected by the wit of man, either in grafting or giving it names, an observation which holds good to the present day, respecting the black mulberry, as it has only one trifling variety, or rather variation, and no synonyme; whereas there are numerous varieties of M. alba. Pliny adds, "Of all the cultivated trees the mulberry is the last that buds, which it never does until the cold weather is passed, and it is therefore called the wisest of trees. But, when it begins to put forth buds, it despatches the business in one night, and that with so much force, that their breaking forth may be evidently heard." The black mulberry was first brought to England in 1548, when some trees were planted at Syon, one of which at least is still in existence. Others say that the first mulberry-tree planted in England was in the garden at Lambeth Place, by Cardinal Pole, 1555. The tree is mentioned by Trusser, and also by Gerard, who describes both the black and the white mulberry tree being cultivated in his time. The royal edict of James Ist, about 1605, recommending the cultivation of silk-worms, and offering packets of mulberry seeds to all who would sow them, no doubt rendered the tree fashionable, as there is scarcely an old garden or gentleman's seat, throughout the country, which can be traced back to the seventeenth century, in which a mulberry tree is

not to be found. It is remarkable, however, that, though these trees were expressly intended for the nourishment of silk-worms, they nearly all belong to Morus *nigra*, as very few instances exist of old trees of Morus alba in England. Shakespeare's mulberry is referable to this period, as it was planted 1609, in his garden at New Place, Stratford; and it was a black mulberry, as Mr. Drake mentions, a native of Stratford, who in his youth, remembered frequently to have eaten of the fruit of this tree; some of its branches hanging over the wall which divided that garden from his father's.

The mulberry was dedicated by the Greeks to Minerva, probably because it was considered the wisest of trees, and Jupiter the protector was called Morea. Ovid has celebrated the black mulberry tree in the story of Pyramus and Thisbe; where he tells us that its fruit was originally snow-white; but that when Pyramus, in despair at the supposed death of his mistress, killed himself with his own sword, he fell dead under one of these trees; and when Thisbe, returning and finding him dead, stabbed herself also, their blood flowing over the roots of the tree, was absorbed by them, and gave its colour to the fruit:—

"Dark in the rising tide the berries grew,
And white no longer, took a sable hue,
But brighter crimson, springing from the root
Shot through the black, and purpled o'er the fruit."

Cowley describes the black mulberry as being used, in his time, both for its fruit and leaves:—

'But cautiously the mulberry did move,
And first the temper of the skies would prove,
What sign the sun was in, and if she might
Give credit yet to Winter's seeming flight:
She dares not venture on his first retreat,
Nor trusts her fruit and leaves to doubtful heat;
Her ready sap within her bark confines,
Till she of settled warmth has certain signs,
Then making rich amends for the delay,
With sudden haste, she does her green array:
In two short months, her purple fruit appears,
And of two lovers slain the tincture wears.
Her fruit is rich, but she doth leaves produce,
Of far surpassing worth and noble use.

Cowley on Plants.

The destruction of Shakespeare's mulberry tree in 1756, by its then proprietor, Mr. Gastrell, gave rise to several songs and other pieces of poetry; but they rather relate to the individual tree than to the species.

Loudon's Arboretum Britannicum.

Of all the trees in the orchard the mulberry doth last bloome, and not before the cold weather is gone in May (therefore the old writers were wont to call it the wisest tree) at which time the Silke worms do seeme to reuiue, as hauing then therewith to feed and nourish themselves, which all the winter before do lie like small graines or seeds, as knowing their proper times both to perform their duties for which they created, and also when they may haue wherewith to maintaine and preserve their own bodies, vnto their businesse aforesaid.

The berries are ripe in August and September. *Hegesander* in Athenæus, affirmeth, that the mulbery trees in his time did not bring forth fruit in twenty yeares together, and that so great a plague of the gout then reigned and raged so generally, as not only men, but boies, wenches, and women were troubled with that disease.—*Gerard's Herbal.*

In England the fruit is generally eaten at desserts; and it is considered of a cooling aperient nature when ripe. It forms an agreeable sweetmeat though it is not generally used for that purpose; and Evelyn says that, mixed with juice of cider apples, it makes a very strong and agreeable wine. Dr. Clarke mentions that he saw some Greeks in the Crimea employed in distilling brandy from mulberries; which he

describes as a weak but palatable spirit, as clear as water. A wine is also made from it in France; but it requires to be drunk immediately, as it very soon becomes acid. The root has an acrid bitter taste, and is considered excellent as a vermifuge, in doses of half a drachm in powder. The tree in every part contains a portion of milky juice, which being coagulated, is found to form a kind of coarse Indian rubber. In some parts of Spain on Mount Etna, and in Persia, the leaves of this species are said to be preferred to those of the white mulberry for silk worms.—*Loudon's Arboretum Britannicum.*

Silk worms are hatched from eggs, laid during summer, by a kind of greyish moth; they are about as large as a grain of mustard seed, at first of a yellow colour, but afterwards of a blueish hue. From each of these comes a small black caterpillar; in about eight days its head grows larger, and it is seized with its first sickness, when its size increases; and in the course of a month, its weight is multiplied many *thousand-fold.* It then throws off its covering, not only that of the body, but of the feet, of the entire skull, and even of the mandibles, or jaws; which process may be seen by the unassisted eye, but, of course, more clearly through a magnifying glass. It is again attacked by sickness, after which it moults again; and when this has been repeated for the fourth time, the caterpillar is about one and a half or two inches long, devours its food most voraciously, and during ten days, increases rapidly in size. Its whole form is now remarkable; but the two very small apertures through which the worm draws its silky substance, are placed just beneath the jaw, and close to each other. It now ceases to feed on the mulberry leaves; its colour is now light green, with a mixture of a darker hue; and, in twenty-four hours, the material for forming its silk is digested, when its green colour disappears, its body acquires greater firmness and is somewhat lessened in size, and it finds some place for its work, and begins its cocoon. The substance of which the silk is composed is secreted in the form of a fine yellow transparent gum in two small separate vessels, which are wound as it were on two spindles in the stomach, and, which unfolded, are about ten inches long.

In three or four days, the cocoon is complete; the caterpillar then smears its surface with a gum like that which forms the silk itself (no doubt to shield the chrysalis from the rain,) a portion of which accompanies the silken filament through its entire length, and so completely is this done, that when, in order to reel the silk more easily, the balls are thrown into hot water, they float like bladders, and, unless the ball is imperfectly formed, the water does not penetrate the silk until it is nearly all unwound. When the ball is finished, the insect rests awhile, throws off its garb, and appears, when the cocoon is opened, something like a kidney bean in shape, or pointed at one end; having a smooth, brown-skin, with its former covering lying by its side. It then sleeps from fifteen to thirty days, according to the climate. It then throws off its shroud, and appears as a large moth of a greyish white colour, with four wings, two eyes, and two black antennæ, or horns, seeks its mate, who deposits her eggs; and both in two or three days after, end their being. The quantity of silk in a cocoon is variously stated, and sometimes most absurdly exaggerated—thus Isward, an old author, says, it will measure in length six miles, or 10,560 yards; but Count Dandola tells us that silk-worms labours seldom exceed 625 yards; a great quantity for so short a life. Others consider the average length to be from 300 to 400 yards, and the weight to be about three grains.

The credit of drawing the slender filament from the cocoon of the silk-worm is claimed by the Chinese. It is stated in their records, that they used the work of the silk-worm, two thousand seven hundred years before the Christian era; they represent the Empresses as surrounded by their women, engaged in hatching and rearing the little manufacturers, and in weaving their valuable produce; and they give the honour of doing this *first* to one who was named See-ling-she. A long time passed before it was known in England, and even then it was very slowly introduced. Soon after the Conquest, however, it was much used; and in 1251, when Alexander III. of Scotland, married Margaret, the daughter of Henry III. a thousand English knights appeared in garments of silk, which were thrown aside the next day for robes equally gorgeous and splendid. Silk was one time valued at Rome, at its weight in gold; and the Emperor Aurelian is said to have refused his Empress a robe of silk because it was so costly. Even when James VI. King of Scotland, came to assume the English crown, it was so scarce, that he was obliged to ask the Earl of Mar for the loan of a pair of silk stockings to wear before the English Ambassador, adding, "For ye would not, sure, that your

king should appear as a scrub before strangers." When the frame-work knitters of silk stockings petitioned Oliver Cromwell for a charter, they said, "the Englishman buys silk of the stranger for twenty marks, and sells him the same again for one hundred pounds." But now we buy three millions and a half pounds of raw silk from the stranger, employ half a million of our own people in the manufacture of it by the aid of machinery, and sell it to them and the stranger, at a price as low as that of the calico of half a century ago. To supply this one luxury to us, fourteen thousand millions of animated creatures yearly live, labour, and die! Still greater must be the number in China, where all, from the Emperor to the peasant, wear silk. A species of mulberry is cultivated in Japan for the manufacture of paper, and hence it is called the paper-mulberry. For this purpose it is raised in beds, as osiers are cultivated with us for the use of the basket maker and the cooper. When the leaves have fallen off, that is about the month of December, the shoots are cut down, divided into lengths of about three feet, bound into bundles, placed upright and close together in a copper, and boiled till the bark is completely loosened from the wood. Should they be dry before being subjected to boiling, they are prepared for that operation by maceration in water for twenty-four hours. After the rods are cold, the bark is divided lengthwise by a knife; stripped off, and dried for use. When about to be used, it is put into water till it is so much soaked that the external and coloured part of the bark can be separated. That being done, the bark is sorted, the strongest being set apart for the best and whitest paper, and the weaker for that of inferior quality; while of the refuse a very coarse brown paper is made. The sorted bark is then boiled till it becomes tender, that is till it easily separates with the fingers, and then it is washed for a longer or shorter time according to the quality of paper wanted. If strong writing-paper, the washing must be moderate, but if the colour is to be very delicate, and the texture soft and silky, the washing must be more prolonged. When properly washed, it is taken to a table and there reduced to a pulp, by beating with wooden mallets. When sufficiently reduced, it is brought to the requisite consistency with water; rice starch, and the mucilaginous infusion of manihot root, are added by way of size; and then the sheets of paper are formed, one by one, upon a table, collected into heaps, and pressed by a weight.

Charles Williams.

"May," says Peacham, "must be drawn with a sweet and amiable countenance, clad in a robe of white and green, embroidered with daffodils, hawthorns and blue-bottles." And May *has* a sweet and amiable face, in spite of the occasional frowns with which it is overclouded. A pleasant season it is for those who are capable of pleasing emotions. Yet there are some whose melancholy is increased by the gaiety of nature around them, and who feel it more easy to endure the grey sky and nipping blasts of December, than to enjoy the fragrant gales of June. The following lines seem inspired by a sentiment of this kind.

The winter fled, sweet May is here,
The thrushes to the purple year
Their joyous tribute bring;
But ah! to me no joy returns,
In this cold heart no passion burns,
Life knows no second spring!

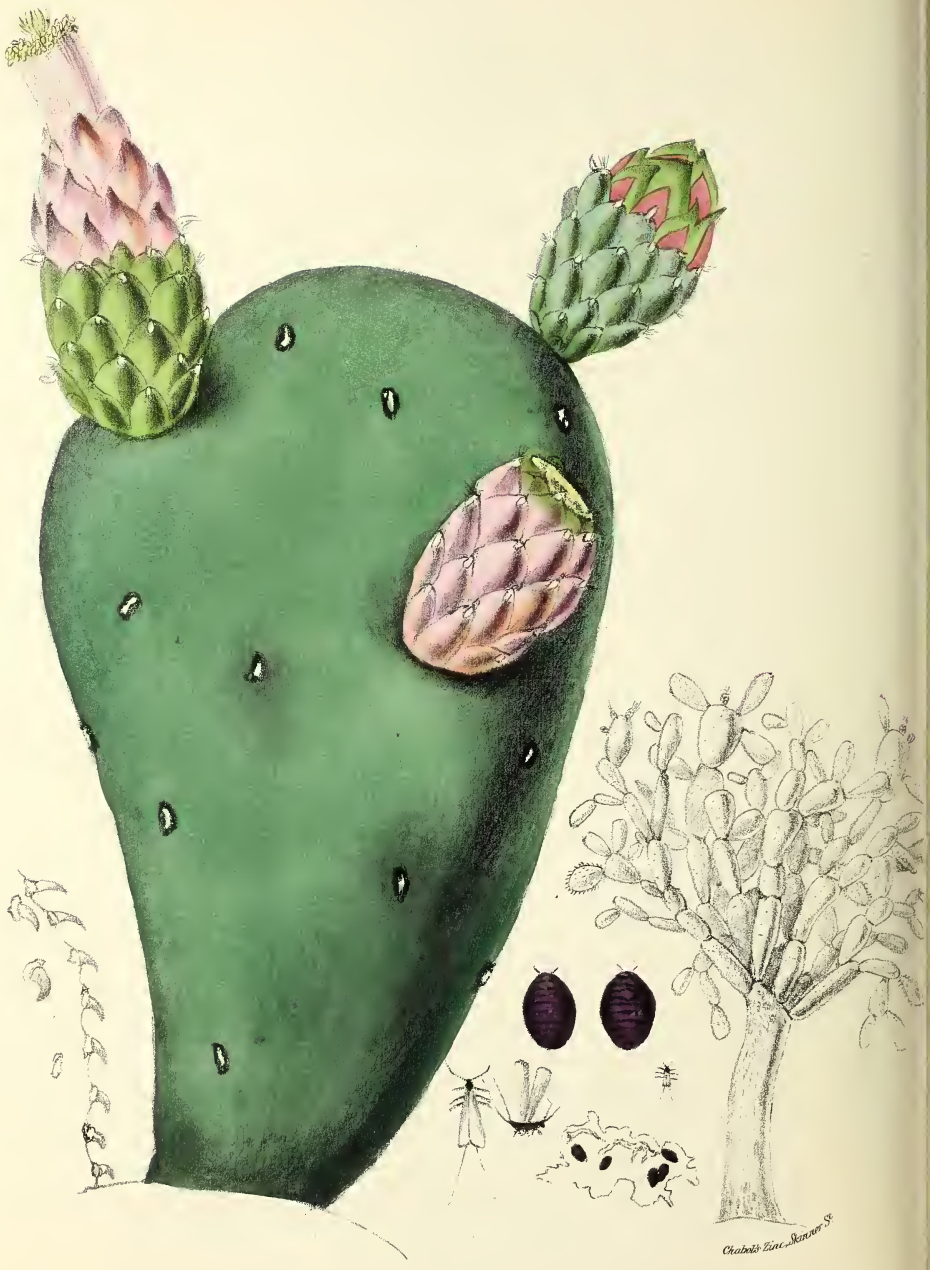
No more on me bright eyes shall shine,
Nor Susan more than half divine
Those plaintive ballads sing;
Nor wife, nor friend to cheer my way,
I live the solitary day,
Nor hope a second spring.

Then farewell every earthly dream,
Henceforth be mine a higher theme,
Upwards each thought take wing;
God of the just! my soul prepare
Thy blest abode with thee to share,
Be there my second spring!

Qualities.—Mulberries are inodorous, possess a sweet sub-acid taste, and yield a fine rich-coloured juice, which contains tartaric acid, jelly, and mucus.

Medical Properties and Uses.—This fruit is very grateful to the parched mouths of fever-patients, but is apt to produce diarrhœa if eaten too freely. The syrup is used in gargles, on account of its acidulating properties and its beautiful colour. According to Bergius, the *bark of the root* has been successfully administered in doses of half a drachm, to expel the tape-worm. He also asserts that it acts on the bowels.

Off. Prep.—Syrupus Mori. *L.*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CACTUS COCHINILLIFER.——SPINELESS COCHINEAL FIG.

Class XII. ICOSANDRIA.—Order I. MONOGYNIA.

Natural Order, CACTEÆ.——THE INDIAN FIG TRIBE.

This Cactus may almost be reckoned arborescent, for it grows to the height of nine feet. The lower and older parts of the *stem* and branches are cylindrical or but slightly compressed, of a greyish ash colour, and woolly; the younger branches are every where proliferously jointed, their joints varying in size from four to six inches, to a foot in length, oblong or obovate, more or less attenuated at the base, all of them much compressed, flattened, of a deep full green colour, when young having several scattered fleshy, curved, subulate *leaves* scarcely half an inch long, which soon fall off, leaving a white scar. There are no spines. The flowers, which are three inches or more long, appear in the joints at the extremities of the branches, and generally at or near their superior margins. The base is occupied by the large, fleshly, obovate, truncated, reticulated, dark green *germen*, whose areolæ constitute an oblong swelling or tubercle, tipped at the apex by a white scar, whence small leaf-like processes have fallen, and above which is a small fascicle of fine hairs or bristles. This has one cell filled with ovules, attached to a curved seed-stalk. *Calyx* of many ovate or obovate, very acute, erect, greenish red scales, gradually passing into the broader and larger, obtuse, very closely imbricated, connivent bright rose coloured *petals*. *Stamens* much protruded, very numerous, rose coloured, their base sunk into the top of the *germen*, forming a cylindrical mass, united below. *Filaments* very slender. *Anthers* oblong, pale yellow. *Style* dilated near the base, but again suddenly contracted at the very base, tapering upwards to the length of the stamens, and terminated by a cup-shaped *stigma*, cut into from five to eight yellow green rays. After the falling away of the *Calyx*, *Corolla*, *Stamen*, and *Pistil*, a considerable hollow remains on the top of the germen, and this latter, scarcely increasing in size, or altering in form, becomes a *berry* of a fine red colour within and without, having, in the centre, a number of nearly reniform, compressed *seeds*, enveloped in pulp.

There are few tribes of plants that require illustration, by the aid of the pencil, more than the Cactuses; they cannot be preserved in the Herbarium, nor so easily described in words, as many other plants. An idea, too, has been very generally current, that they are liable to much variation; but from what we have ourselves seen of them in a state of cultivation, we think ourselves warranted in considering them to be tolerably constant to their character.

With regard, too, to that particular species of Cactus, which nourishes the Cochineal Insect, much doubt has existed; and we believe it must be allowed, that our plant, which was named by Linnæus, and has been almost universally called C. *cochinillifer*, is not that which produces the best Mexican Cochineal; nor are we prepared to say, of what part of South America it is a native. Linnæus speaks of it as indigenous to Jamaica, and the warmer parts of the new world; but Stone, who gives a very tolerable figure of it, says, that the plants he saw, in Mr. Worley's plantation, were brought from the main Continent of America, by a Spanish priest, and affirmed to be the species on which grew the Cochineal.

We know our present subject to be the true C. *cochinillifer* of Linnæus, by his references to various figures, especially to that of Dillenius, in the Hortus Elthamensis above quoted; and that author considers it may be the same as the *Nocheznopalli* or *Nopelnochetzli*, figured in Hernandez; except that, in the latter plant, the flowers are spreading, whilst in ours the petals are connivent. He does not say where it is indigenous. In the Chelsea garden according to Ray, it was cultivated prior to 1688, and was received from Barbadoes.

Ulloa, not upon his own authority, as it appears, but on that of well informed travellers, states, that the *Cochineal Cactus* has no spines, and a fruit imbued with a deep-red pulp. This is partly contradicted by Clavigero, who says, "In Misteca, where I was for five years, I always saw the insect upon prickly Nopals. M. de Raynal imagines, that the colour of the Cochineal is to be ascribed to the red fig on which it lives; but that author has been misinformed, for neither does the Cochineal feed upon the fruit, but only upon the leaf, which is perfectly green; nor does that species of Nopal bear *red*, but *white* figs." It is true, Clavigero adds, "it may be reared upon the species with a red fig; but that is not the proper plant of the Cochineal."

De Candolle, in his beautiful work entitled "Plantes Grasses," has given, as the Cactus *Cochinellifer*, the C. Tuna of Linnæus, a plant totally distinct from the Linnæan *cochinillifer*, and whose flower is of a different structure.

Thierry de Menonville, who so courageously procured[a] the Cochineal Insect and the Cactus from

[a] This circumstance is thus related by Dr. Bancroft, in his valuable "Researches on the Philosophy of Permanent Colours." In the month of January, 1777, M. Thierry de Menonville left Port au Prince, in St. Domingo, for the purpose of procuring some of the living Cochineal Insects in Mexico, and bringing them away to be afterwards propagated in the French West India Islands; an enterprise, for the expence of which, four thousand livres had been allotted by the French Government. He proceeded by the Havannah, to la Vera Cruz and was there informed, that the finest Cochineal Insects were produced at Guaxaca, distant about seventy leagues. Pretending ill health

Guaxaca, and transported them to St. Domingo, and who unquestionably had the best means of determining the kinds of CACTI, cultivated for the insect, describes particularly *three* sorts, on which it may be reared and cultivated to advantage.

1. The CACTIER *Nopal;* upon which *alone* the Cochineal is reared in Mexico, both the fine and the common Cochineal (la Cochenille *fine* et *sylvestre*) although there are throughout the country, many other kinds of CACTUS. The two following, therefore, it is presumed, are employed in St. Domingo.

2. The CACTIER *Splendide;* which may be used to equal advantage with the former; and

3. The CACTIER *de Campêche.*

Of these, the first as far as can be determined by description, for the writer had never seen the flower or fruit, is the CACTUS *Tuna* of Linnæus; C. *coccinellifer* of De Candolle.

The second appears from the account to be very similar to the former, but larger in its joints (some of them thirty inches long,) and very glaucous.

The third, the C. de Campêche, is, I think without a doubt, our C. *cochinillifer,* for his whole description, and especially the flowers and fruit, entirely correspond, and he says of it, from his own experience, that it may be usefully employed for rearing the Cochenille *sylvestre,* and may even support a small quantity of the fine kind.

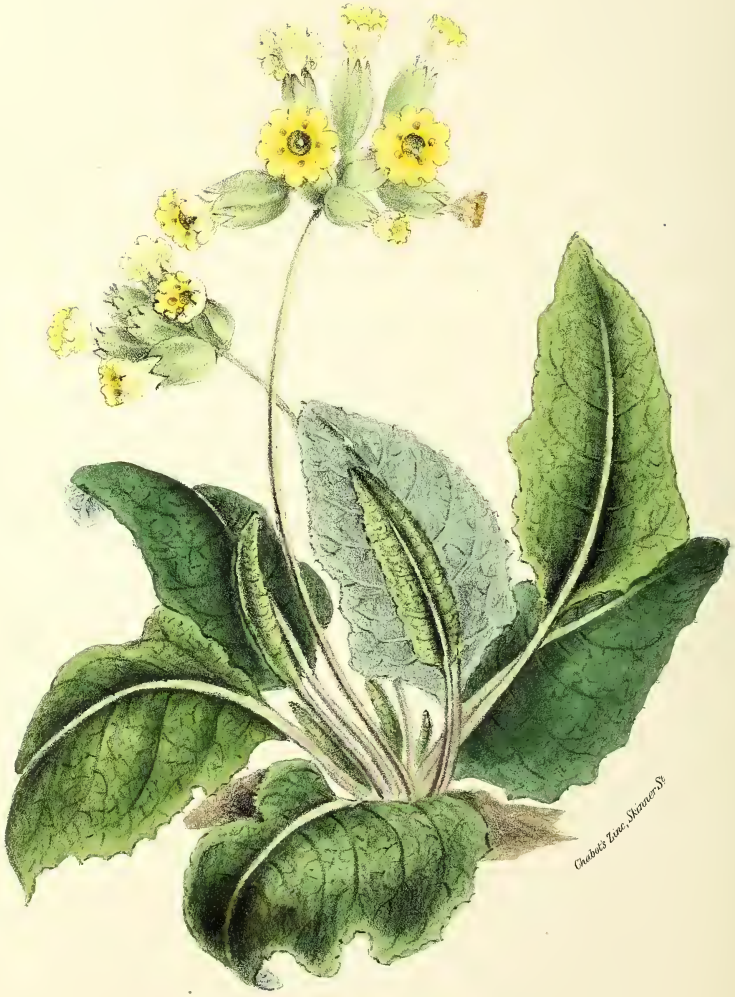
The celebrated *Humboldt* also, although he allows that it is the plant upon which the Cochineal has often been sent to Europe, asserts, that our CACTUS *cochinellifer* is not the individual of the Mexican Nopaleries, which he makes a new species, under the name of C. *Bonplandii*; and he quotes under it, with a mark of doubt, the CACTUS TUNA of Linnæus. At Rio Janeiro, when that place was visited by the CHINESE Embassy, under LORD MACARTNEY, there were considerable plantations of CACTUS, for rearing the Cochineal, which had some time previously been introduced into Brazil; and the plant, which is the CACTUS *Tuna,* is represented on the twelfth plate of the atlas of that work.

I shall further, upon the subject of the kinds of CACTUS employed in rearing the Cochineal, only add that my excellent friend, the Rev. L. GUILDING, who sent me most splendid drawings of this particular CACTUS, wrote me two years ago from St. Vincent, "I possess a considerable nursery of this CACTUS inhabited by thousands of the true *Coccus Cacti;* and I do not despair of being able to send to the Society of Arts a large quantity of dried insects, before the termination of the present year." In the East Indies also, the insect has been extensively propagated; but we have not the means of knowing whether successfully or otherwise. From all this, we think it may be inferred, that, in Mexico and Brazil, the Cactus Tuma is the favorite food of the Cochineal, and that in the West Indian Islands, where the C. Tuna is, perhaps, less frequent; the C. *cochinillifer* is employed by the natives, and answers the purpose sufficiently well.

Like all its congeners, C. *cochinillifer* increases readily by having the joints stuck into the ground; and the plant loves dry and barren spots. If cultivated for the purpose of rearing the *Cactus,* it must be defended, at least in the rainy island of St. Vincent, from storms and winds, by sheds placed windward. It there blossoms all the year. The Cochineal insect, which feeds upon the kinds of *Cactus* just mentioned, is too well known to need a particular description here; as are also its valuable properties in producing the dye, which bears its name and carmine. It is the *Coccus Cacti* of Linnæus, a small insect of the order *Hymenoptera,* having a general appearance not very dissimilar to that of the Mealbug of our gardens, and equally covered with a white powdery substance. The male is winged. It is originally a native of MEXICO, and was cultivated for its precious dye, long before the conquest of that country; and these plantations, called *Nopaleros* are most extensive in the MISTECA and OAXACA; the latter district alone has exported, according to HUMBOLDT upon the average 32,000 arobas annually, estimated at 2,400,000, piastres, above £500,000 sterling. The proprietor of a *Nopalery* buys in April or May, the branches or joints of the *Tunas de castilla* (Cactus Tuna;) which are sold in the markets of Oaxaca, at about three francs a hundred, loaded with young Cochineals.—*Botanical Magazine.*

Mr. Field in his instructive work entitled *Chromatography,* in speaking of carmines, "says that the brightest and most beautiful colours are prepared from cochineal, of a fine powdery texture and velvety richness. They vary from a rose colour to a warm red; work admirably; and are in other respects, except the most essential—the want of durability—excellent pigments in water and oil:—they have not, however, any permanence in tint with white lead, and in glazing are soon discoloured and destroyed by the action of light, but are little affected by impure air."

he obtained permission to use the baths of the river Magdalena; but instead of going thither, he proceeded, through various difficulties and dangers, as fast as possible to Guaxaca; where, after making his observations, and obtaining the requisite information, he affected to believe that the Cochineal Insects were highly useful in compounding an ointment for his pretended disorder, (the gout,) and therefore purchased a quantity of Nopals, covered with these insects of the fine or domestic breed, and putting them in boxes with other plants, for their better concealment, he found means to get them away as Botanic trifles, unworthy of notice, notwithstanding the prohibitions by which the Spanish Government had endeavoured to hinder their exportation, and being afterwards driven by a violent storm into the bay of Campeachy, he there found and added to his collection a living Cactus, of a species which was capable of nourishing the fine domesticated Cochineal, after which, departing for St. Domingo, he arrived safe with his acquisitions, on the twenty-fifth of September, in the same, at Port au Prince. Though almost unaided, M. THIERRY de MENONVILLE, then persevered in cultivating, not only the *fine* Cochineal (which he brought from Mexico,) but also the *Sylvestre,* which he afterwards found wild in St. Domingo, and so successfully, that in 1789, there were more than four thousand plants in a single Nopalery, the produce having been ascertained by chemists to be equal in quality to that of Mexico. The political troubles in St. Domingo consequent upon the French Revolution, caused the total destruction of these plantations.



Primula veris.

PRIMULA VERIS.—COMMON COWSLIP.

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

Natural Order, PRIMULACEÆ.—THE PRIMROSE TRIBE.

Calyx inferior, monosepalous (of 1 sepal) tubular, upright, with 5 pointed teeth, and 5 angles, regular, permanent. Corolla monopetalous, salver-shaped, tube cylindrical, as long as the calyx; limb spreading in 5 rather deep inversely heart-shaped segments; mouth open. Filaments 5, in the throat of the corolla, very short, and opposite to the segments of the limb. Anthers upright, pointed, converging within the tube. *Germen* globular, *Style* thread-shaped, the length of the calyx. *Stigma* globular. *Capsule* cylindrical, of 1 cell, opening at the top with 10 upright parallel teeth. *Seeds* numerous, roundish, attached to an oblong, central *receptacle* or *placenta*. The 1-celled capsule, opening with 10 teeth; the salver-shaped *corolla* with a cylindrical tube, open in the throat; and the globular *stigma;* will distinguish this from other genera with a monopetalous, inferior corolla, and numerous covered seeds, in the same class and order.

Ben Jonson, with his usual tendency to overdo a matter of learning, calls cowslip, "lippes of cows." The name is derived, as some think, from their resemblance of scent to the breath of a cow; perhaps from growing much in pasture grounds, and often meeting the cow's lip. As beautiful objects of culture, they rank among the most esteemed for their beautifully bright colour, and we love them for being the heralds of spring. Gerard, in that curious old book of his, says, "They are commonly called *Primula Veris*, because they are the first among those plants that doe floure in the spring, or because they floure with the first. They are also named *Arthriticæ* and *Herbæ paralysis*, for they are thought to be good against the paines of the joints and sinews. They are called in Italian *Brache cuculi*, in English Petty Malleins, or Palsie-worts: of most, cowslips."

The blossoms are used for making wine. Farley says, "Take twelve pounds of sugar, the juice of six lemons, the whites of four eggs well beaten, and six gallons of water. Put all together in a kettle, and let it boil half an hour, taking care to skim it well. Take a peck of cowslips, and put them into a tub, with the thin peeling of six lemons. Then pour on the boiling liquor, and stir them about, and when it is almost cold, put in a thin toast, baked hard, and rubbed with yest. Let it stand two or three days to work. If you put in, before you tun it, six ounces of syrup of citron or lemon, with a quart of Rhenish wine, it will be a great addition. The third day strain it off, and squeeze the cowslips through a coarse cloth. Then strain it through a flannel bag, and tun it up. Leave the bung loose for two or three days till you be sure it has done working, and then bung it down tight, let it stand three months, and then bottle it.

It is accounted soporific, and thus recommended by Pope:

——"for want of rest,
Lettuce and *Cowslip* wine: probatum est."

The flowers are, for the same purpose, sometimes mixed with tea, or infused alone. They have likewise been considered antispasmodic, whence probably the French designation, *Herbes de la Paralysie*. The leaves are sometimes eaten as a pot herb and in salads. The root has a fine scent, like aniseed. Silk worms are fond of the leaves and flowers, but the silk thus produced is not of the best quality. Milton elegantly defines the appropriate tints of these favourite congeners:

"The flowery May, who from her green lap throws,
The yellow *cowslip* and the pale primrose."

And Shakespeare depicts the saffron-coloured spots of the blossom as "Fairy favours," in his Midsummer Night's Dream:

"Over park, over pale,
Through flood, through fire,
I do wander every where,
Swifter than the moone's sphere;
And I serve the fairy queen,
To dew her orbs upon the green:
The cowslip tall her pensioners be;
In their gold coats spots you see;
Those be rubies, fairy favours,
In those freckles live their savours,
I must go seek some dew drops here,
And hang a pearl in every cowslip's ear.

The following is by Howitt, on finding an early cowslip:

"It is the same! It is the very scent,
That bland, yet luscious, meadow breathing sweet,
Which I remember when my childish feet,
With a new life's rejoicing spirit went,
Thro' the deep grass with wild flowers richly bent
That smiled to high Heav'n from their verdant seat,
But it brings not to thee such joy complete:
Thou can'st not see, as I do, how we spent,
In blessedness, in sunshine, and in flowers,
The beautiful noon; and then, how seated round
The odorous pile, upon the shady ground,
A boyish group we laughed away the hours,
Plucking the yellow blooms for future wine,
While o'er us play'd a mother's smile divine."

The leaves of the cowslip are recommended for feeding silk worms, before the leaves of the mulberry tree make their appearance. Cowslips are commonly supposed to possess somniferous quality. The process of making this wine is alluded to by Montgomery in the following lines:

" Where thick thy primrose blossoms play,
Lovely and innocent as they,
O'er coppice, lawns, and dells,
In hands the village children stray,
To pluck thy honied bells:
Whose simple sweets, with curious skill,
The frugal cottage dames distil,
Nor envy France the vine;
While many a festal cup they fill,
Of Britain's homely wine."

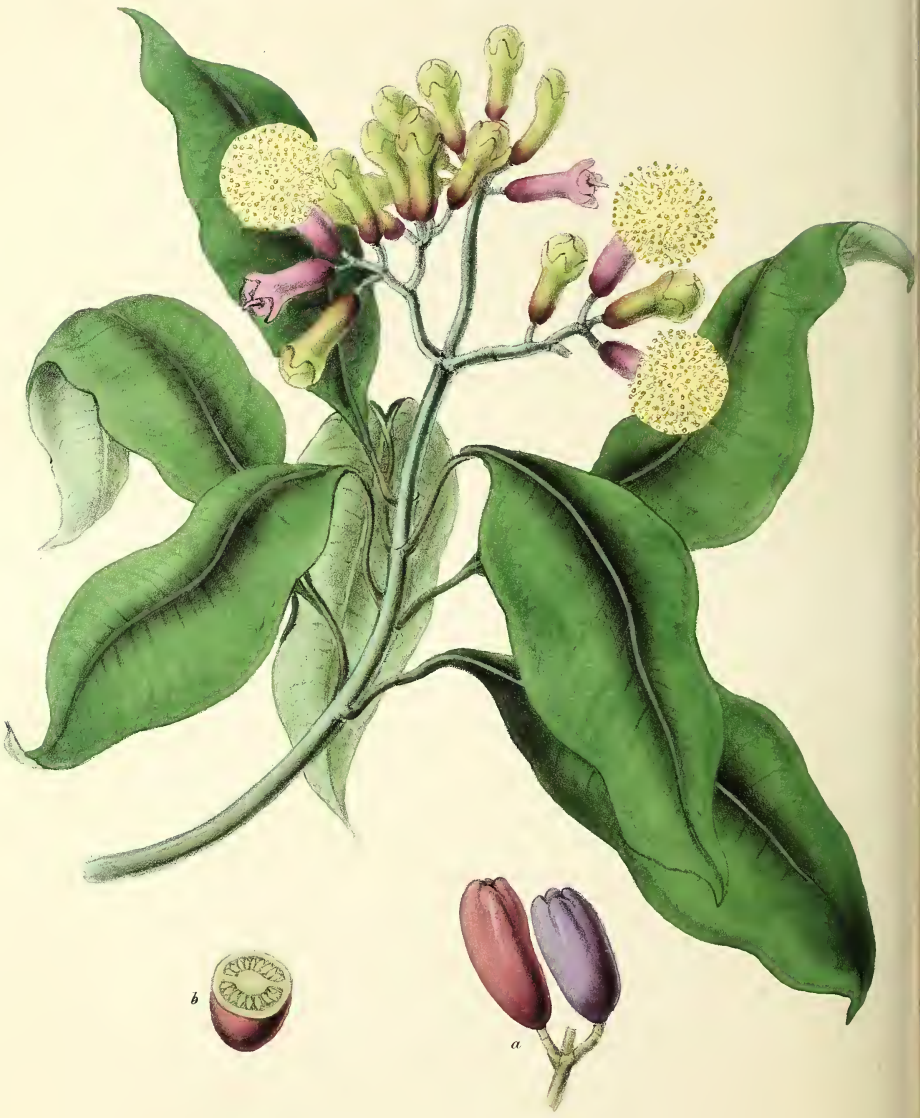
From Mr. Baxter's excellent work, British Flowering Plants.

The properties of the primulaceæ, says Mr. Burnett, are insignificant, nature having thus as it were secured some of her prettiest flowers from rapine, and spared us kindly the pain of destroying those most delicate specimens of her handy works. Swine who never look up to the tree from whence falls their food, nor lick the hand that feeds them, are the only animals which claim any of the *Preciæ* for their especial sustenance. The cowslip is reputed to possess a mild narcotic power, and hence it is used to flavor and heighten the intoxicating effects of fermented liquors.

There are many brief incidents and apparently trivial events in our lives, that at the moment of occurrence are almost unnoticed; but which, from some association, make an impression on the memory at many periods of after-life, or may be remembered through existence with undiminished freshness; when others, of the most seeming interest at the time, fade from our recollections, or become abraded from the mind by a constant collision with the passing transactions of our days. It is in early life, chiefly, perhaps entirely, that deep and indelible sensations of regard and affection are made; and impressions in those days are often recorded upon an unsullied tablet, that admits in after hours of no erasement or superscription. How deep are our school-boy reminiscences! and the kindnesses received, and the friendships formed, at such periods, commonly constitute more enduring characters on our minds than all the after-occurrences, half-heartless transactions, perhaps, of later hours; when darker passions arise—ambition, avarice, self-interest, and cold reality, banish for ever the elysian ideas of youthful romance. There is a flower, the common *cowslip* of the fields, which by reason of associations, for thirty years of my life I never saw without emotion; and though I might sanctify this feeling, I confess my belief that it has not contributed to the general happiness of my life: from reverence at first, it gradually became a disease, induced a morbid indifference, and undermined and destroyed the healthful sources of enjoyment.

Towards the close of a most lovely spring day—and such a lovely one, to my fancy, has never beamed from the heavens since—I carelessly plucked a cowslip from a copse side, and gave it to *Constance*. 'Twas on that beautiful evening, as, seated on a mossy bank, she dissected, with downcast eyes, every part of the flower; chives, pointal, petal, all were displayed; though I am sure she never even thought of the class. My destiny through life I considered as fixed from that hour. Shortly afterwards I was called, by the death of a relative, to a distant part of England; upon my return, *Constance* was no more. The army was not my original destination; but my mind began to be enfeebled by hourly musing upon one subject alone, without cessation or available termination; yet reason enough remained to convince me, that, without change and excitement, it would degenerate into fatuity.

The preparation and voyage to India, new companions, and ever-changing scenes, hushed my feelings, and produced a calm that might be called a state of blessedness—a condition in which the ignoble and inferior ingredients of our nature were subdued by the divinity of mind. Years rolled on in almost constant service; nor do I remember many of the events of that time, even with interest or regret. In one advance of the army to which I was attached, we had some skirmishing with the irregulars of our foe; the pursuit was rapid, and I fell behind my detachment, wounded and weary, in ascending a ghaut, resting in the jungle, with languid eyes fixed on the ground, without any particular feeling but that of fatigue, and the smarting of my shoulder. A *cowslip* caught my sight! my blood rushed to my heart—and, shuddering, I started on my feet, felt no fatigue, knew of no wound, and joined my party. I had not seen this flower for ten years! but it probably saved my life,—an European officer, wounded and alone, might have tempted the avarice of some of the numerous and savage followers of an Indian army. In the cooler and calmer hours of reflection since, I have often thought that this appearance was a mere phantom, an illusion—the offspring of weakness: I saw it but for a moment, and too imperfectly to be assured of reality; and whatever I believed at the time seems now to have been a painting on the mind rather than an object of vision; but how that image started up, I conjecture not—the effect was immediate and preservative. This flower was again seen in Spain: I had the command of an advance party, and in one of the recesses of the Pyrenees, of the romantic, beautiful Pyrenees, upon a secluded bank, surrounded by a shrubbery so lovely as to be noticed by many—was a *cowslip*. It was now nearly twenty years since I had seen it in Mysore: I did not start; but a cold and melancholy chill came over me; yet I might possibly have gazed long on this humble little flower, and recalled many dormant thoughts, had not a sense of duty (for we momentarily expected an attack) summoned my attentions to the realities of life: so, drawing the back of my hand across my eyes, I cheered my party with, 'Forward, lads,' and pursued my route, and saw it no more, until England and all her flowery meadows met my view: but many days and service had wasted life, and worn the fine edge of sensibility away;—they were now before me in endless profusion, almost unheeded, and without excitement: I viewed not the cowslip, when fifty, as I had done with the eyes of nineteen. *Time's Telescope.*



Eugenia caryophyllata.

EUGENIA CARYOPHYLLATA, OR CARYOPHYLLUS AROMATICUS, THE CLOVE SPICE TREE.

Class XII. ICOSANDRIA.—Order I. MONOGYNIA.

Natural Order, MYRTACEÆ.——THE MYRTLE TRIBE.

Fig. (*a*) the fruit. Fig. (*b*) a section of the fruit.

The Clove-tree is originally a native of the Moluccas; and the well-known spice was for a long period the staple commodity of Amboyna, one of the principal of these islands. The lucrative trade arising from this valuable article of medicine, or of luxury, was entirely, and still is principally, in the hands of the Dutch, who guard their monopoly with the most illiberal jealousy. Cloves are only produced in perfection in Amboyna, and the neighbouring islands; but to prevent smuggling, and to make their command of the market more secure, they have been at the utmost pains to extirpate the clove-trees from all the other islands, and to confine the culture of them to Amboyna alone. Notwithstanding, however, the vigilance of the Dutch to secure to themselves a monopoly in this valuable spice, the French obtained some plants, which they carried to the Isle of Bourbon, about the year 1770, and thence to Cayenne, from whence its cultivation has extended to the West Indies. The clove was introduced into the Royal Gardens at Kew, in 1797, by the Right Hon. Sir Joseph Banks.

The clove-spice is produced on a very handsome tree, somewhat resembling a large pear-tree. The trunk is from fifteen to thirty feet high, a foot thick, divided into branches, four or five feet from the ground, which are slender, opposite, usually horizontal, and form a dense, pyramidal head. The leaves are opposite, persistent, somewhat coriaceous, about four inches long, with a strong mid-rib, and parallel lateral nerves; ovate-lanceolate, quite entire, smooth on both sides, reddish and rather shining above, paler underneath, sprinkled with minute resinous dots, and tapering at the base into a slender foot-stalk, nearly two inches long, which according to Sonnerat is the most aromatic part of the plant. The flowers are odorous, from nine to fifteen or more on a branch, in short terminal panicles, trichotomously divided, and jointed at every division, The calyx, which is superior, consists of four ovate, concave, spreading segments, at first green, but afterwards becoming red. The petals are four, ovate, concave, yellowish-red, larger than the calyx, coherent by their edges, and forming a calyptra which is caducous. In the centre of the calyx, and occupying the top of the germen, is a quadrangular elevated line, into which the stamens are inserted, surrounding the base of the shortish obtusely subulate style. The filaments are numerous, much longer than the petals, bearing small yellow ovate-cordate anthers. The germen is inferior, oblong, 2-celled, with twenty ovules in each cell; all of which, as stated by Professor Hooker, become abortive, or *one* or *two* prove fertile, and by their great enlargement destroy the rest of the ovules, and obliterate the distinction of the two cells; so that the fruit, which forms a rather large elliptical purple berry, is only 1 or at most 2-ceeded.

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

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

quantity of 125 lbs. of this spice: whereas, the average produce in Amboyna is 2 or $2\frac{1}{2}$ lbs. per annum. It requires five thousand cloves to weigh a pound; consequently, there were 625,000 flowers upon this single tree, independently of others which were left for seed; "a fact," says M. St. Vincent, "which would appear incredible, were we not to mention, that this beautiful tree is at least forty feet high, throwing out innumerable branches, some of which, falling down on all sides, form a pyramid of verdure."

The Rev. Lansdown Guilding, who wrote an account of the Botanic Garden in the Island of St. Vincent, says, "that the tree is covered with its lovely blossoms, the greater part of which prove abortive, and falling to the ground, are collected and dried for sale. The berries which remain on the tree, gradually enlarge their calyx and develop the seed, and are gathered under the trees about July, having turned to a blackish purple, and lost all their value as a spice. The seeds require to be set out immediately and planted near the surface, as they vegetate rapidly. The young plants are tender, and should be placed, if possible, where it is intended they should remain.

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

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

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

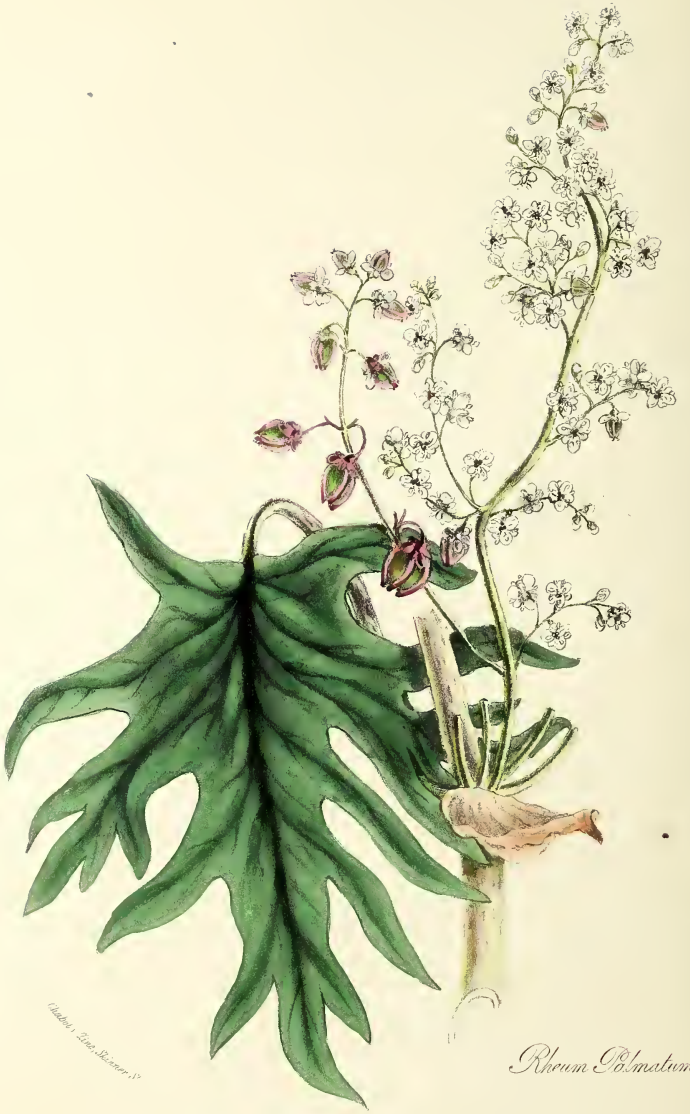
Cloves should be chosen large-sized, perfect in all parts, heavy, of a fine fragrant smell, and hot aromatic taste, so as almost to inflame the throat; the colour should be dark-brown, almost approaching to black, and when handled should leave an oily moisture on the fingers. When *fresh gathered*, cloves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

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

Medical Properties and Uses.—Cloves are generally conceded to be the most stimulating of aromatics, and are chiefly employed to impart a pleasant flavour, or to correct the irritative properties of drastic medicines. The essential oil is sometimes added to extracts for the same purposes, and is a popular remedy for tooth-ache. The infusion of cloves is a warm and grateful stomachic, and is advantageously employed to relieve the sense of coldness in the stomach, which attends some forms of dyspepsia, especially when arising from the abuse of ardent spirits, or chronic gout. The Dutch join it with cinchona and supertartrate of potass, in obstinate agues. Twenty cloves are added in powder to half an ounce of each of the other ingredients, and half a drachm is given every third or fourth hour. In dyspepsia, and as a vehicle for other medicines, ʒij of cloves are infused in half a pint of boiling water, and administered in the dose of an ounce and a half, or two ounces. The essential oil is made into an agreeable draught by diffusing it in water, with mucilage; and an aromatic syrup is sometimes made from the clove, and coloured with cochineal. Cloves are used in their native climate, and in almost every part of the civilized world, as an article of luxury, communicating a pleasant flavour to preserved fruit, sauces, ragouts, and liqueurs. They are likewise employed by the perfumer.

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

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



Rheum Palmatum.

RHEUM PALMATUM.—PALMATED RHUBARB.

Class IX. ENNEANDRIA.—Order III. TRIGYNIA.

Natural Order, POLYGONEÆ.—THE BUCK-WHEAT TRIBE.

The palmated rhubarb is a native of Russia, and some parts of Asia, whence the dried root is imported into this country for medicinal purposes. Several species, however, are known to furnish the drug of commerce. These grow chiefly on the declivities of the chain of mountains which stretches from the Chinese town Sini, to the lake Kokonor, near Thibet. The soil here is light and sandy, and the Bucharians assert that the best grows in the shade, on the southern side of the mountains. Linnæus supposed the generic name *rheum*, to be derived from ῥεω, to flow as expressive of its action on the liver and intestinal canal. The old name *rha*, which is still retained in composition, to designate the species *rha*-ponticum, and *rha*-barbarum, of the latter of which, indeed, the common name *rhubarb* is a corruption, was given to the plant from its being at first procured only from the banks of the *Rha*, or Volga. Ammianus Marcellinus confirms this opinion, for he says, "The *Rha* is a river, on the border of which grows a root, which bears its name, and is much renowned in medicine. *(Loudon's Encyc.)*

The root of the palmate species is large, thick, oval, branched, brown externally, and of a deep yellow colour within. The stem is erect, round, hollow, jointed, branched at top, and rises to the height of six or eight feet. The lower leaves are very large, palmated, acuminate, somewhat rugged, and stand upon long-channelled smooth petioles, grooved above and rounded at the edge with ferruginous dots; those of the stem are placed close to the stalks, and become gradually smaller towards the summit. The flowers, which appear in May and June, are small and numerous, surrounding the stem, and collected at the extremity of the branches, forming a sort of spike. The perianth is divided into six obtuse segments; the filaments are nine, the length of the sepals, and supporting oblong anthers; the style is short, with three reflected stigmas. The ovary becomes a triangular, pointed nut, with membranaceous margins.

The common Rhubarb (Rheum *Rhaponticum*) was first cultivated by Mr. John Parkinson, in 1629, the seeds of which were sent to him by Dr. Lister, one of the king's physicians. On making trial of the roots, they were found very inferior in power to those of the Rhubarb of commerce. In 1759, Dr. Boerhaave procured the seeds of Rheum *undulatum*, which is a native of China and Siberia. It was cultivated by Mr. Miller, but not very generally received as the true Rhubarb; which induced Boerhaave to procure from a merchant the seeds of the plants which produced the roots that he annually sold, and were admitted at St. Petersburgh to be the genuine medicinal Rhubarb. These seeds were soon propagated, and were discovered to produce two distinct species, namely, the Rheum *undulatum*, referred to above, and the Rheum *palmatum*, which has for some time been supposed to be the true plant, not only by botanists, but by the acknowledged authorities in the Pharmacopœias of London and Edinburgh; though the Dublin college retain the Rheum *undulatum*. The seeds of Rheum *palmatum* were first introduced into Britain in 1762, by Dr. Mounsey, who sent them from Russia; both Professor Martyn and Dr. Hope cultivated them at the same time, the former at Cambridge, and the latter at Edinburgh. It appears, however, that we are indebted to several species of Rheum for our valuable medicine, as Georgi relates that a Cossack pointed out the Rheum *undulatum* to him as the true Rhubarb; while Prof. Pallas states that in Bukharia, the *palmated* sort seems to be unknown; and that as far as he could collect from description, the species they consider as the true one is the *compactum*, the seeds of which, Mr. Miller informs us, were sent to him from St. Petersburgh, as the true Tartarian Rhubarb. The Chinese Rhubarb, called by the natives Ta Hwangor Hai-houng is cultivated chiefly in the province of Cher-see.

For the following remarks on the Rhubarb of commerce, we are indebted to an interesting paper published in the Edinburgh Philosophical Journal, by Mr. David Don, Professor of Botany, at King's College, London, &c. "Mr. Sievers, an enterprising assistant of Professor Pallas, and well known by his interesting Letters on Siberia, published in the *Nordische Beyträge*, was sent by the Empress Catharine II., purposely to try to obtain the true Rhubarb plant from its native country; and although, after travelling for seven

years in the countries adjacent to that in which it is found, he was unable to effect the object of his mission, yet he obtained sufficient information to convince him that the plant was then unknown to botanists. But it was reserved for Dr. Wallich, the zealous superintendent of the Calcutta Botanic Garden, to set this long agitated question at rest, by the transmission of seeds and dried specimens of the true Rhubarb plant to Europe. Last spring, Mr. Colebrooke received a quantity of the ripe seeds from Dr. Wallich, and presented a portion of them to Mr. Lambert, who has been so fortunate as to raise a number of plants of this valuable vegetable. The seeds were sown in pots, and, by the aid of artificial heat, soon vegetated. The young seedlings were transplanted into several pots filled with rich earth, and the pots were gradually changed as the plants increased in size. By this treatment, as might well be imagined, the young plants grew vigorously, and, at the end of autumn, the leaves were from fifteen inches to a foot in breadth, and the footstalks nine inches long, with half an inch in diameter. The plant, on examination, proved to be identical with my Rheum *australe*, from Gosaingsthan, in the Himalaya Alps. I find Dr. Wallich calls it Rheum *Emodi*, a name which I should certainly have adopted, had I been aware of it before the publication of my work. The whole plant is thickly beset with numerous small, bristle-shaped, cartilaginous points, which give it a rough feel. The leaves, are of a dull green, and the foot-stalks are red, and deeply furrowed. The native samples I have seen appear to be smaller in all their parts, and the leaves, although flowering specimens, frequently not more than three or four inches broad; the footstalks four inches long, and slender, and the flowering stem not above two feet high. It is curious to observe how well this description accords with what Sievers has given us. The Rheum *australe* appears to be peculiar to the great table lands of central Asia, between the latitudes of 31° and 40°, where it is found to flourish at an elevation of 11,000 feet above the level of the sea; and there is little doubt, therefore, of its proving perfectly hardy in our own country. Large quantities of the roots are annually collected for exportation in the Chinese provinces within the lofty range of the Himalaya. The best is that which comes by way of Russia, as greater care is taken in the selection; and on its arrival at Kiachta, within the Russian frontiers, the roots are all carefully examined, and the damaged pieces destroyed. This is the fine rhubarb of the shops, called improperly Turkey Rhubarb. We have yet to regret the want of much interesting information respecting the mode of collecting and preparing the roots, and other details interesting in a commercial point of view. The unfortunate fate of Mr. Moorcroft, whose zeal and multifarious knowledge well fitted him for a scientific traveller, has deprived us of much valuable information on this as well as on many other subjects."

Culture.—Since the introduction of Rheum *palmatum*, it has been largely cultivated in this country; and we are informed by the best authority, that the London market is principally supplied from Banbury. Fine specimens are worth about six shillings per pound, and resemble Turkey rhubarb in their appearance more than they do East Indian; although it is for the latter that they are principally substituted. The article sold at the herb shops under the designation, "English Rhubarb," is the produce of the R. *undulatum;* the leaf-stalks of which are used for tarts. It may be bought for nine-pence per pound, and from its want of power has caused undeserved reproach to be cast on the proper cultivated sort.

Twenty pounds of English Rhubarb,
Seven pounds of East India,
Three pounds of Turkey,

ground together, are the proportion employed by one of the most fashionable druggists at the west end of the town, to form a fine looking article, denominated, and sold as, "Fine Turkey Rhubarb." Indeed, so strong is prejudice, that we have it from very good authority, that perfectly unadulterated Turkey Rhubarb, procured from Apothecaries Hall, has been rejected as bad, when attempted to be vended in a retail shop.

The Society for the Encouragement of Arts, Manufactures, and Commerce, exerted itself for many years to promote the culture of Rhubarb in this country; and medals and other rewards were voted to Sir A. Dick, Mr. Jarman, Mr. R. Davis, Jun. of Minehead, Mr. Ball, of Williton, Mr. Jones, late of Fish Street Hill, &c.

Mr. Davis recommends the seeds to be sown in a very gentle hot-bed, in March, and when the roots are about the size of a crow's quill, they should be drawn up carefully to preserve the taproot, and planted in a fine rich earth in a deep soil: if the weather should prove dry, they must be watered. When the plants are once in a growing state, all farther care and trouble are at an end, but that of keeping them free from weeds. The distance of the plants should be eight feet; and *as they disappear above seven months in*

the year, the ground may be usefully employed in many articles of gardening, from the middle of August to the beginning of April.

The seeds, however, do not require a hot-bed to make them vegetate; but if sown in the natural ground during the spring, when the weather is open, soon come up, and thrive fast. The plant delights most in a rich, light, deep soil, and warm exposure, but will thrive almost in any situation.

Mr. Jones says, that "In the culture of rhubarb, the whole difficulty consists in bringing the plants through their first season; if the weather be hot and sultry, they must be shaded, and at all events must be continually watered. For transplanting, a wet or cloudy day should be preferred; and if the weather should continue for two or three days successively, not more than four or five in a hundred will probably be lost. In a month the roots will have made fresh shoots, and new leaves will have succeeded the former, which commonly, notwithstanding all our care, will wither away. The plants may now remain till the ensuing spring, or if the summer be favourable, and the land intended for the plantation be well trenched three feet deep, it may be completed without delay. It is a good way to sow the ground with carrots; the surface by this means being preserved from weeds, and rendered finer by repeated hoeings, and the bottom kept light and open. At different periods during the summer, when the plants are of a proper size, and the weather is cloudy or showery, with a transplanter or circular spade, remove them with a ball of earth adhering, at the prescribed distances, into the midst of the carrots, destroying such as might obstruct the growth of the rhubarb; and if the weather should prove unusually hot, the foliage of the carrots will preserve the young plants from the sun till they have acquired a sufficient growth; after this it remains only to keep the plantation clear, and the trenches open."

The indispensable points are the depth and quality of the soil, which should be light, loamy, and rich, but not too much so, lest the roots should be too fibrous: it can scarcely be too dry, for more evil is to be expected from a superabundancy of moisture, than from any actual want of it. A declivity is very eligible for the plantation. When a plantation does not possess this natural advantage, narrow beds and deepened trenches are among the artificial means that should be adopted; but most situations will require some care to prevent the ill effects of water remaining on the crowns of the plants; therefore, when the seed-stalks are cut off, which ought always to be done on the withering of the radical leaves, they should be covered with mould in the form of a hillock. This will answer two good purposes, that of throwing off the rain, and keeping open the trenches, by taking the earth from them."

The Chinese get up their rhubarb in winter. Pallas says that the Tartars take up theirs in April and May; but in Bell's account, this is said to be done in autumn. Forster, in his History of voyages in the North, affirms, that the roots are dug up in winter, because they then contain the entire juice and virtue of the plant; those that are taken up in summer, being of a light spongy texture, and unfit for use. We should think, that in this country, February would be the month most fit for digging up the roots. The greatest difficulty appears to be in drying, and preserving them.

In Tartary, being thoroughly cleansed, and the smaller branches cut off, they are cut transversely into pieces of a moderate size; these are placed on long tables or boards, and turned three or four times a day, that the yellow viscid juice may incorporate with the substance of the root. If this juice be suffered to run out, the roots become light and unserviceable; and if they be not cut within five or six days after they are dug up, they become soft, and decay rapidly. Four or five days after they are cut, holes are made through them, and they are hung up to dry, exposed to the air and wind, but sheltered from the sun. Thus, in about two months, the roots are completely dried. The loss of weight is very considerable: seven loads of green roots yielding only one small horse-load of perfectly dry rhubarb.

The Chinese method is somewhat different. They skin the roots, cut them into slices, and dry them on stone slabs, under which large fires are kindled; but, as this process is not sufficient to dry them perfectly, they make a hole through them and suspend them on strings; some say exposed to the sun, while Kochin asserts that they are hung in the shade. Were we to cultivate rhubarb in this country, we should take the same preliminary steps that are practised by the Tartars, and afterwards dry the pieces in a malt-kiln, where they might be hung on strings without interfering with the barley.

From experiments made at the Bath hospital, it appears that the purgative qualities of English are scarcely so strong as Turkey or East India rhubarb, but the difference is not great. And from numerous

trials made by Dr. Parry, it appears that one of the specimens of English rhubarb was fully equal in its effects to the Turkey.

Upon the whole, if English rhubarb should be allowed to be inferior to the foreign, which is perhaps doubtful, it appears probable, that this inferiority is owing only to such circumstances as attention and industry may obviate; and that this might be done in a great measure by attending to the age of the plant when taken up, to the root being cut transversely, rasped on the outside, having the sappy parts cut out, and being quickly dried. The best specimens of the drug have generally been allowed to grow six or seven years; the roots are then very large, weighing from thirty to fifty pounds.

When it is considered that the duty on East Indian rhubarb is 2s. 6d. per pound, and that about £200,000 is paid annually for what is imported into this country, the subject is one of considerable importance, and arrested the attention of the late Mr. Salisbury of the Fulham Road; whose zeal for the improvement of domestic economy, particularly as applicable to Ireland, is well known to the philanthropic part of the community.

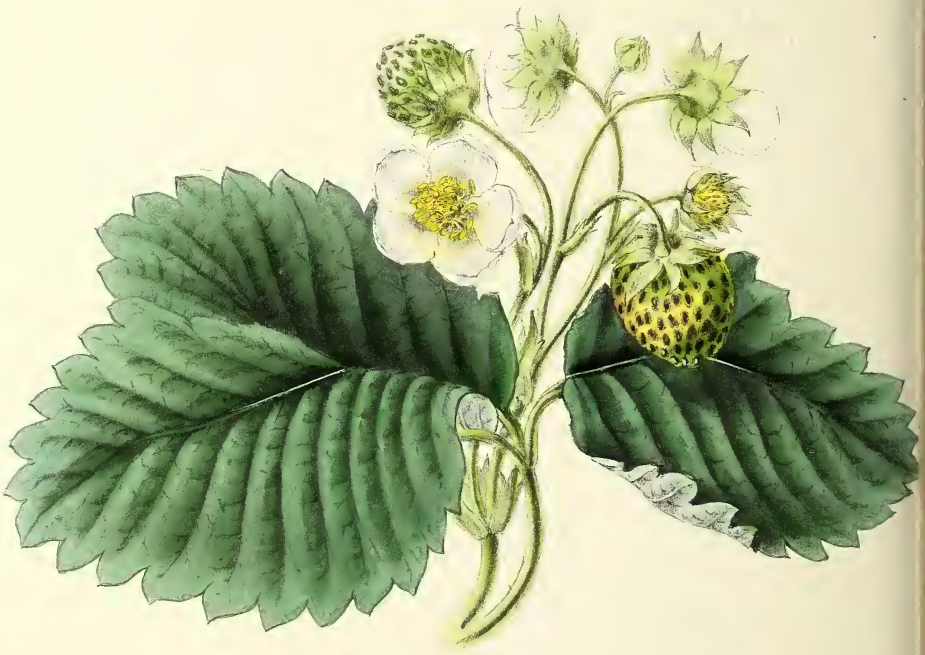
We have been almost wholly indebted for our materials on the cultivation of rhubarb, to an able article in Miller's Gardener's Dictionary, which was written by the late Professor Martyn; and those who are desirous to glean more information, may consult that work with pleasure and advantage.

Qualities and Chemical Properties—The best rhubarb, termed Turkey, or Russian, is in small pieces, with a hole in the middle, made in the recent root for the purpose of drying it. The colour is a lively yellow, streaked white and red. Its texture is dense, and its powder a bright yellow. In selecting rhubarb, the pieces should be broken, and those which are of a bad colour, or exhibit appearances of decay, should be rejected. The smell of rhubarb is somewhat aromatic, and it has a nauseous, bitter, slightly astringent taste.

"Another kind, imported from China, is known by the name of East Indian rhubarb; it is in larger masses, more compact and hard, heavier, less friable, and less fine in the grain than the other, and having less of an aromatic flavour."* It is said by Dr. Kelman, to be the produce of the same plant, but that it is prepared with less care.

Medical Properties and Uses.—The medicinal properties of this valuable root are so well known, that it appears almost a work of supererogation to mention them. It is in common use as a stomachic or cathartic, according to the dose in which it is administered. As a cathartic, from one scruple to half a drachm is required for a dose: but a few grains are sufficient to excite the action of the stomach and intestines, and are often employed, when it is desirable that the food should be assisted to pass quickly from the former, or when we merely wish to increase the natural action of the latter. In these small doses, it will be found useful in hypochrondriasis, jaundice, and dyspepsia; as it obviates costiveness, and by its bitter principle has a tendency to restore the tone of the digestive organs. By some it is considered to have an astringent effect, after its operation as a purgative has ceased: it is therefore recommended to be exhibited in diarrhœa; and is especially adapted for the bowel diseases of infants. It may be advantageously combined with sulphate of potash for children, or with any other of the neutral salts; and to cover its nauseous flavour, it is usual to prescribe with it a few grains of powdered cinnamon, or some aromatic water. It is also an excellent adjunct to neutral salts and calomel, rendering their operation more mild. Combined with the extract of chamomile, or gentian, a useful tonic pill is formed, to which may be added preparations of soda, when antacids are required. The tincture of rhubarb is an excellent stomachic, given with some bitter infusion; but the vulgar practice of taking it for pains in the bowels, too often increases inflammation when it exists. We had, however, ourselves, says Mr. Burnett, many years previously used the petioles of both species, which were cultivated in our garden at Laleham, and found that if grown in a damp shady soil, they were both equally palatable. But we are bound to state, that a friend of ours, whose palate is in good order, and whose botanical knowledge is very great, adopted the same plan without becoming a convert to its propriety. He declares that the astringency was so powerful, that neither he nor his family could eat it; which, if a calculation be not made of differences produced by the effects of soil, only proves the truth of the old adage: "De gustibus non est disputandum."

* Murray's *Materia Medica*, vol. i. p. 361.



Fragaria Collina

FRAGARIA COLLINA.—THE ALPINE STRAWBERRY.

Class XII. ICOSANDRIA.—Order III. POLYGYNIA.

Natural Order, ROSACEÆ.——THE ROSE TRIBE.

Stoloniferous leaflets plicate, thin, silky above, pilose beneath, native of Switzerland and Germany. Flowers white. Fruit green. Perhaps only a variety of Fragaria vesca.

The English name strawberry, is believed by some persons to have reference to an old custom lately re-introduced, of putting straw underneath the plant to prevent the fruit being soiled; but it is more probably a corruption of stray-berry, from the trailing or wandering of its runners which travel to great distances from the parent plants, and establish colonies all around. The word is written strawberry by John Lydgate, who died in 1483, in his poem called "London Lyckpenny."

Strawberries have long been cultivated to a great extent in the neighbourhood of London, and even in what is now the heart of the metropolis. The fact has been mentioned by Hollinshed, and dramatized by Shakspeare, that Glo'ster, when contemplating the death of Hastings, asked the Bishop of Ely for Strawberries:

"My lord of Ely, when I was last in Holborn,
I saw good strawberries in your garden there."

"The Alpine Strawberry," says Mr. Keen of Isleworth, "must always be raised from seed, which should be sown in a bed of rich earth in spring. When the plants are of a proper size, which will be in July or August, I plant them in rows at the back of hedges, or walls, in a rich or in a very moist soil. The rows should be two feet apart, and the distance from plant to plant in the rows twelve inches. My Alpines, thus managed, bear most abundantly, so much so that in gathering them there is not room for the women to set their feet without destroying many. The Alpines differ from all other strawberries in quickness of bearing, for no other sort, sown in the spring of the year, will produce fruit under two years, whereas this yields a crop at the end of one year. Its duration with me seldom exceeds two years."

Don's System of Gardening and Botany.

A great variety of strawberries is now cultivated, and there has been much confusion and dispute concerning the species to which these varieties should be referred. Generally speaking, however, it may be said that *Fragaria vesca* affords the scarlet and wood strawberries; *F. collina* the European pine, or alpine strawberries; *F. elatior* the hautbois; *F. virginiana* the exotic scarlets; *F. grandiflora* the exotic pines; and *F. chilensis* the chili strawberries. How far the several species of Fragaria enumerated by botanists, may, in reality, be reducable to two or three, is not yet determined.

An account of the strawberries which have been reared in the gardens of the Horticultural Society has been published by Mr. J. Barnet in the sixth volume of the transactions of the Society. He divides them into—1. Scarlet strawberries.—2. Black strawberries.—3. Pines.—4. The Chili strawberries.—5. The Hautbois.—6. Green strawberries.—7. Alpine and wood strawberries. We subjoin an account of some of the more remarkable varieties, for which we are indebted to Mr. Barnet's paper.

The Old Scarlet Strawberry.—This which has been an inhabitant of our gardens nearly, if not fully, two hundred years, was doubtless an original introduction from North America. It is singular that a kind of so much excellence, as to be at present scarcely surpassed by an of its class, should have been the first known. It continued in cultivation considerably more than half of the period of its existence as a garden fruit, without any variety being produced of it either by seed or by importation from America.

This Strawberry has long continued to hold its station in public estimation; it is deservedly a favourite, being considered by many the best and most useful variety, and it will probably not be put aside by any of the new productions. It has peculiar merit with the confectioners from imparting to cream, either for ice or other purposes, its flavour, which possessing much acidity, is brought out by sugar. It is equally good for water ices, and makes excellent preserves, though its colour in jam is inferior to that of some others. There are now not less than twenty-six varieties of the scarlet strawberry cultivated in England.

Wilmot's late Scarlet Strawberry.—Was raised by Mr. John Wilmot, of Isleworth, about the year 1815, specimens of the fruit were first exhibited to the Horticultural Society in 1817.

It is a good bearer, ripening late enough to succeed the old scarlet, and producing its berries in succession so as to afford a continual supply. The fruit is very large, bluntly conical, irregularly shaped, shining light red; the seeds are small, deeply imbedded; the intervals ridged; the flesh white; hollow in the centre; the flavour moderate.

The Old Black Strawberry, has been long known but is now neglected in consequence of its unproductiveness. The Downton strawberry which was raised from a seed of Knight's large scarlet, impregnated by the pollen of the old black strawberry, is now in very general cultivation, and the fruit has a very fine flavour.

The Pine Strawberry, presents numerous varieties, of which the *Old Pine*, long an inhabitant of our gardens, is the best. Indeed although its flavour is less powerful than that of the old black, and less aromatic than that of the hautbois, it is on the whole, the finest of all strawberries. A singular variety of this, produced by Mr. J. Wilmot in 1820, is named the *Black Prince Strawberry*. The dark and polished surface of its fruit gives it an appearance entirely unlike any other strawberry yet known.

The Chili Strawberry, originally a native of South America, has been cultivated in Europe for more than a century. The true Chili strawberry has not much to recommend it, but the yellow variety of it grown by Mr. Williams, and that called Wilmot's superb strawberry, show that very fine fruit may be expected from this stock.

Wilmot's Superb Strawberry, was raised by Mr. John Wilmot of Isleworth, in 1821, from the seed of the true Chili, and the pollen of the Roseberry. It appears to be an abundant bearer, ripening late in the season, after the Old Pine, and in succession, so as to afford a lengthened supply. The first fruits are very large, irregularly rounded, ovate or flat turned, sometimes growing of a cock's comb shape; the other berries are invariably round, all are hairy, pale scarlet, appearing as if polished, the seeds projecting, brown; the flesh very firm, pale scarlet next the outside, within whitish, with a small hollow in the centre, and a core. Flavour very good, buttery and rich mixed with acid. This is a Strawberry of good promise; the fruit is very beautiful and of extraordinary size. One that Mr. Barnet had an opportunity of examining measured six inches and a half in circumference.

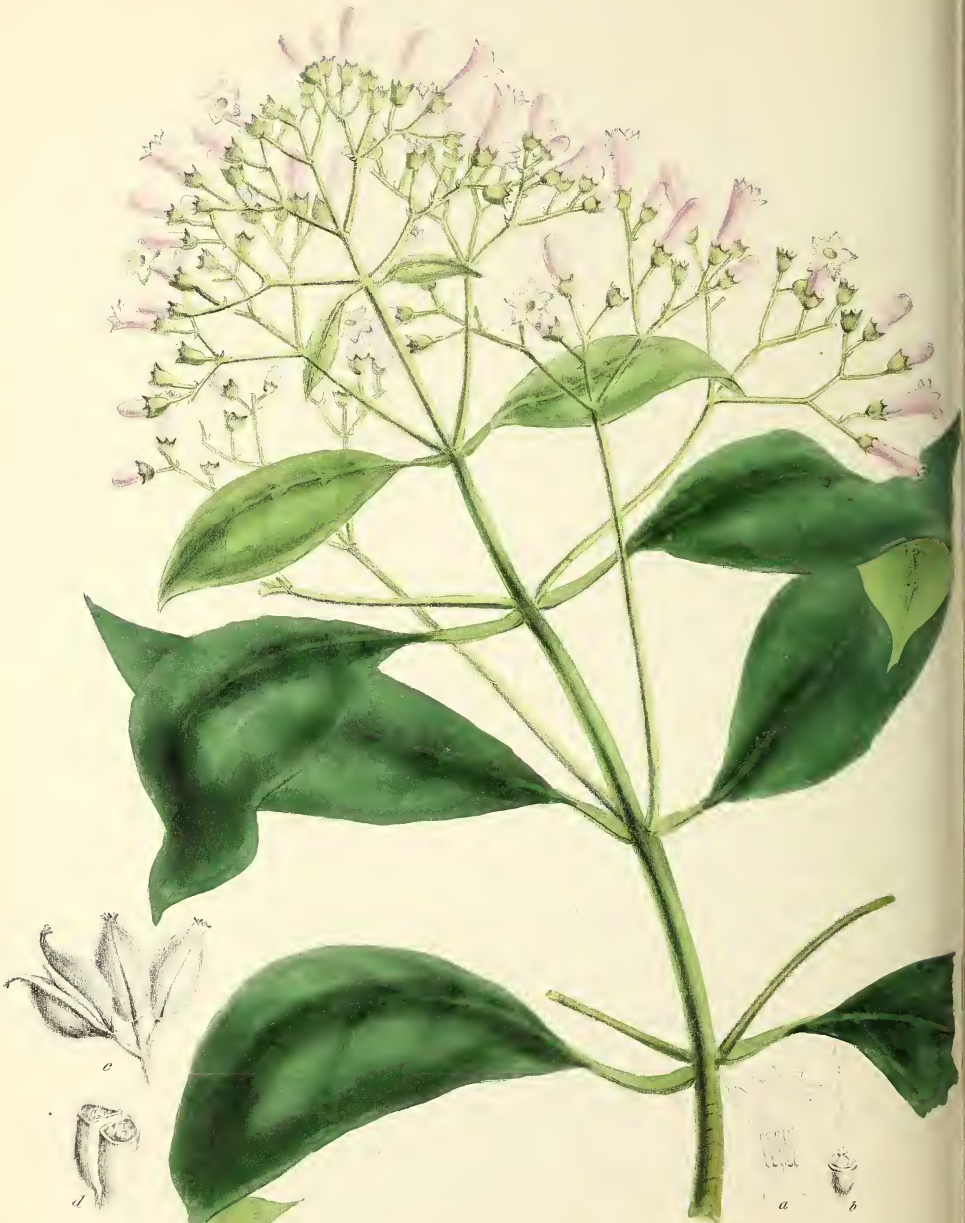
The Hautbois Strawberry, has about five varieties, of which that styled the *prolific*, or *conical*, is the most esteemed.

The *Fragariæ*, are subject to *Uredo fragariæ*, "in roundish dots, on the under side the leaves; bright yellow, changing to brown."—Besides the discolouration on either surface of the leaves, principally occasioned by fungi or insects, spots are often apparent, generally of a dark hue, and not unfrequently observable on different kinds of strawberry plants, for which no such origin can be detected, a probable cause of these appearances was many years ago suggested to me by my late very ingenious and learned friend Professor Robinson, who conjectured that they were in most instances produced by the power of the sun acting upon globular drops of dew, or perhaps sometimes of rain, as through a burning lens, the rays becoming thus so concentrated as to incinerate, more or less, the portion affected. In a recent publication we observe something like the same hypothesis propounded.—Dr. Mason Good, in his "Book of Nature," remarks, "among animals, some are locomotive or migratory, and others stationary or permanent, (including the zoophitic order,) though the greater number may be migratory. Plants are, on the contrary, for the most part stationary, yet many are fairly entitled to be regarded as locomotive or migratory, of which the genus Fragaria affords examples; as do the palmate, the testicular, and the premorse rooted tribes offer similar proofs. Many of these grow from a new bulb or knob, or radicle, while the old root dies away; we may therefore conclude that the vital principle of the plant has quitted an old dilapidated, and ruinous mansion, to take possession of a new one." And thus several of the Orchidiæ, or *Scabiosa succisa*, may sometimes be traced in their change of position across half an acre.

Strawberries, either eaten alone, or with cream and sugar, are universally esteemed as a delicious fruit. They are grateful, cooling, sub-acid, juicy, and have a delightful smell. Taken in large quantities they seldom disagree.

Strawberries are said to promote perspiration, and dissolve the tartarous incrustations upon the teeth. they were formerly recommended in gouty and calculous affections; and Hoffman says, he has known consumptive patients cured by them.

The bark of the root is astringent. Sheep and goats eat it. Cows are not fond of it. Horses and swine refuse it.



Cinchona condaminea

CINCHONA CONDAMINEA.—LAUREL-LEAVED CINCHONA.

Class V. PENTANDRIA.—Order I. MONOGYNIA.

Natural Order, CINCHONACEÆ.—THE CINCHONA TRIBE.

Fig. (*a*) exhibits a flower cut open; (*b*) germen and pistil; (*c*) capsule; (*d*) section of the same.

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 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, ereet, 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 foot-stalks, 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 pedicles, 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 obscurely five-angled, silky, frequently of a rose-colour; the limb wheel-shaped, with linear-lanceolate segments, much shorter than the tube, white, and woolly above. The anthers are twice the length of the free portion of the filaments. The germen is globular, with an erect style, and bifid stigma. The capsule is ovate, woody, striated longitudinally, crowned with the calycinal teeth, two-celled, many-seeded, oppositely twice furrowed, and opening from the base to the apex with two valves.

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 the town of Quito,) that even the vultures, Vultur *aura*, in their neighbourhood, were subject to that disorder."

"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. In Loxa, an old tradition is current, that 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."

Cinchona bark is stripped from the trunk and branches in the dry season, from September to November; it is dried by exposure to the sun, and after being imported into Europe is sorted for sale. It is brought to this country in chests, each of which contains from one hundred to two hundred pounds weight of bark, mixed with dust, and other impurities.

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.

From the experiments of Vauquelin, Fabroni, and others, it appears that the active principles of cinchonine, 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 MM. 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 cinchonine, kinate of quinine, reddish fatty matter, red cinchonine, 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, *cinchonine* 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. 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.

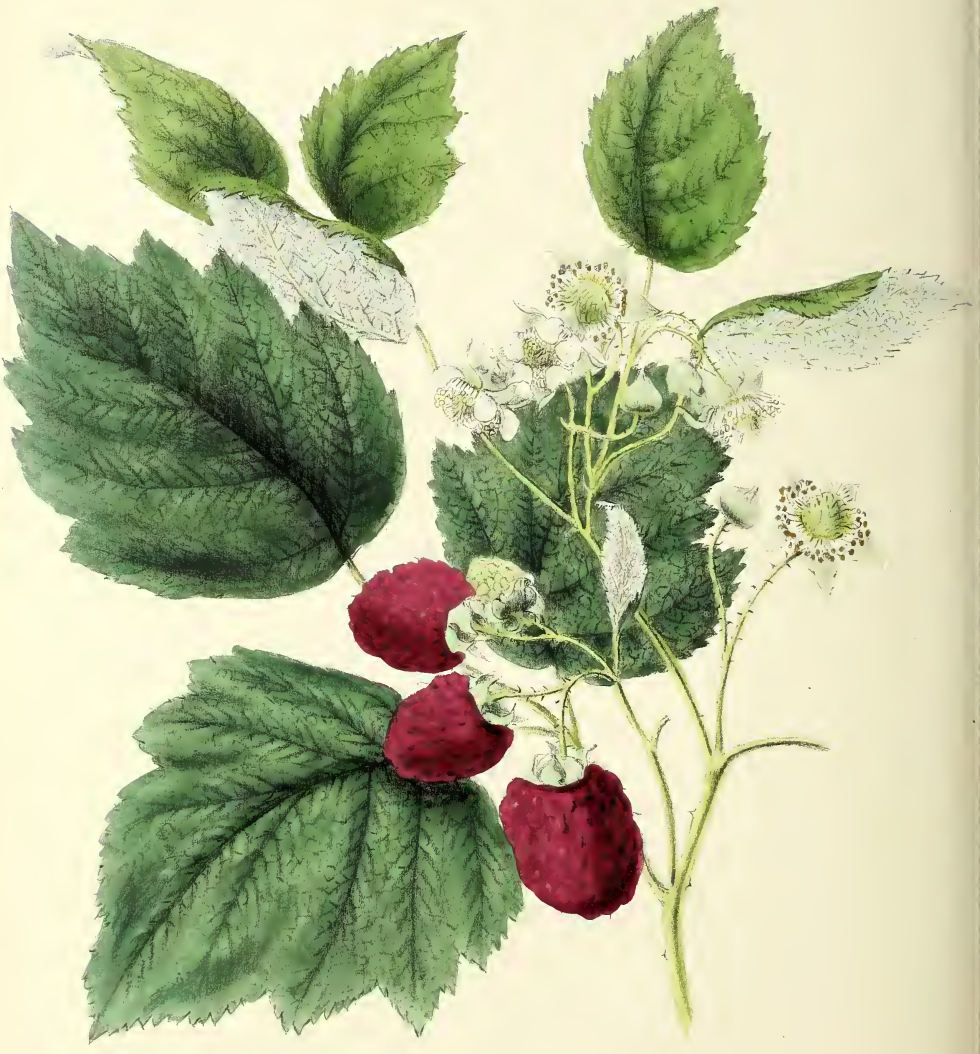
The sulphate of quinine is frequently adulterated with starch, pipe-clay, and various other substances. To determine its purity, the simple process of heating it is sufficient; if it evaporate entirely, without charring and melting, it is pure; but if it should turn black, or smell sweetish, it is probable 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. It has superseded in a great measure the Peruvian bark, and is now extensively used 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 lividus, 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.

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.



Rubus Idæus

RUBUS IDÆUS.—THE COMMON RASPBERRY.

Class XII. ICOSANDRIA.—Order III. POLYGYNIA.

Natural Order. ROSACEÆ.——THE ROSE TRIBE.

The common raspberry has a creeping root with briennial stems, 3 feet, or 4 feet high, pinnate leaves, and small white flowers. The fruit of this species, in a wild state, is crimson, and consists of numerous juicy grains beset with the permanent styles and highly fragrant, with a very deliciously sweet, and yet slightly acid, flavour when eaten. It is a native of Europe, from Norway and Sweeden to Spain and Greece, in woods. It is found in Asia, on the Himalaya mountains, and in other places; in the north of Africa; according to Pursh, in America, in hedge-rows, from Canada to Pennsylvania, though it has probably been introduced into that country. It is found in every part of Great Britain, and in Ireland, in the agricultural and subalpine regions, and in woods and in moist wastes. Improved varieties of it have long been cultivated in gardens, for the fruit, which is delightfully fragrant, and grateful to the palate in itself, and is used in numerous culinary and confectionary articles as well as in liqueurs. In France, raspberries are very generally eaten at table, mixed with strawberries. A very refreshing summer drink is made of them, by simply bruising them in water, and adding sugar. They enter into the composition of different jellies, jams, ices, syrups and ratafias; and they are preserved either alone or along with currants. Infused in spirit, they communicate a most delicious perfume to it. Fermented, either alone or mixed with currants or cherries, they make a very strong and agreeable wine; from which a very powerful spirit can be distilled. Raspberry wine was formerly much used in Poland; the fruit being there abundant in the woods. In Russia, a mixture of raspberries and honey with water, fermented, makes a delicious hydromel.

Propagation and culture.—The raspberry requires a vegetable soil, rather moist, soft and not very deep, because most of the roots like those of all other plants that throw up numerous suckers, keep near the surface; and the situation should be shaded, rather than fully exposed to the meridian sun. In a wild state, it is almost always found more or less shaded by trees, but not under their drip; and in woods, the situation of which is rather low and moist, than hilly and rocky or dry. The roots belong to that description which is called travelling; that is, the suckers extend themselves all round the central plant, so as every year to come up in fresh soil. Hence, as Miller observes, a raspberry plantation requires to be renewed every five or six years. The raspberry, for this reason, has been considered as a good example of the doctrine of the excretion of plants first broached by Brugmann, afterwards explained in detail by De Candolle, and subsequently elucidated, by various experiments, by M. Macaire. The raspberry, in a wild state, is continually changing its situation; and in a state of culture, it requires to be frequently taken up, and replanted in a fresh soil.

All the varieties, says Mr. Don, will succeed in any common mould, trenched about two feet deep, and sufficiently manured; but the soil in which the *raspberry* bush prospers most, and bears the finest fruit is in a light rich loam. Allot the main crop a free exposure to the sun, that the berries may ripen in perfection. Be careful to favour the double bearers with a dry soil, and a sheltered sunny situation to give the second crop every aid in coming to maturity. When *raspberries* are cultivated on a large scale it is best to keep them in plantations by themselves. Set them in rows from 4 to 6 feet asunder, as the bushes are of the smaller or larger kinds, and by 3 or 4 feet in the row. Scattered bushes may either occupy a small row lengthwise along the back part of a border, or stand-stools, at 10 or 15 feet distance. Select sorts are frequently trained against walls, stakes, or espaliers from the most sunny to the most shady aspect, for early and late fruit of improved growth and flavour. Neill says, "the *raspberry* bush grows freely in any good garden soil; but it is the better for being slightly moist. Although the place be inclosed by trees, and even

shaded, the plant succeeds. In an enclosed, and well sheltered quarter, with rather a damp soil, containing a proportion of peat moss, we have seen very great crops of large and well flavoured berries produced; for example at Melville house, the seat of the Earl of Leven, in Fifeshire." Haynes also recommends well manured bog earth, and a situation naturally or artificially shaded.

Raspberry bushes are in their prime about the third or fourth year, and if well managed, continue in perfection 5 or 6 years; after which they are apt to decline in growth and the fruit to become small, so that a successive plantation should be provided in time. Select new plants from vigorous shoots, in full perfection as to bearing.

Keep them free from weeds during the summer by hoeing between the rows, at the same time loosen the earth about the plants: the plants if tolerably strong, will both yield a moderate crop the first season, and supply young stems for bearing in greater plenty and perfection the following season, and so from year to year this should be repeated. As the plant gets established, let all the straggling suckers between the rows, or from the extreme roots of single shoots, be cleared out by hoeing, or twisted off to admit the air and sun freely to the fruit. The fruit of the *raspberry* may be obtained of a very large size, other circumstances being favourable, by destroying the suckers; but in this way the plant being destroyed, a double plantation is wanted, the one to give only suckers, the other fruit.

"The fruit of the different varieties comes in from the end of June or July till October or later. As it ripens it should be timely gathered for immediate use, because when fully ripe it will not keep above two or three days before it moulds or becomes maggoty, and unfit to be used."—ABERCROMBIE.

Raspberries are dried in ovens for winter use. Raspberry vinegar is well known both in France and England, and independently of its agreeableness when mixed with water, as a summer drink, it is excellent as a febrifuge. In England, raspberries are principally used for making raspberry jam and raspberry vinegar; and for pies and puddings, in combination with currants and cherries. They are excellent eaten with milk or cream, with the addition of sugar, when fresh; and are easily preserved in jars or bottles, entire, with or without sugar, for winter use. They are reckoned very wholesome, and children are seldom, if ever, injured by eating them.

To make Raspberry wine, says John Farley, "You must with the back of a spoon, bruise the finest raspberries you can get, and strain them through a flannel bag into a stone jar. To each quart of juice put a pound of double refined sugar, then stir it well together, and cover it close. Let it stand three days, and then pour it off clear. To a quart of juice put two quarts of white wine, and then bottle it off. It will be fit for drinking in a week.

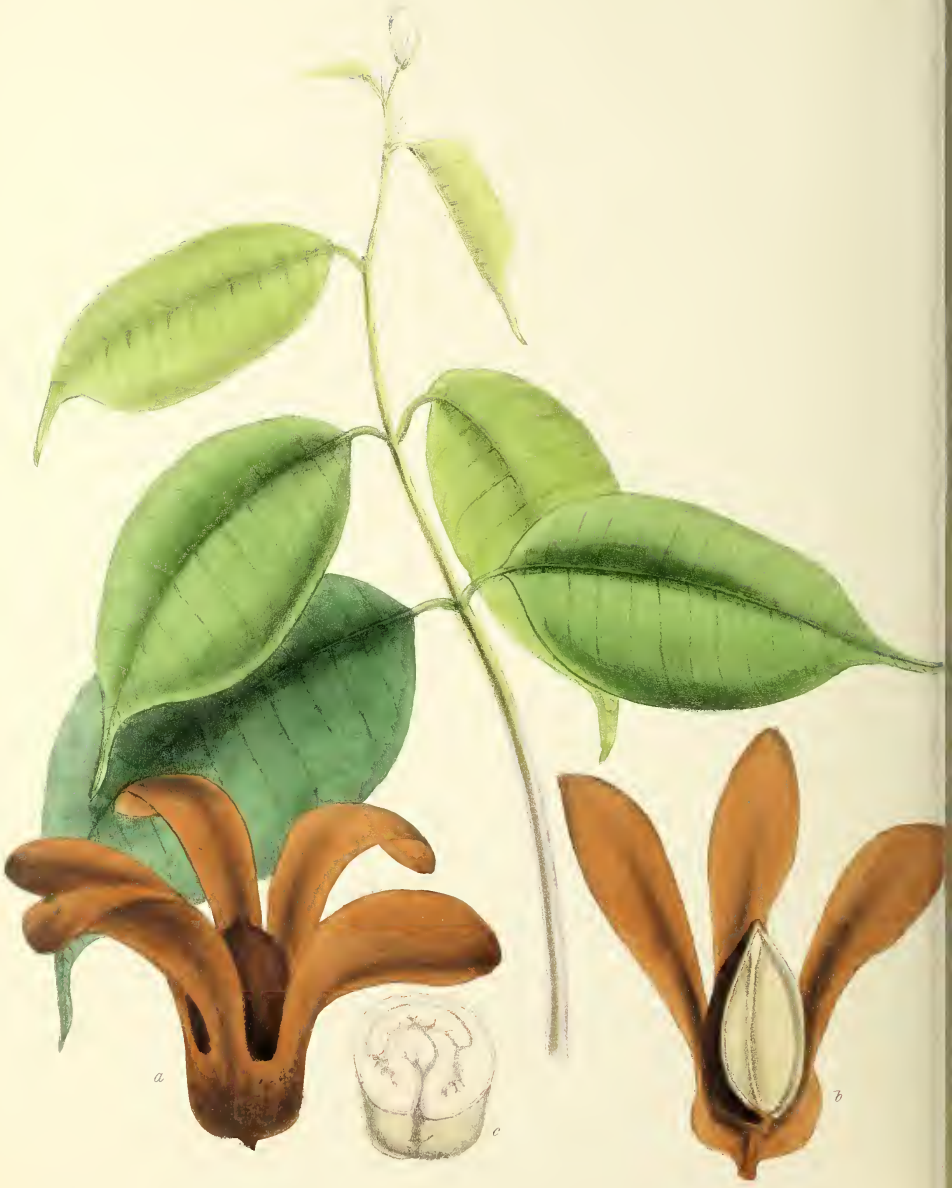
If an attempt be made to form wine from raspberries and sugar, a liquor will be produced with but little, if any, of the flavour of the fruit; but a small quantity of juice of raspberries added at the *decline* of the fermentation, or a little fresh fruit suspended in the cask at the same period, will be sufficient to communicate an excellent raspberry flavour.

"The roots of the raspberry plant are in demand by some French cooks; but we are uncertain to what use they are applied, probably in the dressing of game."

"The seeds of the raspberry are said to retain the vital principle for a very long period; and a plant in 1836, in the Horticultural Society's garden, was raised from seeds found in a barrow, or tumulus, in Wiltshire, opened in 1835; which, unless we can suppose the seeds to have been conveyed into the interior of the tumulus by insects or vermin, must have lain there many centuries."—*Loudon's Arboretum Britannicum.*

—Almighty Being,
Cause and support of all things!
————Can I view
These objects of my wonder—can I feel
These fine sensations—and not think of thee!

In the language of flowers, we perceive the Raspberry denotes remorse.



Dryobalanops Camphora

Chalot. Brux.

DRYOBALANOPS CAMPHORA.—CAMPHOR TREE OF SUMATRA.

Class XIII. POLYANDRIA.—Order I. MONOGYNIA.

Natural Order, DIPTEROCARPEÆ.—THE CAMPHOR TREE TRIBE.

(*a*) Capsule. (*b*) Section. (*c*) Section of the seed.

There are two species of trees from which the camphor of commerce is obtained. That with which Botanists have been longest acquainted is the Laurus *Camphora* of Linneus, a large forest tree, that grows wild in Japan. From the wood, root, and leaves of this tree, the camphor is extracted by distillation. It has been supposed, perhaps erroneously, that the greater part of this valuable drug imported from India, is exclusively the product of a tree belonging to a different genus, the Dryobalanops *camphora*. Kœmpfer, indeed, had long ago remarked, that the camphor which is found in a concrete state, occupying cavities and fissures in the trunk of a tree in the islands of Borneo and Sumatra, is not the Laurus *camphora;* but it is only within these thirty years that the discovery of the species which yields it, was made by Mr. H. T. Colebroke, who was enabled to determine the genus from the examination of some seeds sent by Mr. Prince, a resident at Tapanooly, to Calcutta. In Sumatra, the camphor trees are confined to the country of the Battas, which extends about a degree and a half immediately to the north of the equator; and they are found in Borneo in nearly the same parallel of latitude. This valuable tree is not known to exist in any other part of the world, and on this account, as well as the difficulty of obtaining its produce, the camphor it yields bears an exorbitant price. It appears to be little known in Europe; and is stated by Mr. Jack to be all carried to China, where it sells for twelve times as much as that of Japan.

The Dryobalanops *camphora* is found growing in great abundance in the forests on the north-western coast of Sumatra, especially in the vicinity of Tapanooly. It is a lofty tree, frequently attaining the height of ninety feet, with a trunk that measures six or seven feet in diameter. It is said to flower only once in three or four years. The trunk is arboreous, and covered with a brown bark. The leaves are opposite below, and alternate above, elliptical, obtusely acuminate, parallel, veined, entire, smooth, 3-7 inches long, one inch and a half broad, and supported on short petioles, with subulate, caducous, stipules, in pairs. The flowers, according to Mr. Jack, are terminal and axillary, forming a kind of panicle at the extremity of the branches. The calyx is monophyllous, with five linear-lanceolate spreading teeth. The corolla is 5-petalled, longer than the calyx; the petals ovate-lanceolate, and in some degree adnate, or connected together at the base. The stamens are numerous, and have their filaments united into a ring, in which particular it differs from the genera most nearly related to it. The anthers are nearly sessile on the tube of the filaments, connive into a conical head round the style, and terminate in membranous points. The germen is superior, ovate, with a slender filiform style, longer than the stamens, and crowned by a capitate stigma. The capsule is ovate, woody, fibrous, longitudinally furrowed, embraced at the base by the calycine hemispherical cup, and surrounded by its enlarged leaflets, which are converted into remote, foliaceous, spatulate, rigid, reflex wings; 1-celled, and 3-valved. The seed is solitary, thin, membranaceous, thickened along one side, and contained between the interior fold of the cotyledons.

The camphor is found, as already observed, in a solid state, occupying portions of about a foot, or a foot and a half, in the heart of the tree. The natives, in searching for the camphor, make a deep incision in the trunk, about fourteen or eighteen feet from the ground, with a billing or Malay axe; and when it is discovered, the tree is felled, and cut into junks of a fathom long, in order to allow of the extraction of the crystalline masses. There are a race of men, styled *Toongoo Nyr-Cappoor*, who pretend to have the power of distinguishing those trees in which the crypta are large and full, from those, the felling of which would be unprofitable toil. Many, however, are mutilated without avail, notwithstanding the pretensions of the seers, and sometimes the cavities are found with a pitch like matter, instead of camphor and fragrant oil. The same trees yield both the concrete substance and a liquid or oily matter, which has nearly the same

properties as the camphor, and is supposed to be the first stage of its formation. The product of a middling sized tree, is about eight China *catties*, or nearly eleven pounds, and of a large one, double that quantity. The Camphor thus found is called *Se Tantong*.

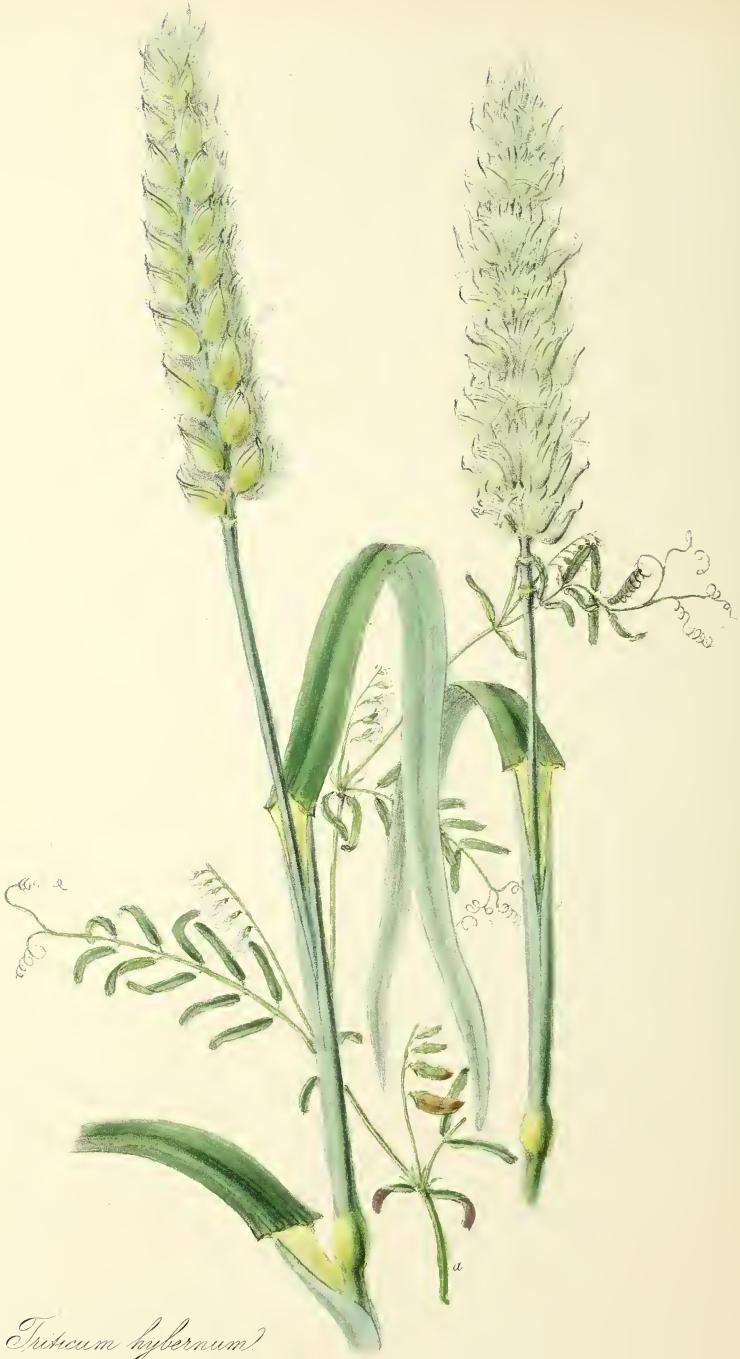
Qualities and Chemical Properties.—Camphor is imported into this country in chests and and casks, chiefly from Japan, in small granular, or friable masses, and is afterwards purified by sublimation, in low flat-bottomed glass vessels, placed in sand, for that purpose. It is usually obtained in large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

Camphor, or a substance analogous to it, exists in several other vegetables besides the Laurus and Dryobalanops; as mint, thyme, marjoram, and many other plants, and is held in solution by the essential oils obtained from them; Zea tells us that in South America he found a tree, from the bark of which camphor exudes in the form of tears.

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

Dose.—From gr. v. to ℈ j. diffused in almond emulsion.

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



Triticum hybernum

TRITICUM HYBERNUM.—WINTER OR COMMON WHEAT.

Class III. TRIANDRIA.—Order II. DIGYNIA.

Natural Order GRAMINEÆ.——THE GRASS TRIBE.

(*a*) Ervum Hirsutum.[a]

Culm jointed, three feet high; dark green smooth leaves; spikes long and close, the lower flowers imperfect; the calyx containing generally four flowers; valves of the corolla generally smooth, but in some of the varieties terminated by awns; nectaries small, fringed and silky. Its varieties are white and red lammas wheat, without awns; white and red bearded wheat. The corn, or grain-bearing plants, are styled the cerealia, from Ceres, the goddess of corn. That one, however, on which any people chiefly depend for their food is called *corn* by them; as *wheat* is in England, *oats* in the northern lowlands of Scotland, *rye* in the sandy districts on the southern shores of the Baltic sea, and *maize* throughout the United States of America. They are all made annuals, both in their stems and roots, the whole plant dying after the seed has been completely formed and ripened, and sometimes even before the latter process has fully taken place.

When the seed is perfectly ripe, the vessels separate, the point of separation speedily heals, the grain may then be easily threshed out from the chaff in which it had lain buried, and sometimes it sheds itself spontaneously.

The corculum, "little heart," or germ, contains a principle, which, if rightly managed, can produce, not only a plant of wheat, but plant after plant, until, in the course of a few harvests, its progeny would become capable of feeding a nation. Thus, notwithstanding the ravages of war, the vital principle of vegetation, destined for the chief support of the human race, has not been lost, but it has remained to man, like fire, which he alone has subjected to his use, to be called forth at his bidding, and to contribute to his support, comfort, and prosperity. One circumstance connected with the increase of the cereal grains is very singular. An insect deposits its eggs in the very core of the primary shoot of the wheat, so that it is completely destroyed by the larvæ or grubs; and did not the plant possess within itself the means of repairing the injury, the care and toil of the husbandman would be lost. But happening, as it does, in the spring, shoots immediately grow forth from the knots, the plant becomes more firmly rooted, and produces, probably a dozen stems and ears, where, but for the temporary mischief, it might have yielded only one. The inherent power of multiplication possessed by vegetables is indeed most extraordinary. On the 2nd of June, 1766, Mr. Miller, of Cambridge, sowed some grains of the common red wheat, and, on the 8th of August, a single plant was taken up, and divided into eighteen parts, and each part planted separately. A second division produced sixty-seven plants, and a third amounted to five hundred. They were then divided no farther; and some of them produced upwards of one hundred ears from a single root, many of which measured seven inches in length, and contained between sixty and seventy grains. The whole number of ears which, by this process, were produced from one grain of wheat, was twenty-one thousand one hundred and nine; which yielded three pecks and three quarters of clear corn; the weight of which was forty-seven pounds, seven ounces; and the whole number of grains was about five hundred and seventy-six thousand, eight hundred and forty; In this case, there was only one general division of the plants made in the spring; had a second taken place, Mr. Miller thinks the number of plants would have amounted to two thousand!

In the early books of Scripture, we often read of corn, and of Ruth gleaning with the maidens of Boaz, "unto the end of barley-harvest, and of wheat-harvest." Pliny says, that in the champaigne country about Byzacium in Africa, wheat had been known to yield a hundred and fifty fold. He mentions that a procurator-general of that province, under Augustus Cæsar, sent the emperor from thence a plant of wheat which had nearly four hundred straws springing from one grain, and meeting in one and the same root. Sicily is said to be the first country in Europe where grain was cultivated. Ceres was not only worshipped in that island, but is often represented on the ancient Sicilian coins; and garlands of ears were offered to her before they began to reap. At what period wheat was first cultivated in England is only matter of conjecture. Cæsar found corn growing on the coast, but of what kind we are not informed. Other seeds are dispersed through the earth by winds and currents, in the hairy coats of quadrupeds, and in the maws of birds. But the corn-plants are said, in common with many other important vegetable productions, to follow the course of man alone. Even hostile armies have been instruments of their diffusion. Cortez, the inhuman con-

[a] From the Celtic *erw*, a *ploughed field*, of which it is the pest; or, from *eruo*, Gr. *to pluck out*; as necessary to be eradicated from the growing corn; to separate the *tares* from the wheat.

This is a very troublesome weed in corn-fields; in wet seasons whole crops have been overpowered and wholly destroyed by it; hence it is sometimes called *Strangle Tare*. All sorts of cattle will eat it. The seeds when ground in flour affect it with a strong disagreeable flavour,

Dr. Withering observes, that the *Tine Tares (E. hirsutum,)* not only illustrate the old adage, that "ill weeds grow apace," but that they likewise increase by superabundant fertility; for it appears from experiment, that a single seed will, by the produce of one plant only, multiply itself a thousand fold in a very short time.

queror of Mexico, wrote from thence to the King of Spain, "I beseech your Majesty to give orders that no vessel sail for this country without a certain quantity of plants and grain." The foundation of the wheat-harvests of that country is said to have been three or four grains, which a slave of the conqueror accidentally in 1530, mixed with a quantity of rice. These he carefully preserved, and used so advantageously as to entitle him to public gratitude, but even his name is unknown; while the Spanish lady, Maria d'Escobar, who first imported the same blessing into Peru, has her name, and her distribution of the produce of successive harvests as seed among the farmers, celebrated in history. A chief, named Duaterra, was the first person who actually reared a crop of wheat in New Zealand. On leaving Port Jackson the second time, to return home, he took with him a quantity of it, and much surprised his acquaintances by informing them that this was the very substance of which the Europeans made biscuit, such as they had seen and eaten on board their ships. He gave a portion of it to several persons, all of whom put it into the ground, and it grew well; but, before it was well ripe, many of them were impatient for the produce; and, as they expected to find the grain at the roots of the stems, similar to their potatoes, they examined them, and, finding no wheat under the ground, all, except one, pulled it up, and burned it. The chiefs ridiculed Duaterra about the wheat; and all he urged would not convince them that wheat would make bread. His own crops, and that of his uncle, who had allowed the grain to remain, came, in time, to perfection, and were reaped and threshed; and, though the natives were much astonished to find that the grain was produced at the top and not at the bottom of the stem, yet still they could not be persuaded that bread could be made of it. A friend afterwards sent Duaterra a steel mill to grind his wheat, which he received with no little joy. He soon set to work before his countrymen, ground some wheat, and they danced and shouted with delight when they saw the meal. He afterwards made a cake, and baked it in a frying-pan, and gave it to the people to eat, which fully satisfied them of the truth of his assertions. The chiefs now begged more seed, which they sowed; and such of it as was attended to grew up as strong a crop as could be desired.

Thus, wheat as it is the plant most necessary to mankind, so it is the most general; and it ought not to be over-looked, that its presence in any region of the earth attests that man is there in an advanced state of civilization. In the sepulchres of the Egyptian kings, which were opened by the scientific men who accompanied the French army into Egypt, the common wheat was found in vessels so perfectly closed that the grains retained their form and colour; and thus, buried, as it had been, for several thousand years, it shows as clearly the civilization of that country as its temples now in ruins; because the corn-plants, such as they appear under cultivation, do not grow wild in any part of the earth.

Mr. Martin Farquher Tupper, the talented author of "Proverbial Philosophy" succeeded in raising grain from some ancient Egyptian seed presented to him by Mr. Pettigrew the distinguished Surgeon and Antiquary. "In 1838," says this gentleman, "Mr. Pettigrew, the well-known lecturer on Egyptian antiquities, gave me out of two small glasses in his own private museum, six grains of wheat, and as many of barley, furnishing me at the same time, with the following information as regards their history:—Sir Gardiner Wilkinson, during his recent travels in the Thebaid, opened an ancient tomb, (which had probably remained unvisited by man, during the greater part of 3,000 years,) and from some alabaster sepulchral vases therein, took with his own hands, a quantity of wheat and barley that had been there preserved. Portions of this grain, Sir G. Wilkinson had given to several of his antiquarian friends, and among them to Mr. Pettigrew, who made me a sharer in the venerable harvest. Until the spring of 1840, the twelve corns of which I so became possessed, remained among certain contemporary bronzes and images, in their separate paper box, but about that time, finding myself in the country, and much occupied in horticultural pursuits, I bethought myself of those ancient seeds, and resolved to try my fortune in rearing them. Now, the question being strictly a question of identity, and more or less involving personal character, I should, perhaps, be pardoned, if I endeavour to satisfy the unbelieving mind, by descending to a few humble details of my care and caution. I ordered four garden pots of well-sifted loam, and not content with my gardener's care in sifting, I emptied each pot into an open paper, and put the earth back again, morsel by morsel, with my own fingers. It is next to impossible that any other seed should have been there. I, on the 7th of March, planted my grains, three in each pot, at the angles of an equilateral triangle, so as to be sure of the spots where the sprouts would probably come up, by way of additional security against any chance seed unseen, lurking in the soil. Of the twelve, one only germinated, the plant in question, the blade first becoming visible on the 22nd of April, the remaining eleven after long patience I picked out again: and found in every instance that they were rotting in the earth, being eaten away by a number of white worms. It is a curious speculation, bye the bye, whether this might not have been a re-wakening of dormant animal life, for it is by no means improbable that the little maggots, on which we might build such high arguments, were the produce of ova deposited on the grains, at a period involving the very youth of time, by some patriarchal flies of ancient Egypt. My interesting plant of wheat, remained in the atmosphere of my usual sitting room, until change of place and air seemed necessary for its health, when I had it carefully transplanted to the open flower-bed, where it has prospered ever since. The first ear began to be developed on the 5th of July; and although it may disappoint expectation, to find that its appearance is in most respects, similar to that of a rather

weakly plant of English wheat, that called by farmers 'beared,' (which be it noted, I have since learned is sometimes known by the name of Egyptian,) still I have no hesitation in expressing my own certainty, that it is the product of the identical corns given to me by Mr. Pettigrew. A second ear has made its appearance since this was written, and both have assumed a character, somewhat different from all our known varieties. After all, why should not common wheat, claim as ancient ancestry as any other kind; and why should not the banks of the Nile have teemed, though perhaps, more luxuriantly, with a harvest similar to those we now see waving on the bank of hoary Father Thames? Moreover, what else, let me ask, could have been expected, than that a seed should produce its like? for I have until now, omitted to state what may easily be verified on inspection of the remaining quantities of ancient seed, now in the possession of others, that the grains in question, only differ from modern wheat, in their brown and shrunk appearance, (the seeming result of high antiquity, and now exposure to the air,) the slight difference, nevertheless observable, is that the ears are less compact, the grains rather plumper, and the beard more thorn-like than happens in common cases. It would, perhaps, be puerile, were I to explain the various methods taken by me to protect the plant; let it suffice to know, that all proper care, excluding that worst of cares, over-care, was given to it. The small size and weakness of the plant, may in one light, be regarded as collateral evidence of so great an age, for assuredly, the energies of life would be sluggish after having slept so long; however, the season of its sowing, spring instead of autumn, will furnish another sufficient cause, but after making all due allowance for this drawback, I still think it very improbable, that supposing the plant a modern one, our rich soil of Albury should have produced so lightly. There are two ears on separate stalks; they are respectively $2\frac{1}{2}$ and 3 inches long, the former being much blighted, and the stalk is about 3 feet in height. In conclusion, I take occasion to remark, that homely as the theme may in itself be, the growing of a grain of corn, small as may be accounted the glory of a success in which man's mind can have had almost nothing to effect, and little as I can have to communicate, still the subject will be admitted by all, to be one of no common interest. If, and I see no reason to disbelieve it, if this plant of wheat, now fully developed, be indeed, the product of a grain preserved since the time of the Pharoahs, we moderns, may, within a little year, eat bread made of corn which Joseph might have reasonably thought to store in his granaries, and almost literally snatch a meal from the kneading troughs of departing Israel. Time, which has been no element to the mummied seed, is conquered by so weak a weapon as a straw, and its infancy and dotage meet in friendly astonishment at a humble banquet of Pharaonic bread."

The great Author of our religion continually exemplified the important truths which he delivered, by a reference to natural objects; those especially of pasturage and husbandry, as peculiarly calculated to make an impression on the mind. A harvest-field was by him compared to the world, in which both bad and good are permitted, under the similitude of tares and wheat, to grow together: angels are the reapers; and the solemn day of final retribution is the gathering of the wheat into the garner. Even the solitary blade, which springs by the way-side, or grows upon a rock, or brings forth abundantly in rich and cultivated soil, though unnoticed by the casual observer, speaks in forcible language to the ear of the Christian. It also tells of the resurrection and the life: '*For verily, except a corn of wheat fall into the ground, and die, it abideth alone; but if it die, it bringeth forth much fruit.*'

[a]"The grand feature of this month is Corn-harvest. It is a time for universal gladness of heart. Nature has completed her most important operations. She has ripened her best fruits, and a thousand hands are ready to reap her with joy. It is a gladdening sight to stand upon some eminence and behold the yellow hues of harvest amid the dark relief of hedges and trees, to see the shocks standing thickly in a land of peace, the partly reaped fields—and the clear, cloudless sky, shedding over all its lustre. There is a solemn splendour, a mellowness and maturity of beauty thrown over the landscape. The wheat crops shine on the hills and slopes, as Wordsworth expresses it, 'like golden shields cast down from the sun.' For the lovers of solitary rambles, for all who desire to feel the pleasures of a thankful heart, and to participate in the happiness of the simple and the lowly, now is the time to stroll abroad. They will find beauty and enjoyment spread abundantly before them. They will find, the mowers sweeping down the crops of pale barley, every spiked ear of which so lately looking up bravely at the sun, is now bent downward in a modest and graceful curve, as if abashed at its ardent and incessant gaze. They will find them cutting down the rustling oats, each followed by an attendant rustic who gathers the swath into sheaves from the tender green of the young clover, which, commonly sown with oats, to constitute the future crop, is now shewing itself luxuriantly. But it is in the wheat field that all the jollity, and gladness, and picturesqueness of harvest are concentrated. Wheat is more particularly the food of man. Barley affords him a wholesome, but much abused potation; the oat is welcome to the homely board of the hardy mountaineers; but wheat is especially, and every where, the 'staff of life.' To reap and gather it in, every creature of the hamlet is assembled. The farmer is in the field, like a rural king amid his people—the labourer, old or young, is there to collect what he has sown with toil, and watched in its growth with pride; the dame has left her wheel and her shady cottage, and with sleeve-defended arms, scorns to do less than the best of them;—the blooming damsel is there, adding her sunny beauty to that of universal nature; the boy cuts down the stalks which

[a] For this interesting account of the Corn Harvest, we are indebted to Mr. Howitt's Book of the Seasons.

overtop his head; children glean amongst the shocks; and even the unwalkable infant, sits propt with sheaves, and plays with the stubble, and

'With all its twined flowers.'

Such groups are often seen in the wheatfield as deserve the immortality of the pencil. There is something too about wheat harvest, which carries back the mind and feasts it with the pleasures of antiquity. The sickle is almost the only implement which has descended from the olden times in its pristine simplicity—to the present hour neither altering its form, nor becoming obsolete amid all the fashions and improvements of the world. It is the same now as it was in those scenes of rural beauty, which the scripture history, without any laboured description, often by a simple stroke, presents so livingly to the imagination; as it was when tender thoughts passed

Through the sad heart of Ruth, when sick for home,
She stood in tears amid the alien corn;

when the minstrel king wandered through the solitudes of Paran, or fields reposing at the feet of Carmel; or 'as it fell on a day that the child of the good Shunamite went out to his father to the reapers. And he said unto his father, My head, my head! And he said to a lad, Carry him to his mother. And when he had taken him, and brought him to his mother, he sate on her knees till noon, and then died.' 2 Kings, c. iv. 18—20.

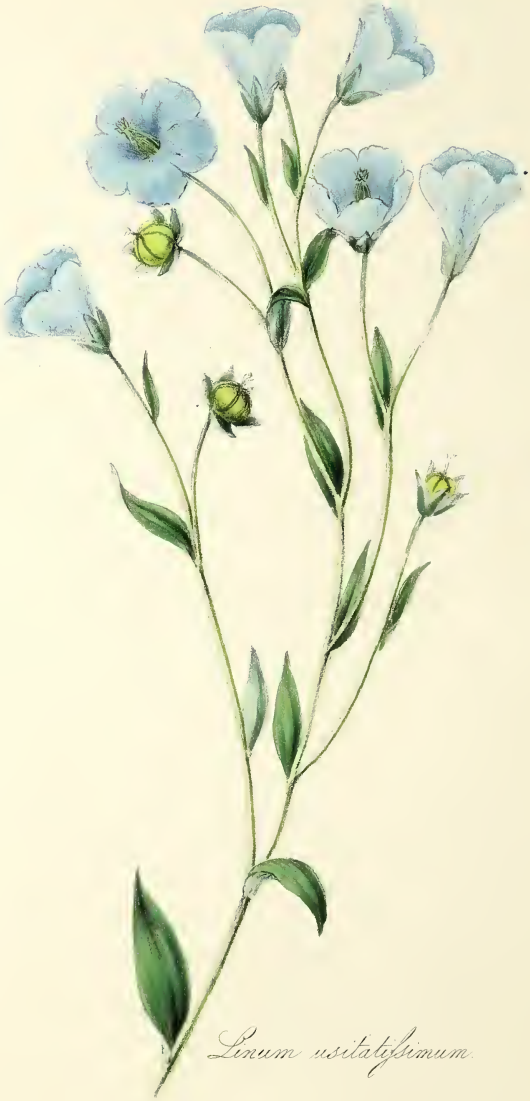
Let no one say it is not a season of happiness to the toiling peasantry; I know that it is. In the days of boyhood I have partaken their harvest labours, and listened to the overflowings of their hearts as they sate amid the sheaves beneath the fine blue sky, or among the rich herbage of some green headland beneath the shade of a tree, while the cool keg plentifully replenished the horn, and sweet after exertion were the contents of the harvest field basket. I know that the poor harvesters are among the most thankful contemplators of the bounty of Providence, though so little of it fall to their share. To them harvest comes as an annual festivity. To their healthful frames, the heat of the open fields, which would oppress the languid and relaxed, is but an exhilarating and pleasant glow. The inspiration of the clear sky above, and the scenes of plenty around them, and the very circumstance of their being drawn from their several dwellings at this bright season, open their hearts and give a life to their memories; and many an anecdote and history from the simple annals of the poor are there related, which need only to pass through the mind of a Wordsworth or a Crabbe, to become immortal to their mirth or woe."

Bread made out of wheat flour, when first taken out of the oven or skillet, is unprepared for the stomach. It should go through a change, or ripen before it is eaten. Young persons, or persons in the enjoyment of vigorous health, may eat bread immediatcly after it is baked, without any sensible injury from it, but weakly and aged persons cannot; and no one can eat such without doing harm to the digestive organs. Bread, after being baked, goes through a change similar to the change in newly brewed beer, or newly churned butter-milk—neither being healthy until after the change. During the change in bread it sends off a large portion of carbon, or unhealthy gas, and imbibes a large portion of oxygen, or healthy gas. Bread has, according to the computation of the physicians in London, one-fifth more nutriment in it when ripe, than it has when just out of the oven. It not only has more nutriment, but imparts a much greater degree of cheerfulness. He that eats old ripe bread will have a much greater flow of animal spirits than he would if he were to eat unripe bread.

Bread, as before observed, discharges carbon and imbibes oxygen. One thing in connexion with this thought should be particularly noticed by all housewives. It is, to let the bread ripen where it can inhale the oxygen in a pure state. Bread will always taste of the air which surrounds it while ripening; hence it should ripen where the air is pure. It should never ripen in the cellar, nor in a close cup-board, or in a bed-room. The noxious vapours of a cellar or a cupboard never should enter into and form a part of the bread we eat. The writer of this article has often eaten bread of this kind, and has felt strongly disposed to lecture the mistress of the house on the subject of keeping bread in a pure atmosphere. Every man and woman ought to know, that much of health and comfort depends upon the method of preparing their food. Bread should be light, well baked, and properly ripened, before it is eaten.—*Nat. Rep.*

The table in Davy's Agricultural Chemistry, says Mr. Burnett, shews, that wheat not only exceeds other corn in the absolute quantity of nutritive matter it contains, but that the different proximate principles very remarkable in their relative proportions, and the superiority of wheaten bread, depends upon the large quantity of *gluten* that its flour contains. When separated by washing from the starch with which it is combined, gluten comes into the market under the name of Maccaroni, Vermicelli, &c. In Italy, and especially in Naples, there are immense quantities manufactured, both for exportation and home consumption. It forms the ordinary and favorite food of the poorer classes in Italy, especially in the Neapolitan states; and Maccaroni is sold by the yard, at the corners of almost every street in the city of Naples. There is another advantage of no slight economical importance that wheat possesses over other grain, which is, that its flower not only contains more nutritious matter, but yields also a greater quantity; for fourteen pounds of wheat yield thirteen pounds of flour, while fourteen pounds of oats yield only eight pounds, and an equal quantity of barley but twelve pounds.

In the language of flowers Wheat denotes riches.



Linum usitatissimum.

LINUM USITATISSIMUM.—COMMON FLAX.

Class V. PENTANDRIA.—Order V. PENTAGYNIA.

Natural Order LINEÆ.——THE FLAX TRIBE.

Of the genus Linum, nearly fifty species have been described by botanical writers. The genus is divided into two sections, the first having opposite, the second, alternate leaves. To the first section belongs the Linum *usitatissimum*, the subject of this article. It is an annual plant, growing occasionally in corn-fields and in sandy pastures; flowering in July, and ripening its seeds in September.

Common flax has a small, fibrous root; a round, slender, smooth, leafy, and branched stem, which rises to the height of two feet. The leaves are scattered, small, lanceolate, entire, sessile, 3-nerved, alternate, and, on the upper part of the stem, of a glaucous, or sea-green colour. The flowers are numerous, collected in a corymbose panicle, erect, and supported on longish footstalks. The calyx is composed of fine lanceolate, erect, permanent, 3-ribbed sepals, imbricate in æstivation. The corolla is funnel-shaped, and consists of five-notched, sky-blue, shining, veiny, oblong petals, which are narrow below, and gradually grow broader upwards, the æstivation being contorted. The filaments are five, awl-shaped, erect, the length of the calyx, and inserted into an annular receptacle, with 2-celled sagittate anthers. The germen is superior, ovate, and surmounted by five blue, capillary, spreading, undivided, bluntish stigmas, the length of the stamens. The fruit is a globular capsule, about the size of a pea, with ten cells and ten valves united in pairs, and crowned with a sharp spine. In each cell is lodged a single elliptical, pointed, smooth, and shining seed.

The generic name, Linum, (λινον,) is retained from the ancient Greek authors; its etymology is obscure.

Flax from whose fibres we procure the comfort of linen, and the beauty of lace; also yields paper for our letters and books, and from the same material sails were first made for our vessels.

Some have supposed that linen-cloth was made previous to the deluge, because we read that Noah slept in a tent; but Egypt, which is called the land of Ham, soon became the garden of the East, and the seat of arts. Isis, the wife of his son Misraim, is said to have taught the art of agriculture, and employed herself diligently in cultivating the earth, for which she was deified, and the worship of Isis became universal in Egypt. Her priests were clothed in *linen* garments. The eastern kings and princes were also attired in linen; flax, therefore, formed a considerable branch of the trade of Egypt; and the method of making fine linen was carried to such perfection that the threads which were drawn out of it were almost imperceptible to the keenest eye. Pliny states, that some of the thread made from flax was finer, and more even, if possible, than the web of a spider, and yet so strong that it would give a sound nearly as loud as a lute-string. He says, too, that he had seen an Egyptian net made of so minute a thread that notwithstanding every cord in the mesh was made of a hundred and fifty threads twisted, yet it could be drawn through the ring of a finger; but that the most extraordinary net-work was that shewn in the temple of Minerva, in the isle of Rhodes, every thread of which was twisted three hundred and sixty-five times double, according to the days in a year. This curious piece of workmanship had formerly belonged to Amasis, who, from a common soldier, became King of Egypt, about five centuries before the Christian era. The Greeks made a linen of so fine a fabric, from the flax which they cultivated at Belvedere, that it sold by weight at the price of gold.

Flax was used at a very early period for the stupendous temples of the heathens, and for the courts of their palaces, which were open buildings, surrounded with massive columns; and, as the art of weaving became known, these gorgeous edifices were occasionally hung with rich curtains of linen cloth to shade or protect the guests from the sun or weather. At the conclusion of the grand festival given by Ahasuerus, as described in the book of Esther, he feasted all the people that were in Shushan, in the court of the garden of the king's palace, where were white, green, and blue hangings, fastened with cords of fine linen and purple to silver rings, and pillars of marble. Julius Cæsar caused the Forum, at Rome, to be covered with fine curtains, as also the whole of the principal street, called Sacra, from his own dwelling to the cliff of the

capitol; and Nero ordered the amphitheatre to be adorned with curtains of a sky-blue, spangled with stars. Spain was celebrated for her manufacture of linen as early as the birth of Christ; and, subsequently, it was made in France, Holland, and Germany. The people of the last-mentioned country carried on the spinning and weaving of linen in vaults and caves under ground. The fine muslins of India were also made by persons thus entombed, who were never allowed to see the light. Even children were imprisoned from their infancy in these dark abodes, in order to produce a finer thread than it was thought could be drawn by the eye which was blessed with the light of day.

The art of weaving then practised is happily lost; and none can wish its revival. The first person who wore a linen shirt was the Emperor Alexander Severus, who was murdered A. D. 235; but the general use of such a garment did not take place till long after that period. The making of linen cloth was probably introduced by the Romans, who certainly cultivated flax in this country. Before Britain had attained its present eminence, each town or village had its weaver; the daughters of farmers were early instructed in this art; their female domestics filled up all their vacant hours at the distaff or wheel; and every good mother was expected to supply her family with linen of her own spinning. A friend of mine, in a recent visit to Scotland, saw a singular specimen of ingenuity—a man's shirt wrought in a loom, about a hundred years ago, by a weaver in Dunfermline, named Inglis; it has no seam; and every thing was completed without aid from the needle, excepting a button for the neck.

At Cambray, a city of France, the beautiful linen called cambric was first manufactured; and, for many years, England spent in its purchase not less than £200,000 per annum. From this vegetable, too, the lace of Brussels, Valenciennes, Lisle, Mechlin, Normandy, &c., has been obtained.

Qualities and Chemical Properties.—The cuticle of the seeds of flax, commonly called *linseed*, yields a mucilage to boiling water, which is inodorous, and has but little taste. By *expression*, a bland, inodorous, sweetish oil is obtained from the nucleus of the seed, the specific gravity of which is 939. It is much more soluble in alcohol than olive-oil; and as it is one of the *drying oils*,[a] it loses its unctuosity after proper preparation, and is used for varnishes, and printer's ink. It is not congealed excepting by a cold below 0° of Fahrenheit, and boils at 600° of the same scale. Although the pharmacopœia orders this oil to be obtained by simple expression, heat is generally employed, which renders it disagreeable both in taste and smell; it is therefore seldom employed as an internal remedy. Linseed contains about one-fifth of mucilage, and one-sixth of oil. The cake remaining after the expression of the latter, is used for fattening cattle, by the name of oil cake.

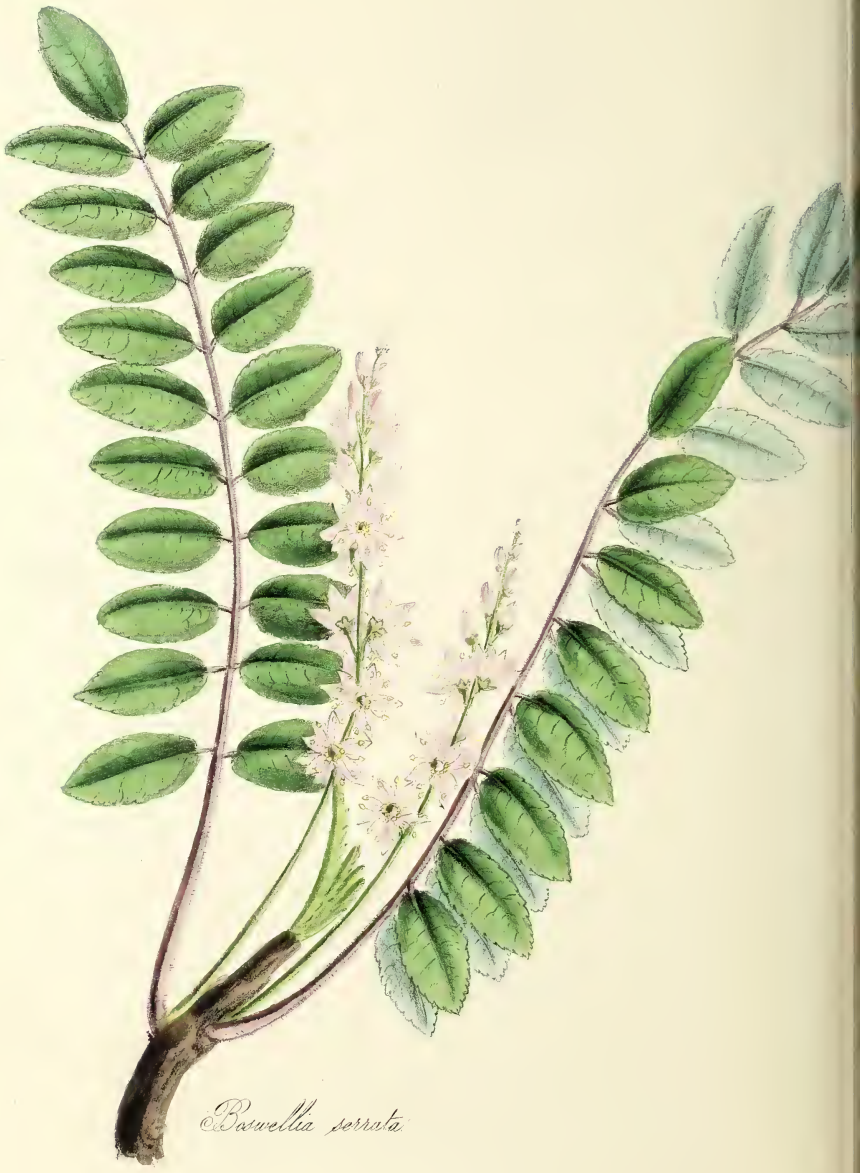
Medical Properties and Uses.—Woodville asserts that linseed affords but little nourishment, and that when taken as food it is found to injure the stomach. These circumstances were noticed by Galen, Ray also adverts to them; and Professor Fritze, in his Medical Annals, states, that vegetable mucilage, when used as a principal article of diet, relaxes the organs of digestion, and produces a viscid, slimy mucus, and a morbid acid in the primæ viæ—effects which may be obviated, as Dr. Paris has well shown,[b] by the addition of bitter extractive.

As we have already stated, the oil is little used as a demulcent; but when it can be obtained good, it may be given with advantage in doses of a table-spoonful as a corrector of habitual costiveness; and if a drachm of tincture of rhubarb be added to it, it will generally agree with the most fastidious stomachs. The decoction of the seeds contains a portion of oil diffused in the mucilage; it is, therefore, a useful ingredient for injections, when there is abrasion or ulceration of the mucous membrane of the intestines: and the infusion is a valuable drink for persons who are suffering from irritation of the fauces.

We need scarcely state, that one of our most useful and common poultices is made with linseed-meal and boiling water.

[a] When fixed oils are exposed to the open air, or to oxygen gas, they undergo different changes according to the oil. All of them, as far as experience has gone, have the property of absorbing oxygen; and by uniting with it, they become more and more viscid, and terminate at last in a solid state, being apparently saturated with oxygen. Some retain their transparency after they have become solid; while others become opaque, and assume the appearance of tallow, or wax. Those that remain transparent are called *drying oils*, while those that become opaque are called *fat oils*.

[b] Pharmacologia. Edit. 5. vol. i. p. 144.



Boswellia serrata

BOSWELLIA SERRATA.—OLIBANUM-YIELDING BOSWELLIA.

Class X. DECANDRIA.—Order I. MONOGYNIA.

Natural Order, BURSERACEÆ.

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

This species of Boswellia, so named by Dr. Roxburgh in memory of the late Dr. John Boswell, of Edinburgh, is indigenous to the mountains of Central India, where it is known under the vulgar name of *Sali*. It is a lofty tree, with the foliage crowded at the extremities of the branches; and is frequent in the forests between the Sone and Nagpur, on the route to Berar. The leaves are pinnate, consisting of about ten pairs of obliquely ovate-oblong, obtuse, serrated, villous leaflets, with a terminal one, about an inch and a half in length, sometimes opposite, sometimes alternate, and supported on short, round, downy petioles. The flowers, which are produced in simple axillary racemes, shorter than the leaves, are numerous, small, of a pale pink colour, accompanied with minute bracteas. The calyx is monophyllous, 5-toothed and downy; the corolla consists of five oblong, spreading petals, downy on the outside, and considerably larger than the stamens. The nectary is a fleshy, crenate ring, surrounding the lower two-thirds of the germen. The filaments are ten, alternately shorter, inserted on the exterior margin of the nectary, and supporting oblong anthers. The germen is superior, ovate, with a cylindrical style, and 3-lobed stigma. The capsule is oblong, triangular, smooth, 3-celled and 3-valved, each cell containing a single seed, which is broad-cordate at the base, deeply emarginate, with a long and slender point.

Olibanum is chiefly collected in India; but it is also imported in casks and chests from the Levant. It distils from incisions made in the bark of the tree, during the summer months. It is the frankincense of the ancients, the *thus* of the Romans, and the Λιβανος of Theophrastus and Dioscorides. The latter writer mentions it as procured from India; and Theophrastus, Hist. Pl. lib. ix. c. 4, says Γινεται μεν ουν ὁ λιβανος εν τη των Αραβων χωρα μεση περι του Σαβα και Αβραμιττα, και Κιταβαινα. The same observation is made by Strabo, l. xvi. p. 778; Plin. Nat. Hist. lib. vi. c. 28; and Virgil, Geor. i. v. 58.

The burning of incense made part of the daily service of the ancient Jewish church. The priests drew lots to know who should offer it. The destined person then took a large silver dish, in which was a censor full of incense, and being accompanied by another priest carrying some live coals from the altar, went into

[a] Forsk. *Descrip. Plant. cent.* iii. *p.* 80.

the temple. Then, having said a prayer or two, on a signal given, he set fire to the incense, the whole multitude continuing all the time in prayer. The quantity of incense offered each day was half a pound in the morning, and as much at night. One reason of this continued burning of incense might be, that the multitude of victims that were continually offered up, would have made the temple smell like a slaughter house, and consequently have inspired the comers rather with disgust and aversion, than awe and reverence, had it not been overpowered by the agreeable fragrance of those perfumes.

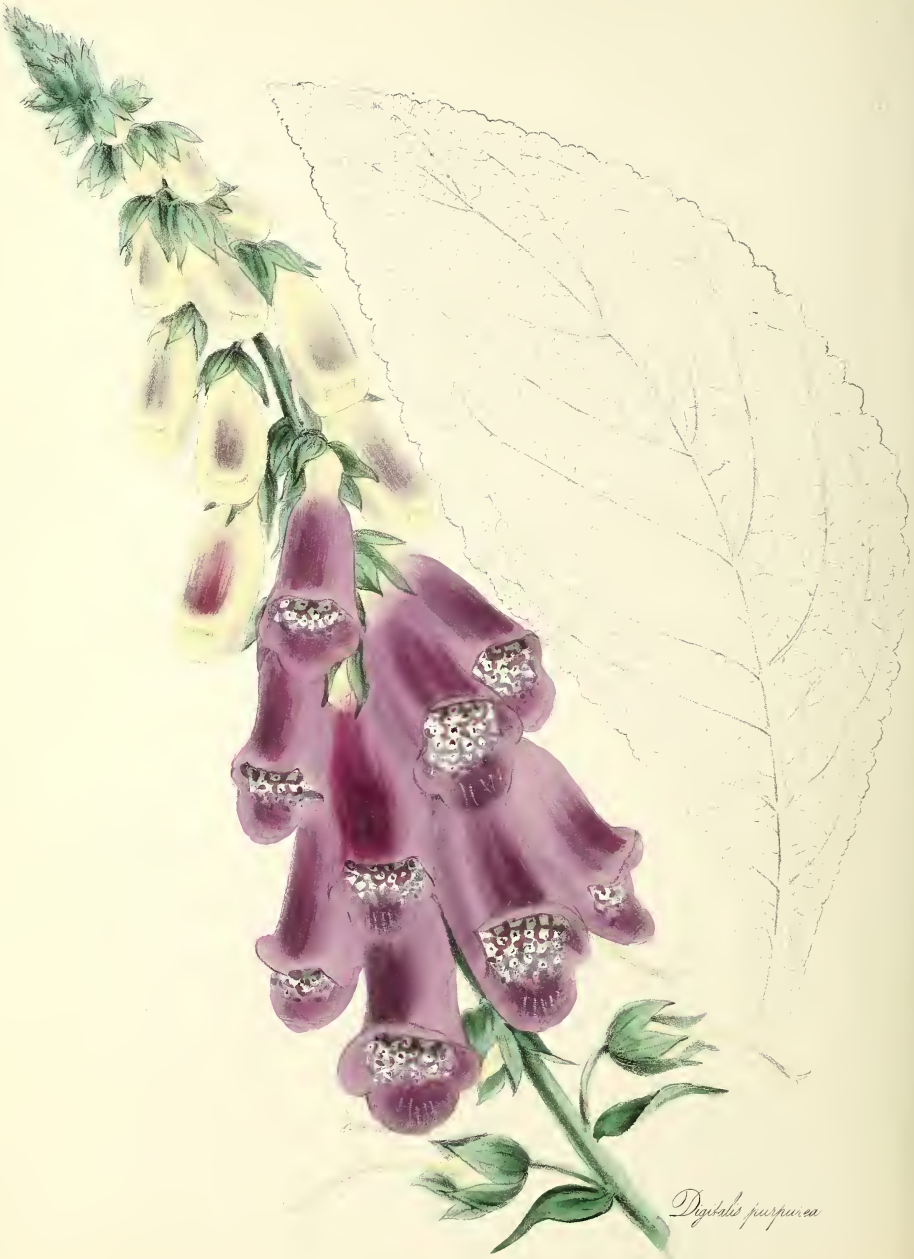
In the early ages, it was much used as incense in sacrifices; and in modern times, the Greek and Romish churches still retain the use of frankincense in some of their ceremonies, where the diffusion of such vapours round the altar forms a part of the prescribed religious service.

The source of the *Olibanum*, the especial incense of the ancients, has long been a matter of doubt. Supplies of this resin were formerly drawn only from Africa, and it is said by some to have been called *Gum Thuris* on account of its being brought by the merchants from *Thur* or *Thor*, a port in the North Bay of the Red Sea, near Mount Sinai, and in order to distinguish it in commerce from gum arabic, which was chiefly exported from Suez. Linnæus supposed the Olibanum of Africa to be procured from a species of Juniper (J. Lycia,) but of this no satisfactory evidence has been adduced; and the assumption is now generally denied. It is more than probable, that Olibanum, or balms which so closely resemble it that they pass current in commerce, may, like gum-arabic, be afforded by several different plants: and of this there seems to be evidence offered by Messrs. Turnbull and Colebrooke, who have shown that a gum collected in the mountainous regions of central India, and sent to this country without a name, but which the London Drug Merchants recognised as *Olibanum* and which now forms the greater part of the *Olibanum* used in Europe, it is an exudation from a tree called, in India *Sali*, the *Boswellia Serrata* of botanists.

Qualities.—Olibanum is in the form of semi-transparent masses or tears, of a pale yellowish, or pink colour, solid, hard, and brittle. It has a bitterish acrid taste, and when chewed, sticks to the teeth, and renders the saliva milky. When heated, it burns brilliantly, and diffuses an agreeable odour. Alcohol dissolves three-fourths of it, and water about three eighths. On distillation alone, it affords a yellowish, fragrant, essential oil. From the analysis of Braconnot, it appears, that in 100 parts Olibanum are composed of 8 essential oil, 56 of resin, 30 of gum, and 5·2 of a matter resembling gum, but insoluble in water and alcohol.[a]

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

[a] *Ann. de Chim.* lxviii. 60.


Digitalis purpurea

DIGITALIS PURPUREA.—PURPLE FOXGLOVE, OR FOLKSGLOVE.

Class XIV. DIDYNAMIA.—Order II. ANGIOSPERMIA.

Natural Order, SCROPHULARINEÆ.—THE FIGWORT TRIBE.

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

The name Digitalis, derived by Fuchsius, who first gave it to this plant, from *digitabulum*, a thimble, has an evident reference to the finger-like flowers of the plant; a similitude which has been recognized in almost every country in which it is found; as may be seen by the names, Fingerbor, Fingerhut, Vingerhoed, Digital, &c., given to it by the Spaniards, the Dutch, the Germans, and the Swedes. Mr. Rootsey in a very interesting commentary on the medical plants mentioned by Shakespeare, communicated to the Medico-Botanical Society of London, expresses an opinion that this plant is the "long purples" of the poet, an opinion contrary to that generally entertained. He says, "the names of *Foxglove* or *Folksglove*, *Finger flower*, or Digitalis, and dog's fingers, as the plant is called in Wales, together with the magnificent spike of purple flowers borne by the digitalis *purpurea*, induce me to conjecture that it is alluded to by our illustrious poet as *long purples*.

> "There is a willow grows ascant the brook
> That shews his hoar leaves in the glassy stream;
> There with fantastic garlands did she make,
> Of crow-flowers, nettles, daisies, and long purples,
> That liberal shepherds give a grosser name,
> But our cold maids do *dead men's fingers* call them."
>
> *Hamlet*, iv. 7.

This question, however, still remains unsettled, for as the writer adds:—

"The common *blue-bells* to which Salisbury attached the epithet *festalis*, might perhaps be thought to be the garland flowers of Ophelia; but Lightfoot says, it is the orchis mascula; though Martyn considers that the name of *dead men's fingers* would better apply to the palmated species."

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

Although this plant is so elegant and stately in its appearance, it does not appear to have attracted the attention of the ancients. Fuchsius, in his *Hist. Stirp.* 1542, is the first author who notices it: and from him it received the name of Digitalis, in allusion to the German name of *Fingerhut*, which signifies a finger-stall, from the blossoms resembling the finger of a glove. All parts of the plant have at different times

been used, and we understand that the flowers are still preferred by some practitioners in the west of England. It was first introduced into the London Pharmacopœia in 1721, *(folia, flores, semen,)* was discarded in the ensuing edition of 1746, and has been since restored; having encountered a like alternation of favour and proscription in the Edinburgh College.

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

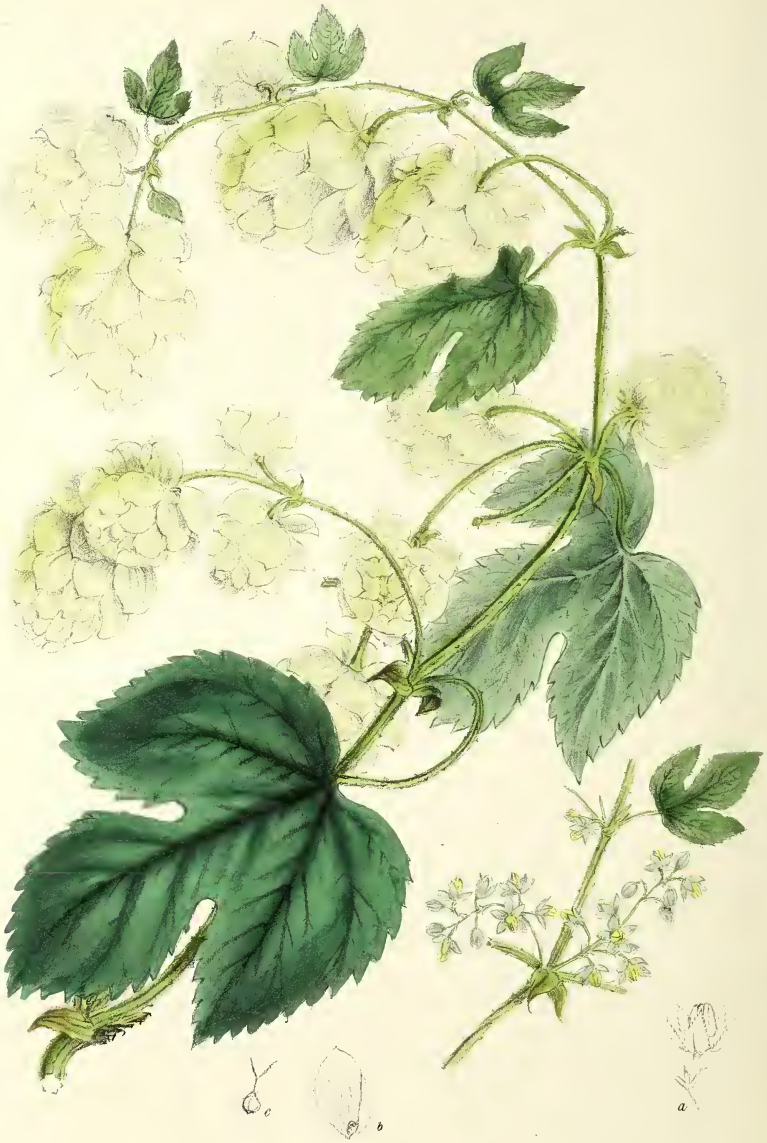
Qualities and Chemical Properties.—The leaves of Digitalis should be collected just as the plant is about to blossom, and the advice which we gave respecting the drying and perservation of Conium *maculatum*, applies equally to them; and those plants should be preferred for medicinal purposes which grow wild in elevated situations exposed to the sun. For although the beauty of the foxglove has made it a denizen of our gardens, its properties are much impaired by cultivation, especially in damp or shady situations. When properly dried, the leaves have a slight narcotic odour, and a bitterish nauseous taste. When reduced to powder, they are of a beautiful green colour, which will be preserved by exclusion from light and air. The active principle has been separated by M. le Rayer, and is termed *Digitaline*. It is inodorous, very bitter, deliqueseent, and soluble in water, alcohol, and ether; and is decomposed by heat. He procured it by digesting the leaves in ether, both cold and warm, and treating the solution with hydrated oxide of lead; or the infusion may be evaporated to the consistence of an extract, which, if dissolved in distilled water, will part with some chlorophylle: and if the solution, which reddens litmus paper, be acted on with acetate of lead, filtered, evaporated, and again treated with ether and re-evaporated the result is *Digitaline*, or *Digitalia*.

Digitalis appears to contain extractive resin, and some saline matter. Both water and alcohol extract the virtues of the leaves, but boiling them impairs their power. Precipitates are produced by *sulphate of iron*, acetate of lead, and the infusion of yellow bark, &c. which are *incompatibles* in mixtures containing Digitalis, if used medicinally; but the latter is an excellent antidote to counteract the baneful influence of an over-dose.

Medical Properties and Uses.—Were all that has been written on Digitalis to be colleeted, a ponderous volume of contradiction would be the result; for although the known virtues of the plant may be stated in a very small compass, it was at one time held forth as a never-failing remedy in the worst and most common of diseases—pulmonary consumption. It was of course prescribed by almost every practitioner throughout the United Kingdom; but time, which settles down the minds of men to a just appreciation of the truth, has proved that it is only in the incipient stages of tubercular consumption, when inflammatory action has been subdued by other means, or in the advanced stages when the pulse shows that bleeding has diminished the chronic inflammation of the substance of the lungs, that the sedative effects of Digitalis, which are so benign and truly valuable, can be advantageously produced.

Dr. A. T. Thompson makes the following pertinent remarks. "The Pharmacopœias order an infusion and a tincture of Digitalis; but there is great uncertainty in both preparations; owing to the careless manner in which the leaves are frequently dried; and the only advantage of even a correct analysis of the plant would be the obtaining a vehicle which should always ensure a preparation of a definite strength. As far as my experiments enable me to decide, I am disposed to think that such a vehicle will be found in ether, which takes up the whole of the colouring matter, and when the solution is evaporated, leaves a green principle, possessing in a high degree the properties of the plant. The solution of this in alcohol might be employed with advantage. *Mat. Med.* i. 580. An instance in point is recorded by Dr. Williams, who says that "two ounces of the tincture of the London College have been taken in two doses, with a short interval between them, yet without causing any inconvenience."

This is not the only plant, valuable as a medicine, says "Burnett in his outlines" which Withering introduced into practice; and if it be the lot of an individual to discover one, and such an one; amongst our native weeds, it would encourage the belief that there still may be many more, "blest secrets," more yet "unpublished virtues of the earth," hereafter to be revealed, as "aidant and remediate to the sick man's distress," and which, if we cannot hope they will "spring with our tears" we may more than hope, they will be found by our exertions.



Humulus Lupulus

HUMULUS LUPULUS.—THE HOP.

Class XXII. DIŒCIA.—Order V. PENTAGYNIA.

Natural Order URTICEÆ.—THE NETTLE TRIBE.

Fig. (*a*) is a male flower magnified. Fig. (*b*) a single scale of the catkin. Fig. (*c*) the germen with the two styles.

The hop is a perennial plant indigenous to this country. It grows wild in hedges, and flowers in July. It is very abundantly cultivated in Kent, Essex, Surrey, and Suffolk; and the strobiles are picked about the end of August, or beginning of September. The root sends up numerous long striated, angular, rough, flexible stems which support themselves by turning spirally round upright bodies in a direction from left to right. The leaves are opposite, in pairs, petiolate, cordate, serrated, entire, or lobed, and dark green on the upper surface. Both the leaves and petioles are scabrous, with minute prickles, and at the base of each petiole are two interfoliaceous, entire, reflected, smooth stipules. The flowers are axillary and furnished with Bracteæ: the male flowers are yellowish white, in panicles, and drooping; the female, which are on distinct plants, are in solitary strobiles, ovate, pendulous, and composed of membranous scales of a pale greenish colour, tubular from being rolled in at the base, and two-flowered, each containing one round flattish seed of a brown colour, surrounded with a sharp rim, and compressed at the top.

The culture of the hop was introduced into England from Flanders in 1524, and the strobiles were first used for preserving English beer in the latter part of the reign of Henry the Eighth; but there was at first a strong prejudice against them, and a hundred years after, a petition to pohibit their use was presented to Parliament from the City of London. At present, brewers who use any other bitter for preserving their beer are subject to a severe penalty and the number of acres devoted to the cultivation of the hop in Great Britain was found, in 1830, to be 46,727.

At the proper season, that is when the strobiles are yet scarcely ripe, the plants are cut about three feet from the ground, the poles round which they are twined are pulled up, and the strobiles picked off one by one. Those that are over-ripe or defective, are separated from those that are ripe enough, and both kinds are carried to the kiln as soon as possible after they are picked. The heat of the kiln requires to be regulated with great nicety; and in order to prevent the hops from drying too fast, many kilns have two floors, on the uppermost of which the greener strobiles are laid, and gradually dried before being exposed to the heat of the lower floor. The fuel usually employed is charcoal. The strobiles when sufficiently dried become crisp, but after they are laid up in heaps they lose this property, and are somewhat tough and difficult to pulverise. Hops have a strong peculiar, fragrant, and slightly narcotic odour, and a very bitter, aromatic, astringent taste. It was noticed by Sir. J. E. Smith, and M. Planche, that the scales of the hop secreted a yellow powder, and Dr. A. W. Ives, of New York, ascertained that the active properties of the hop reside in this substance, to which he accordingly gave the name of *Lupulin*. It has the peculiar flavour of the hop, and when examined with the microscope it is seen to consist of globules filled with a yellow fluid, like the pollen of plants.

Uses of the Hop. The most important and familiar use of the hop is in the preparation of malt liquors, but it is also used medicinally in several forms. A pillow stuffed with hops has been recommended as a means of inducing sleep in cases of delirium and mania. This means was used with success in the case of King George the Third. Administered internally hop possesses narcotic, tonic, and other medicinal properties. Dr. Maton found, that besides allaying pain and inducing sleep, it diminishes the frequency and increases the firmness of the pulse. It is sometimes serviceable in cases of dyspepsia attended with general irritability and sleeplessness, and has been advantageously used externally as an anodyne and discutient. On the whole its medicinal virtues appear to have been over-rated, and practitioners in general have little confidence in it.

The hop requires a very rich mellow soil and careful cultivation. It is very tender, and the produce is precarious, sometimes giving a great profit to the grower, and at other times failing altogether. The greatest quantity of hops is raised in Kent, but the finest quality in the neighbourhood of Farnham in Surrey. The soil of a hop-garden must be rich to a considerable depth, or made so artificially. The subsoil must be dry and sound; a porous rocky subsoil, covered with two or three feet of good vegetable mould, is the best for hops. The exposure should be towards the south, on the slope of a hill, or in a well-sheltered valley. Old rich pastures make the best hop-gardens. They should be dug two or more spits deep, and

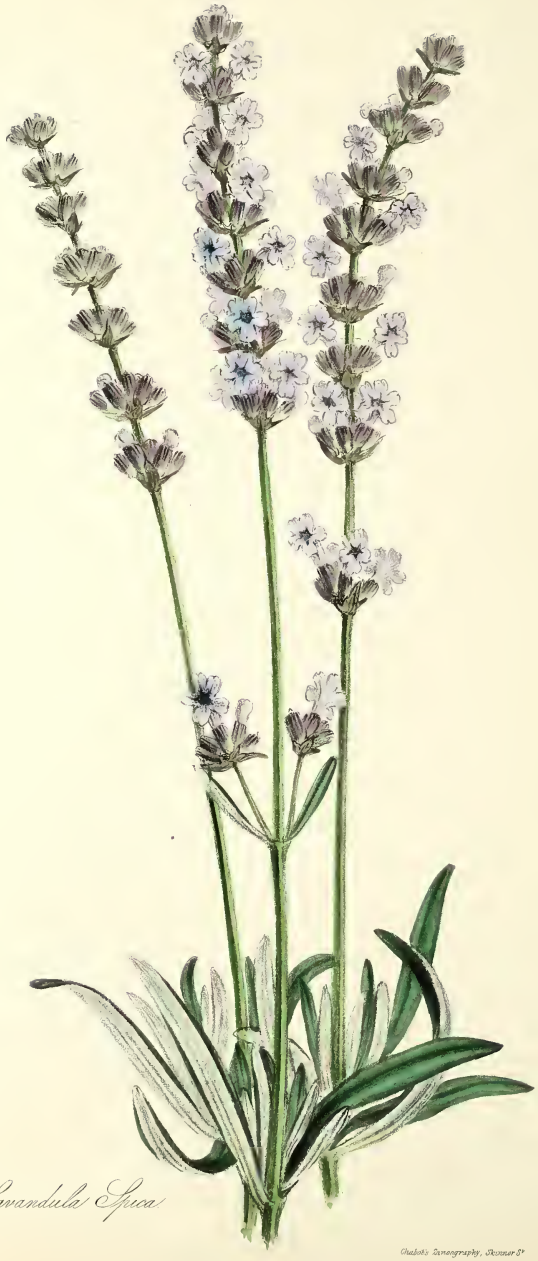
the sods buried at the bottom, where they will gradually decay and afford nourishment to the slender roots of the plants which strike deep. A very large quantity of the richest rotten dung, at least 100 cubic yards per acre, should be well incorporated with the soil by repeated ploughings, till it is entirely decomposed and produces that dark tint which is the sure sign of an abundance of humus. The ground should be prepared by laying it up with the spade in high ridges before winter, to expose it as much as possible to the mellowing influence of the frost. A succession of green crops, such as rye cut green or fed off with sheep, early turnips fed off in autumn, or spring tares, are an excellent preparation, by cleaning the land.

The young plants are raised in beds, and may be raised from seed; but it is more usual to plant the young shoots which rise from the bottom of the stems of old plants. They are laid down in the earth till they strike, when they are cut off and planted in the nursery-bed. Care must be taken to have only one sort of hops in a plantation, that they may all ripen at the same time; but where there are very extensive hop-grounds it may be advantageous to have an earlier and a later sort in different divisions, so that they may be picked in succession. The ground having been prepared for planting, it is divided by parallel lines, six or more feet apart, and short sticks are inserted into the ground along these lines at six feet distance from each other, so as to alternate in the rows, as is frequently done with cabbage-plants in gardens. At each stick a hole is dug two feet square and two feet deep, which is filled lightly with the earth dug out, together with a compost prepared with dung, lime, and earth, well mixed. Fresh dung should never be applied to hops. Three plants are placed in the middle of this hole six inches asunder, forming an equilateral triangle. A watering with liquid manure greatly assists their taking root, and they soon begin to show bines. A stick three or four feet long is then stuck in the middle of the three plants, and the bines are tied to these with twine or the shreds of Russia mats, till they lay hold and twine round them. During their growth the ground is well hoed and forked up around the roots, and some of the fine mould is thrown around the stems. In favourable seasons a few hops may be picked from these young plants in the autumn, but in general there is nothing the first year. Early in November the ground is carefully dug with the spade, and the earth being turned towards the plants, is left so all winter.

In the second year, early in spring, the hillocks around the plants are opened, and the roots examined. The last year's shoots are cut off within an inch of the main stem, and all the suckers quite close to it. The suckers form an agreeable vegetable for the table, dressed like asparagus. The earth is pressed round the roots, and the cut parts covered so as to exclude the air. A pole about twelve feet long is then firmly stuck into the ground near the plants; to this the bines are led and tied as they shoot, till they have taken hold of it. If by any accident the bine leaves the pole, it should be carefully brought back to it, and tied till it takes hold again.

Some hop-planters plough up or dig the ground before winter; others prefer doing it in spring, in order not to hasten the shooting, which weakens the plants. The same operations of pruning the shoots, manuring, and placing poles, which were performed the preceding year, are carefully repeated. Particular attention is paid to proportion the length of the poles to the probable strength of the bines; for if the pole is too long, it draws up the bine, and makes it bear less; if it is too short, the bines entangle when they get beyond the poles, and cause confusion in the picking. In September, the flower containing the seed will be of a fine straw colour, turning to a brown; it is then in perfection. When it is over ripe, it acquires a darker tint. No time is now lost, and as many hands are procured as can be set a-picking; great numbers of men and women go out of the towns in the hopping season, and earn good wages in the hop plantations. During the picking they sleep in barns and outhouses.

The hops when picked are dried on a hair cloth in a kiln. When they appear sufficiently dry at bottom they are turned; in order that the upper part may be dried equally with the lower, a wooden cover lined with tin plates is led down over the hops on the hair cloth, to within a few inches of the surface; this reverberates the heat, and the whole is dried equally. The heat must be carefully regulated, in order that it may not alter the colour. When the leaves of the hops become brittle and rub off easily, they are then laid in heaps on the floor, where they undergo a very slight heating. As soon as this is observed, they are *bagged*. This is done through a round hole 25 or 30 inches in diameter made in the floor of the left where the hops are laid. Under this hole is a bag, the mouth of which is drawn through the hole, and kept open by a hoop to which it is made fast. The hoop is somewhat larger than the hole, and the bag remains suspended; a handful of hops is now put into each corner of the bag, and there tied firmly by a cord. A bushel or two of hops are put into the bag, and a man gets into it to tread the hops tight. As the hops are packed by the feet, more are continually added till the bag is full. It is now taken off the hoop, and filled up with the hands as tight as possible. The corners are stuffed as soon as the mouth is partly sewn up, and tied as the lower corners were; when sewed close and tight, it is stored in a dry place till the hops are wanted for sale.



Lavandula Spica

Chubb's Lithography, Skinner St

LAVANDULA SPICA.—LAVENDER, OR SPIKE LAVENDER.

Class XIV. DIDYNAMIA.—Order I. GYMNOSPERMIA.

Natural Order, LABIATÆ.—THE MINT TRIBE.

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

The plant is shrubby, much branched, and rises from two to four feet high; the bark of the younger shoots being of a pale green colour, while that of the stem is rough and brown. The leaves are numerous, linear, hoary, entire, slightly rolled back at the edges; the upper ones sessile, the lower petioled. The flowers form terminating spike-like thyrsi which consist of interrupted whorl-like cymes, in which the flowers are from six to ten, and are furnished with small ovate bracteas. The corolla is of a blue colour, and consists of a longish cylindrical tube, divided at the mouth into two lips, the uppermost of which is larger and bifid, the lower expanded downwards, and divided into three segments. The filaments are four, inclosed within the tubular part of the corolla, and support small simple anthers; the style is slender, and crowned with a bilobed stigma, and rises from the depressed centre of a tetrakenium at the base of the tube.

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

The Lavenders are much prized for the very grateful odour of their essential oils. The flowers and leaves of these plants have long been used as perfumes; and the ancients employed them to aromatize their baths, and to give a sweet scent to water in which they washed, hence indeed their generic name, *Lavandula*. The oil of *Lavandula Spica* is more pleasant than that of the other species, and is distinguished in commerce by the name of oil of Spike, while the others are called oils of Lavender. Sixty ounces of flowers yield only one ounce of oil, hence its high price, and the continual adulterations of the genuine drug, with oil of turpentine. According to Proust, it contains a fourth of its weight or more of Camphor. Lavender is a grateful and powerful stimulant, and it enters into the composition of several carminative medicines; but its chief consumption is as a perfume. It is also one of the ingredients used in the preparations of Eau de Cologne, and of the once famous *Vinaigre des quatre voleurs.*

Powdered Lavender leaves were once used as a cephalic snuff, and large quantities of the plant in flower are annually brought into London, where it is used by the citizens to perfume their wardrobes, and to prevent the moths from fretting their garments.

The distilled oil is particularly celebrated for destroying several kinds of cutaneous insects: if soft spongy paper, dipt in this oil, either alone, or mixed with that of almonds, be applied at night to the parts infested by insects, they will certainly, says Geoffroy, be all found dead in the morning.

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

The oil, however, on which their virtues depend, is obtained separate in distillation with water; in the proportion, according to Lewis, of one ounce of oil from sixty ounces of flowers.

Lavender is thought of some, says Gerard "to bee that sweet herbe *Casia*, whereof *Virgil* maketh mention in the second Eclog of his Bucolicks:—

> And then shee'l spike and such sweet hearbs infold,
> And paint the Iacinth with the Marigold.

And likewise in the fourth of his Georgickes, where he intreateth of chusing of seats and places for Bees, and for the ordering thereof, he saith thus:—

"About them let fresh Lavander and store
Of wilde Time with strong Sauorie to floure."

Lavender, says Mr. G. Don, "is propagated by slips and cuttings, like rosemary; it likes a dry soil and may be planted either in distinct plants two feet asunder, or to form a sort of hedge row, in one or more lines, especially where large supplies of flowers are required for distilling. The plants will advance in a close, branchy growth, and when established will produce plenty of flowers in July and August. Gather them while in perfection, cutting the spikes off close to the stem; then give the plants occasional trimmings, taking off the gross and rampant shoots of the year, and the decayed flower spikes. In dry gravelly, or poor soil its flowers have a more powerful odour, and the severity of our winters has little effect on it; while in rich garden soil although it grows strongly, it is apt to be killed, and the flowers have less perfume."

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

Off. Prep.—Oleum Lavandulæ. *L. E. D.*
Spiritus Lavandulæ. *L. E. D.*
Tinct. Lavandulæ Comp. *L.*
Spiritus Lavandulæ compositus. *E. D.*
Linimentum Camphoræ compositum. *L.*

In the language of flowers, Lavender signifies acknowledgement.

In Eastern Lands they talk in flowers,
And they tell in a garland their loves and cares;
Each blossom that blooms in their garden bowers,
On its leaves a mystic language bears.

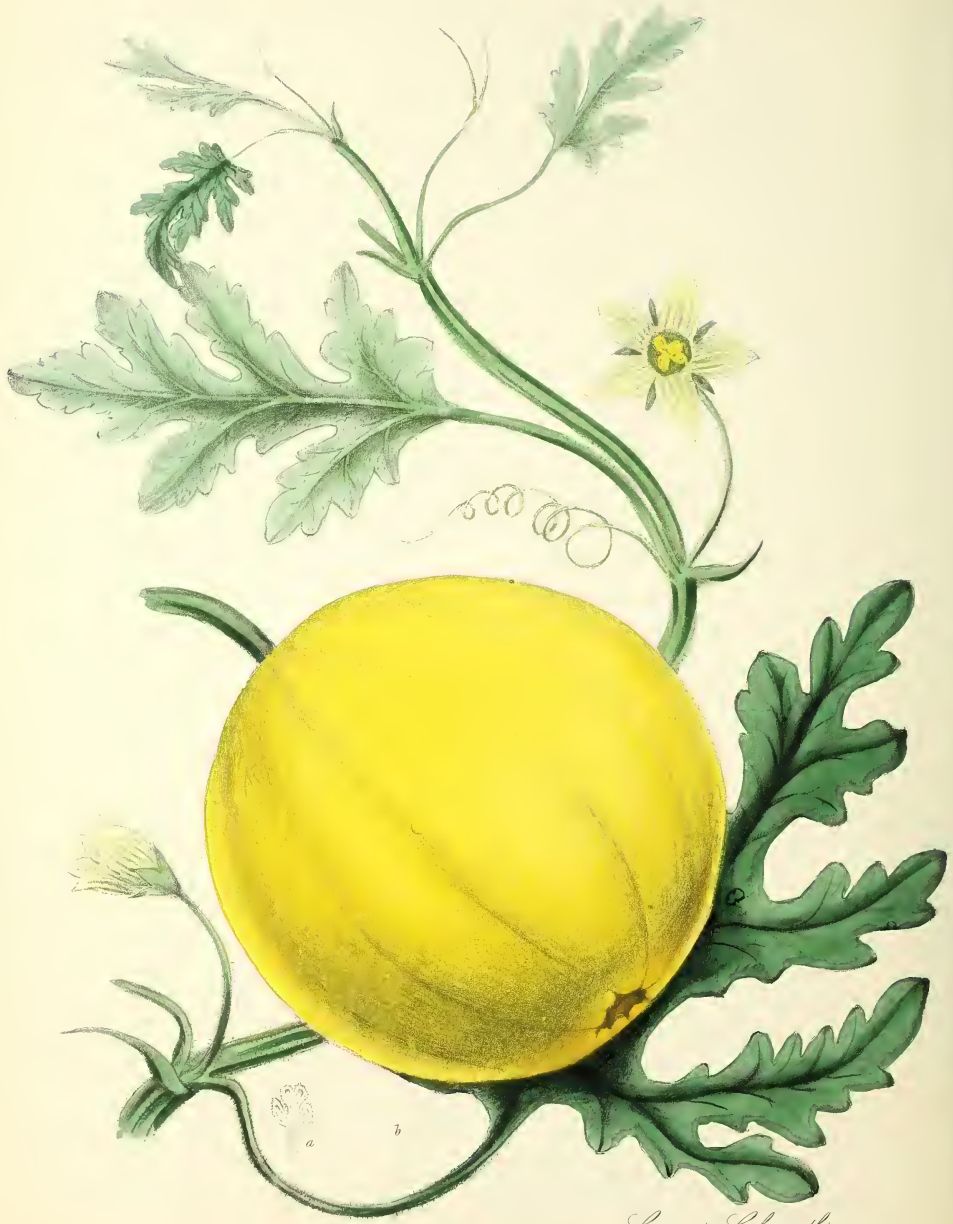
The rose is the sign of joy and love,
Young blushing love in its earliest dawn;
And the mildness that suits the gentle dove
From the myrtle's snowy flower is drawn,

Innocence shines in the lily's bell,
Pure as a heart in its native heaven;
Fame's bright star and glory's swell,
By the glassy leaf of the bay are given.

The silent, soft, and humble heart,
In the violet's hidden sweetness breathes;
And the tender soul that cannot part,
A twine of evergreen fondly wreathes.

The cypress that darkly shades the grave,
Is sorrow that mourns its bitter lot;
And faith that a thousand ills can brave
Speaks in thy blue leaves, Forget me not.

Then gather a wreath from thy garden bowers
And tell the wish of thy heart in flowers.———*Percival.*



Cucumis Colocynthis

Curtis' Lines Skinner St

CUCUMIS COLOCYNTHIS.—BITTER CUCUMBER.

Class XXI. MONŒCIA.—Order IX. SYNGENESIA.

Natural Order, CUCURBITACEÆ.——THE GOURD TRIBE.

Fig. (*a*,) front and back of an anther; Fig. (*b*,) a seed.

This plant, which belongs to the same genus with the rich melon for the dessert, and the cucumber well known for its cooling qualities, is a native of the Cape of Good Hope, Nubia, and Turkey; flowering from May till August. It appears to have been cultivated in this country in the days of Turner.

It is a trailing plant, bearing a considerable resemblance in its herbage to the cucumber. The root is annual, whitish, branching, and strikes deep into the ground. The stems are slender, angular, branched, and rough with short hairs. The leaves are on long petioles, of a triangular form, deeply and obtusely sinuated, of a bright green on the upper surface, paler and clothed with short hairs underneath. The flowers are solitary, axillary, and of a yellow colour. The calyx of the *male* flower is bell shaped; the corolla monopetalous, bell-shaped, and divided at the margin, like the calyx, into five pointed segments; the filaments are three, two of which are bifid at the apex; they are all very short and inserted into the calyx; the anthers are linear, erect, and adhere together on the outer side. The *female* flower is like the male, but the filaments have no anthers; the germen is inferior, large, with a very short cylindrical style, and furnished with three stigmas, which are thick, gibbous, and bent outwardly. The fruit is a round berry or pepo, the colour of an orange, and smooth on the outside when ripe; trilocular, each cell containing numerous ovate, acute, compressed seeds, enveloped by a white spongy pulp.—The seeds are perfectly bland and highly nutritious, and we learn from Captain Lyon, that they constitute an important article of food in Northern Africa.

Burckhardt when travelling through Nubia found the ground covered with the plant, and states that it is very common in every part of the desert; and if we recollect right, it is mentioned more than once as being met with by Major Denham in his adventurous travels in Africa.

Thunberg tells us, that at the Cape of Good Hope the gourd is eaten, being rendered innocuous when properly pickled. This cucumber, which is common in the Levant, is supposed by many persons to be the one mentioned in the second Book of Kings, where the sacred historian says, that during a time of dearth in Gilgal, "one went out into the field to gather herbs, and found a wild vine, and, gathered thereof wild gourds, his lap full, and came and shred them into the pot of pottage: for they knew them not. So they poured out for the men to eat: and it came to pass, as they were eating of the pottage, that they cried out, and said [to Elisha,] Oh thou man of God, there is death in the pot. And they could not eat thereof," until the prophet had miraculously rendered the pottage wholesome.

The fruit is gathered in autumn, when it begins to turn yellow, and is then peeled and dried in a stove or in the sun.

Qualities and Chemical Properties.—The medullary substance of the fruit of colocynth is the part used in medicine. It is white, soft, and porous. The seeds which are imbedded in it are nearly inert. To the taste it is intensely bitter. Boiled in water it gives out a large portion of mucilage, so as to form a liquor of a gelatinous consistence. This is less active than colocynth itself. Alcohol also dissolves only part of its active matter. Experiments seem to prove that colocynth pulp consists chiefly of mucus, resin, the bitter principle, and some gallic acid. According to M. Vauquelin, an alcoholic tincture of colocynth yields by evaporation a brittle substance, of a yellow colour, partially soluble in water, the residue consisting of a white filamentous mass, changing to yellow. He terms it *Colocyntine*, and considers the active principle of the pulp to reside in it.

Poisonous Effects.—Given in over-doses, colocynth acts as a drastic irritating purgative. Dr. Fordyce narrates a case of a woman who was subject to cholic for thirty years in consequence of taking a strong infusion in beer. Orfila says, a man swallowed three ounces of colocynth, with the hopes of curing a malady with which he had been attacked for several days. A short time afterwards he felt severe pains in the epigastrium, and vomited copiously. At the expiration of two hours, he had copious alvine evacuations; the lower extremities became bent, his sight was obscured, and he could only hear with great difficulty; a slight delirium came on, which was succeeded by vertigo. He was made to drink a great quantity of milk, which produced vomiting: ten leeches were applied to the abdomen, and the symptoms yielded by degrees.

Medical Properties and Uses.—Both Hippocrates and Dioscorides were in the habit of employing this remedy as a drastic purgative in dropsy, lethargy, and maniacal cases; and were well acquainted with the violence of its effects, if injudiciously administered. Orfila, from his own observations, asserts that one or two drachms of it only, applied to the cellular tissue of a man's leg, produced death in the space of twenty-four hours. Its doses and combinations are now well ascertained, and although it is scarcely ever prescribed in its simple state, no cathartic is more highly prized, nor oftener used, than the compound extract of colocynth, which, combined with calomel, is the common aperient pill of most English practitioners.

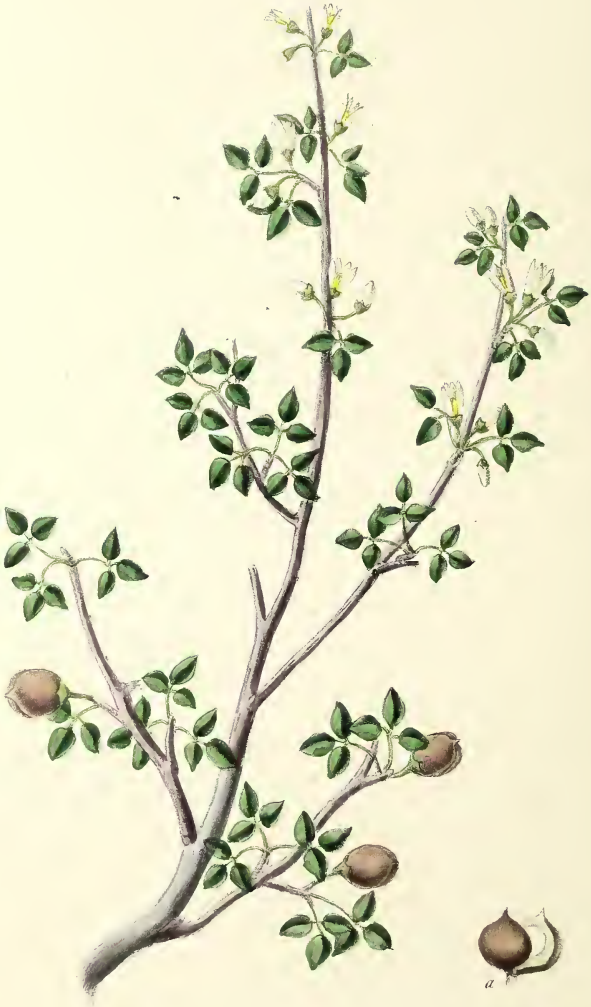
Colocynth has proved very efficacious in dropsy.

Sydenham ordered a drachm to be boiled in water for six minutes, and after adding a drachm of Hoffmann's drops, and an ounce of syrup to a pound of the strained fluid, prescribed a table-spoonful to be taken three times a day.

It is scarcely necessary to observe that pure colocynth is so violent a remedy, that it should be prescribed only by a master of the art.

Off. Prep.—Extract. colocynthidis. L.
Extract. colocynth. comp. L.D.
Pil. aloes cum colocynth. E.D.

Gerard in his Historie of Plants, says, "being boiled in vinegre, and the teeth washed therewith, it is a remedy for the tooth-ache, as Mesues teacheth. And the seed is very profitable to keepe and preserve dead bodies with; especially if Aloes and Myrrhe be mixed with it."



Amyris Gileadensis.

AMYRIS GILEADENSIS.—BALSAM OF GILEAD TREE.

Class VIII. OCTANDRIA.—Order I. MONOGYNIA.

Natural Order, BURSERACEÆ.

This species of amyris, which affords the balsam of Gilead or Mecca, the most precious of the balsams, is a native of Arabia, and was found by Forskal, and also by Niebuhr, growing spontaneously in the mountains of the province of Yemen. The balsam-tree, though not a native of Judea, was cultivated with great perfection many centuries before Christ in the gardens near Jericho, on the banks of the Jordan; and it was from Gilead in Judea, whence the merchants brought the resinous product to Egypt, that it derived its appellation of *Balsam of Gilead*. Since the conquest of Palestine by the Romans, Mr. Buckingham says the balsam-tree has entirely disappeared, and that not one is now to be found; but Burckhardt asserts, that it is still partially cultivated in the gardens near the lake of Tiberias. Mr. Bruce informs us that it is a native of Abyssinia, growing among the myrrh-trees behind Azab, all along the coasts to the straits of Babelmandel.

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

Balm or balsam, is a term commonly applied to resinous substances, which exudes spontaneously from certain plants. It serves very properly to express the Hebrew word עֳרִי, which in the Septuagint is rendered ρητινη, and by the ancients is indiscriminately interpreted *resin*. But Kimchi, and other moderns, have understood the Hebrew noun to designate that particular species formerly called "*balsamum*" or "*opobalsamum*," and now distinguished by the name of *balsamum Judaicum*, or *balsam of Gilead:* celebrated by the ancients for its costliness, its medical virtues, and for being the product of Judea only, and of a particular spot there; which Josephus attributes to the neighbourhood of Jericho, but says that the tree was, according to tradition, originally brought by the Queen of Sheba to King Solomon from Arabia Felix, the country that now principally supplies the demand for that precious drug.

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

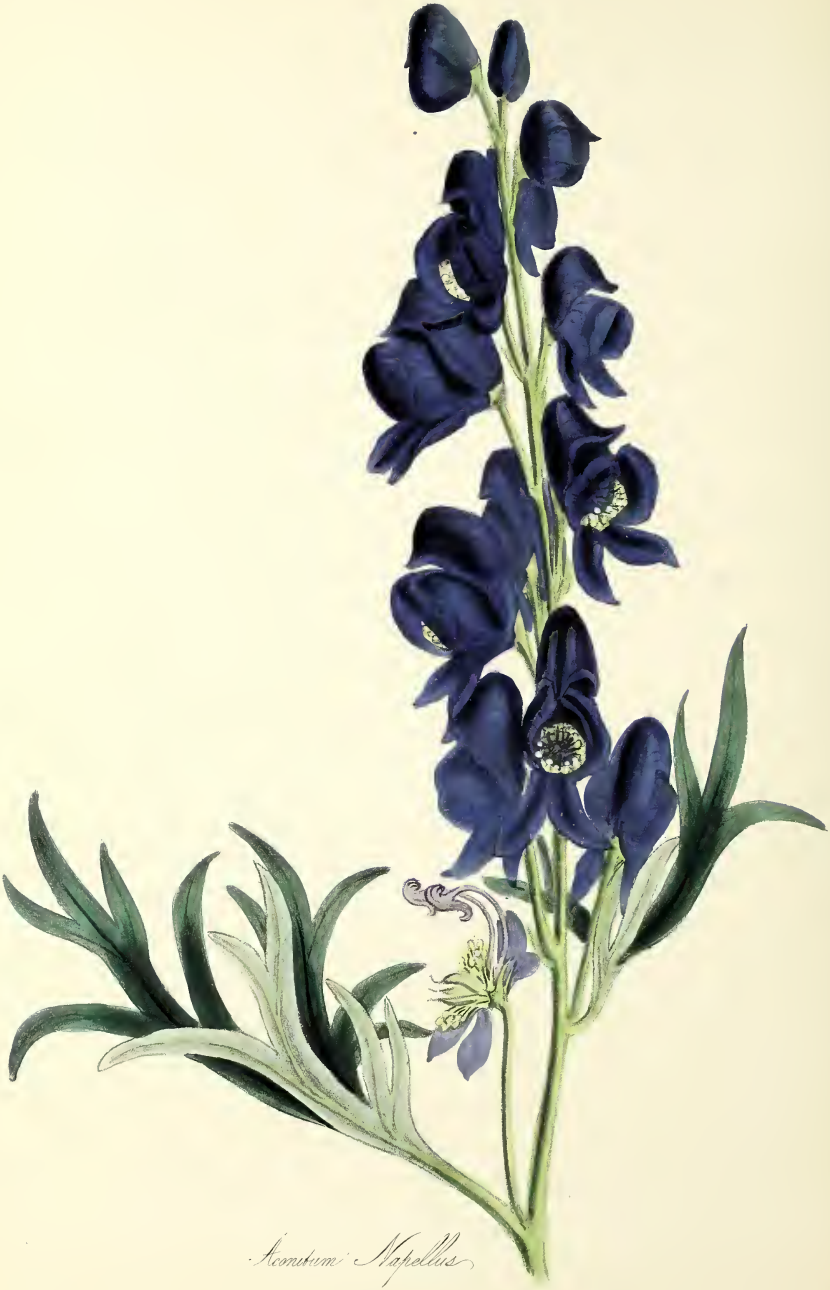
Notwithstanding the positive authority of Josephus, referred to above, and the great probability that attends it, it is observed by Bruce that his account cannot be put into competition with that of the Scriptures, which 1730 years before Christ, and 1000 before the Queen of Sheba, says, "A company of Ishmaelites came from Gilead with their camels, bearing spicery, and balm, and myrrh, going to carry it down into Egypt;" (Gen. xxxvii. 25;) from which it is evident that it had been transplanted into Judea, flourished there, and had become an article of commerce in Gilead long before the period he mentions. Now the spicery or possession was entirely purchased by the Ishmaelites at the mouth of the Red Sea, the market for Indian goods; and at the same place they must have brought the myrrh, which does not, nor did grow anywhere else than in Sabo or Azabo, east of Cape Gardefan, where the ports of India were, from whence it was dispersed all over the world.

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

Qualities and Chemical Properties.—Balsam of Gilead, or of Mecca, says Mr. Milburn, is a resinous juice that distils from a tree, or shrub, growing between Mecca and Medina. The tree is scarce; the best sort is said to exude naturally, but the inferior kinds are extracted by boiling the branches. It is at first turbid and white, of a strong pungent, agreeable aromatic smell, and slightly bitter acrid taste; upon being kept, it becomes thin, limpid, of a greenish hue, then of a golden yellow colour, and, at length, like honey. The *opobalsamum* of the ancients, was the green liquor found in the kernel of the fruit; the *carpobalsamum*, the most in esteem, was expressed from the ripe fruit, and *xylobalsamum* from the small twigs after decoction. It is extremely liable to adulteration, and from its high price and scarcity, we believe that a single ounce of the genuine Balsam of Gilead is not to be obtained in this country, or even in Europe. To spread when dropped into water, all over the surface, to form a thin iridescent pellicle, so tenacious that it may be taken up entire with the point of a needle, were formerly infallible criteria of the genuine article. It has, however, been observed, that other balsams, when of a certain degree of consistence, exhibit these phenomena equally with the Balsam of Gilead. Mr. Bruce says, "if the balsam be dropped on a woollen cloth, in a pure state, it may be washed out completely and readily with simple water. Dried Canada balsam, or the resinous juice which exudes from the Pinus *balsamea*, is at the present day generally substituted for the real, and if it does not possess its odour, it is equally efficaeious."

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

In the Language of Flowers, Balm of Gilead denotes Healing.



Aconitum Napellus

ACONITUM NAPELLUS.—COMMON MONK'S-HOOD, OR WOLF'S BANE.

Class XIII. POLYANDRIA.—Order III. TRIGYNIA.

Natural Order, RANUNCULACEÆ.—THE CROW-FOOT TRIBE.

This species of Aconite, (which has frequently been mistaken for the A. *neomontanum*, so strongly recommended by Baron Stoerck,) is one of our most active vegetable poisons, and is still retained in the London and Edinburgh Pharmacopœias. It is very generally cultivated in gardens as an ornamental plant; but grows spontaneously in the alpine forests of Sweden, France, Switzerland, Austria, Carniola, and other parts of Europe. It is a doubtful native with us, but Smith found it abundant on the banks of a brook running into the river Teme, in Herefordshire, and also by the side of the larger stream; he has, therefore admitted it into the English Flora.

The root is simple, or fusiform, and woody. The stem is erect, simple, clothed with leaves, rises to the height of two or three feet, and is terminated by an elegant cylindrical spike of flowers, which are developed in May and June. The leaves are palmated and divided into five wedge-shaped segments; these are deeply cut and toothed, and stand alternately upon long-channelled footstalks, which become gradually shorter as they approach the top of the stem, so that the upper leaves are nearly sessile; the whole are dark green above, paler underneath, smooth and shining. The flowers which are of a deep violet colour, proceed alternately from the axis of the spike, and are supported upon short pedicles. Two small bracteæ are placed on the flower-stalk, at a short distance from the flower. The petaloid sepals are five; the uppermost helmet-shaped covering the petals or nectaries; the lateral ones broad, roundish; the lower oblong, and bending downwards. The petals, usually called nectaries, are two, concealed under the upper sepal; each nectary is furnished with a hooked spur, with the lip lanceolate, revolute and bifid. The stamens are filiform, converging, purple at the upper part, and supporting whitish anthers. The germens are from three to five, with simple reflected stigmas. The capsules, which correspond in number with those of the germens, contain numerous angular-wrinkled seeds.

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

Its deleterious effects were well known to the ancients, who regarded it as the most violent of all poisons, being unacquainted with those of mineral origin, and fabled it to be the invention of Hecate, who caused it to spring from the foam of Cerberus. Aconite is said to have been the principal ingredient in the poisonous cup that was mingled by Medea for Theseus; and it was the poison employed to execute the barbarous law in the island of Ceos, which condemned to death all who were no longer useful to the state. Hence the old men who were too feeble to defend themselves, were deemed useless, and presented with a draught of the juice of Aconite.

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

The taste is moderately bitter; the odour faint and narcotic. The active principle is supposed to be an alkaloid, first discovered by Pallas, and subsequently examined by Brandes, who has named it *aconitia*.

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

It appears that M. Bichat was the first who ascertained that "the brain is not directly necessary to the action of the heart, and that when the functions of the brain are destroyed, the heart continues to contract for some time afterwards, and then ceases, only in consequence of the suspension of respiration, which is under the influence of the brain."

Dr. A. Thomson says, "the powdered leaves have at first a sweetish taste, which, however, is soon

followed by an acrid burning sensation, accompanied with a profuse salivation; and if an extract of them be given without the greatest caution, it acts first on the stomach and then on the nervous system; producing vomiting, hypercatharsis, vertigo, cold sweats, delirium, and convulsions which terminate in death. If placed on the eyelids it causes tears to flow, but it produces no sensation of heat, and when the powder is sprinkled upon an ulcer, it causes neither heat nor pain."

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

But although such are said to be the effects of the leaves and exhalations from the flowers, the roots are unquestionably the most powerful part of the plant; and as a new root is formed each year by the side of the old one, the properties of which are very much diminished, if not entirely destroyed, by the exhaustion of growth, great care should be taken in the selection.

Linnæus says, the A. *napellus* is fatal to kine and goats, especially when they come fresh to it; but that it does no injury to horses, who eat it only when dry. He also relates in the Stockholm Acts that an ignorant surgeon having prescribed the leaves, and who, on his patient refusing to take them, took a dose himself, died in consequence. The following case is a further example of similar ignorance being similarly fatal to another surgeon, and they are curious, as medical men are not proverbially famous for taking physic.

A person having eaten some of the leaves of the A. *napellus*, became maniacal and the surgeon who was called to his assistance declared, that the plant was not the cause of his disorder; and to convince the company that it was perfectly innocent, he ate freely of its leaves, and soon after died in great agony.—(Mordus in K. Vet. Acad. 1739, p. 41.)

Dr. Willis, in his work, De Anima Brutorum, gives also another instance of a man who died in a few hours from eating the young leaves of this plant in a salad. He likewise exhibited all the symptoms of mania.

Dissection throws no light on the effects of Aconite.

The native Indians use it to poison the water tanks, in order to impede the progress of an army. An attempt of this kind was made at Hotoura during the Napal war, but it was discovered in time to save the soldiers. They also use it for poisoning spears, darts, and arrows. Among other characteristic traits of the iron age, Ovid tells us that

Lurida terribiles miscent aconita novercæ:
"Terrible stepmothers mingle the lurid wolf's bane."

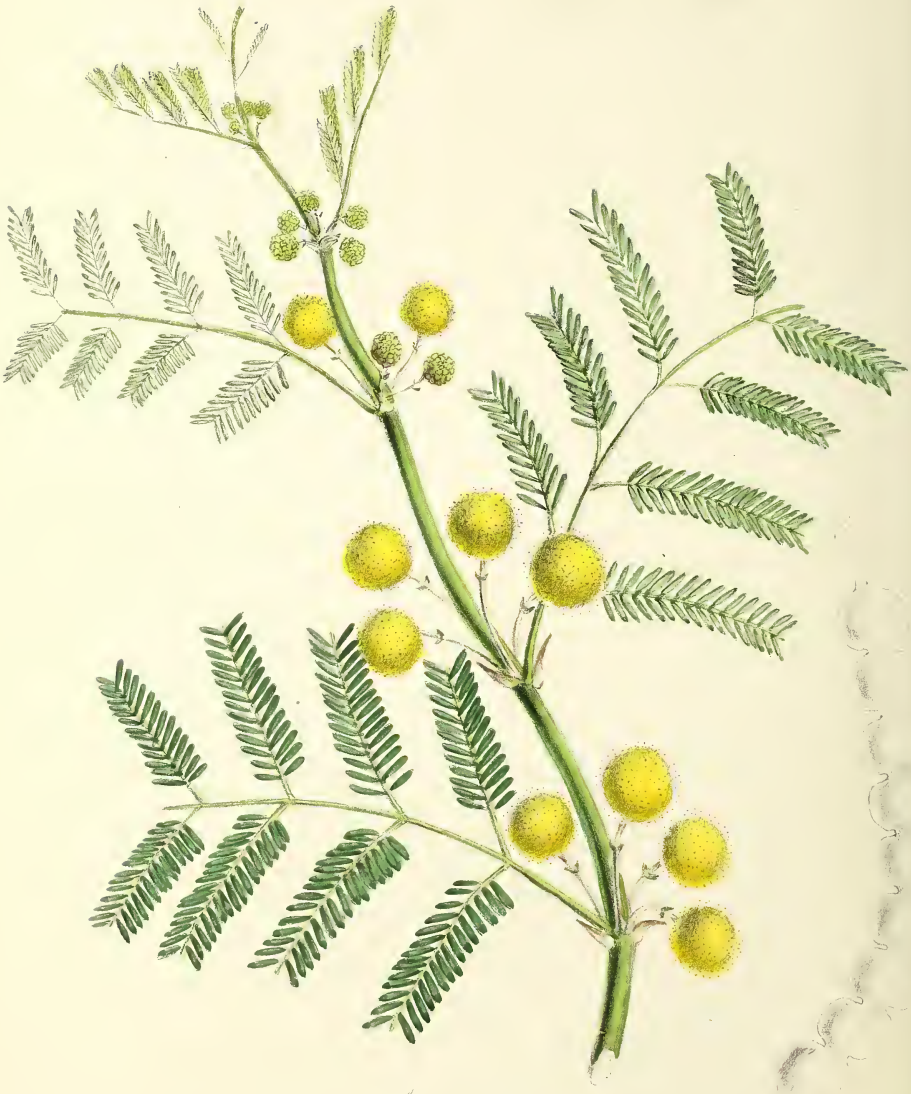
Medical Properties and Uses.—The Aconite thus invested with terror, has, however, as Don observes, been so subdued, and reduced to such a manageable state, as to have become a very powerful remedy in some of the most troublesome disorders incident to the human frame. It is to Baron Stoerck that we are principally indebted for our knowledge of this potent medicine; which, according to his account, is diuretic, as well as diaphoretic, and narcotic. He administered it for intermittent fevers, chronic rheumatism, gout, exostosis, paralysis and schirrous, and narrates many well-marked cases of these diseases, in which it was eminently successful. He appears to have been well acquainted with the potency of the drug he was administering; and therefore recommended small doses to be given at first, which were very gradually increased. His observations led to its employment in other diseases, and it has been found useful; but in consequence of its uncertain powers, alarming symptoms have been produced, which have caused it to fall into general neglect. Dr. Davy, however, in a letter to Dr. Paris, says: "In some cases of chronic rheumatism, and in some of intermittent fever, it has had a beneficial effect not to be mistaken; the dose has been from one to two grains." Its diaphoretic effect he did not observe. We have had no experience of the internal administration of Aconite, but the extract applied as a plaster, is a very useful application to rheumatic affections. It is usual to combine either the powder or the extract, with some antimonial preparations, calomel, camphor, ipecacuanha, guaiacum, &c. The extract is most certain in its effects; and as well as the powder must be given in small doses at first.

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

Off. prep.—Extractum Aconiti. *L. E.*

In Flower Language, Monk's Hood denotes Knight Errantry.

By all those token flowers that tell,
What words can ne'er express so well.———*Byron.*



Acacia vera

ACACIA VERA.—EGYPTIAN GUM-ARABIC ACACIA, OR EGYPTIAN THORN.

Class XXIII. POLYGAMIA.—Order I. MONŒCIA.

Natural Order, LEGUMINOSÆ.——THE PEA TRIBE.

This plant, which affords the finest Gum Arabic of commerce, was originally referred by Linnæus to the extensive genus Mimosa, under the title of Mimos *Nilotica;* but it has been removed by Willdenow with other species to the genus Acacia. It is a native of the sandy deserts of Arabia, Egypt, and the western parts of Asia; and, according to Mr. Jackson, grows abundantly in Barbary, and other parts of Africa. The original gum-arabic tree was known to the earlier botanists, and appears to have been cultivated by Gerarde in 1596; but few persons are acquainted with living, or even dried specimens especially of the legume.

It rises several feet in height; the stem is crooked, and covered with a smooth grey bark, which on the branches has a yellowish green, or purplish tinge. The leaves are alternate, bipinnate, composed of several pairs of opposite pinnæ, with numerous pairs of small, deep green, smooth leaflets. At the base of the leaves are two opposite awl-shaped spines, nearly erect, and having a slight, glandular swelling below. The flowers are of a bright yellow colour, and collected into globular heads, four or five together, upon slender footstalks, that arise from the axillæ of the leaves. Immediately below each head of flowers, is placed a pair of small, ovate bracteas. The calyx is bell-shaped and 5-parted; the stamens are numerous, thread-like, and furnished with roundish, yellow anthers; the germen is conical, with a slender style and simple stigma. The legumes are four or five inches long, moniliform, nearly flat, smooth, of a pale brown colour, and contracted into numerous orbicular portions, in each of which is lodged a flattish seed. This character, as a distinguished botanist justly observes, clearly distinguishes the present species from Acacia *Arabica;* it being more strictly contracted into orbicular portions, with an obliquity well expressed in the wooden cut of Veslingius.

The gum, says Mr. Jackson, called Morocco or Barbary gum, is produced from a high, thorny tree, called *Atteleh,* having leaves similar to the *Arar,* or Gum Sandrac tree, and the juniper. The best kind of Barbary gum is procured from the trees of Morocco, Ras-el-wed, in the province of Suse, and Bled-hummer, in the province of Abda: the secondary qualities are the produce of the Kedma, Duguella, and other provinces. The tree grows abundantly in the Atlas mountains, and is found also in Bled-eljerrede. The gum, when new, emits a faint smell, and when stowed in the warehouse, it is heard to crack spontaneously for several weeks; and this cracking is the surest criterion of new gum, as it never does so when old: there is, however, scarcely any difference in the quality. The wood (of the tree) is hard and takes a good polish; its seeds, which are enclosed in a hard, coriaceous pericarp, resemble those of the lupin, yield a reddish dye, and are used by the tanners in the preparation of leather. These seeds attract the goats, who are very fond of eating them. The more sickly the tree appears, the more gum it yields; and the hotter the weather, the more prolific it is. A wet winter, and a cool, or mild summer, are unfavourable to gum.—(Jackson's Hist. of Morocco, fol. 84.)

The purest and finest gum-arabic is brought in caravans to Cairo, by the Arabs of the country round Mount Tor and Sinai; they bring it from this distance on the backs of camels, sewn up in bags, and often adulterated with sand and other matters. The gum exudes spontaneously from the bark of the trunk and branches of the tree, in a soft, or nearly fluid state, and hardens by exposure to the air, or heat of the sun. It begins to flow in December, immediately after the rainy season, near the flowering time of the tree. Afterwards, as the weather becomes hotter, incisions are made through the bark to assist the transudation of the juice. All the gum that was employed in medicine, or the arts, was formerly brought from Arabia, or from Egypt, whence its name was derived; and it was not till about two hundred years ago, that the gum of Senegal was introduced into commerce. That adventurous and persevering naturalist, Adanson, who explored the district of the river Senegal with so much assiduity, contributed to extend our knowledge of the trees from which the gum might be procured in the western parts of Africa; and at present nearly the whole of what is imported into Europe comes from that country.

Several kinds of gum, yielded by different trees, are occasionally to be met with, but that which is commonly substituted for it, as we have already observed, is brought from the island of Senegal, on the coast of Africa, and is called *Gum Senegal.* It is generally in larger masses, and is of a darker colour; is more tenacious, and breaks with a vitreous, even fracture. It is not so soluble in water as the true Gum Arabic, and leaves at the bottom a stringy substance. It is the sort chiefly employed by the calico-printers, but does not go so far in thickening water. In India, what is termed the *Babul* tree, (Acacia *Arabica,*) furnishes a very fine gum, which is extensively employed in the place of Gum Arabic; and Dr. Ainslie thinks that it is the same tree that is referred to by Dr. Wittman, in his Travels, (p. 231,) as yielding Gum Arabic in Turkey. It is in small clear masses, of a semi-transparent or very pale yellow colour; but it is essential to have this gum well garbled in India; and care should be taken that it is not intermixed with a

gum resembling it, but generally in larger pieces, which is quite worthless. The Feronia *elephantum* of Roxburgh also yields a valuable gum, similar to Gum Arabic, which is commonly used by all the practitioners of Lower India; and, according to Dr. F. Hamilton, gum, simply so called, may be procured in the Mysore, from the Melia *Azederach;* Chironia *glabra;* Mangifera *indica;* Cassia *auriculata;* Ægle *marmelos;* Shorea *robusta*, and several other trees.

Qualities and Chemical Properties.—Gum Arabic is usually met with in small pieces, like tears; moderately hard; somewhat brittle, and may be reduced to a fine white powder. When pure, it is colourless, but has commonly a yellow tinge, and is not destitute of lustre. It has no smell. Its taste is insipid. Its specific gravity varies from 1.3161 to 1.4317. Water may be said to dissolve it entirely. The solution is known by the name of *mucilage;* which is thick, and adhesive: it is often used as a paste, and to give stiffness and lustre to linen. When spread out thin, it soon dries, but readily attracts moisture, and becomes glutinous. When mucilage is evaporated, the gum is obtained unaltered. It may be kept for years, without undergoing putrefaction. When gum is exposed to heat, it softens and swells, but does not melt; it emits air bubbles, blackens, and at last, when nearly reduced to charcoal, emits a low blue flame. After the gum is consumed, there remains a small quantity of white ashes, composed chiefly of the carbonates of lime and potash. Vegetable acids dissolve gum without alteration: the strong acids decompose it. Chlorine converts gum into nitric acid, according to the experiments of Vauquelin. If nitric acid be slightly heated upon gum till it has dissolved it, and till a little nitrous gas is exhaled, the solution, on cooling, deposits saclactic acid. Malic acid is formed at the same time; and if the heat be continued, the gum is at last changed into oxalic acid. Thus, no less than three acids are developed by the action of nitric acid on gum.

Gum is insoluble in alcohol and ether, and both precipitate mucilage.

From the experiments of Vauquelin, it appears that gum contains traces of iron; and he conjectures, that the lime which it contains is usually combined with acetic or malic acid. Berzelius analysed it, by burning it along with chlorate of potash, and found it composed of,

Oxygen	51.306
Carbon	41.906
Hydrogen	6.788
	100.000

Medical Properties and Uses.—Gum arabic is extensively employed for a number of purposes, both in the arts and in medicine. It is frequently used either to suspend in water various substances, which could not otherwise be kept equally diffused in that liquid, or as a useful colourless cement. Gum Senegal resembles gum arabic so nearly, that it is employed instead of it for all purposes in Hindustan; and in this country is used in very large quantities by the calico-printers to mix the colours and the mordaunts in block printing. Gum arabic forms the basis of crayons, and the cakes of water-colours; and of several liquid colours, of which common writing ink is a familiar example.

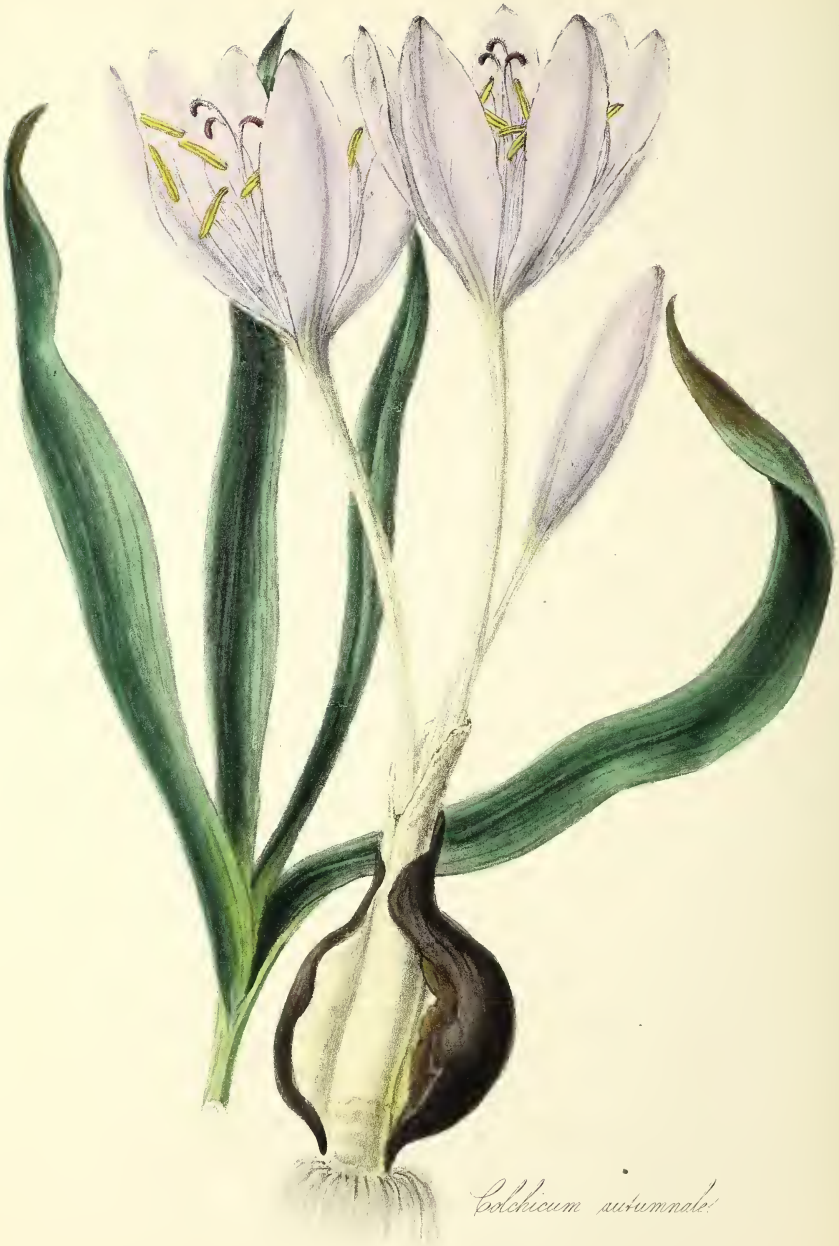
All the vegetable mucilages are considerably nutritious; hence in the countries where the gum arabic and Senegal grow native, they form an important article of diet, either alone or mixed with milk, rice, and other substances. In Guzerat, especially in the wastes, where the Babul tree (Acaeia *arabica*) is very common, the poorer inhabitants use the gum for food. Haselquist informs us, that a caravan whose provisions were exhausted, preserved themselves from famine, by the gum arabic, which they were carrying as merchandise. During the whole time of the gum harvest, of the journey, and of the fair, the Moors of the desert live almost entirely upon it, and experience has proved that six ounces are sufficient for the support of an adult during twenty-four hours.

In medicine, this gum is used either by itself, or as a vehicle for other substances. Taken internally, its principal use is as a demulcent; to envelop acrid matter, and to cover the surfaces that are too sensible to external impressions. Hence it is sometimes allowed to dissolve gradually in the mouth, to allay irritation of the fauces; and its mucilage, sweetened with syrup, forms a useful remedy for tickling coughs, hoarseness, and diarrhœas; as well as in cardialgia, arising from oily substances received into the stomach. In these cases, it is sometimes advantageously joined with opiates and aromatics. Though its action has been supposed not to extend beyond the fauces and alimentary canal, it has been frequently recommended in a great variety of diseases. It is given, either in powder, or dissolved in almond milk, &c. one ounce being sufficient to render a pint of liquid tolerably viscid.

In pharmacy, gum arabic is employed to render oils, balsams, and resins, miscible with aqueous liquids; and to give tenacity to substances made into troches and pills. Even Mercury may be suspended in water, by being rubbed for a considerable time with gum arabic; which preparation is called, from its inventor, *Plank's solution.*

The pharmaceutical preparations into which gum arabic enters as a principal ingredient, are the *Mucilago Acaciæ*, a simple solution of one part of the gum in two of boiling water; the *Emulsio Acaciæ Arabicæ, Ph. Ed.* which is gum arabic dissolved in almond milk; the *Trochisci gummosi, Ed.*, with equal parts of gum, starch, and sugar; and the *Pulvis Tragacanthæ compositus, Ph. Lond.*, a powder made of tragacanth, gum arabic, starch, and sugar. It is also an ingredient in the *Confectio amygdalarum*, L. *Mistura cretæ*, L. *Mistura Moschi*, L. *Mistura Guaiaci*, L. and the *Pulvis cretæ compositus*, L.

In flower language Acacia signifies Platonic love.


Colchicum autumnale

COLCHICUM AUTUMNALE.——COMMON MEADOW SAFFRON.

Class VI. HEXANDRIA.—Order III. TRIGYNIA.

Natural Order, IRIDEÆ.——THE CORN FLAG TRIBE.

Meadow-saffron, like the colts-foot, produces its leaves one season, and flowers at another; but differs in this respect, that the leaves, and fruit, appear early in the spring, and the flowers in the autumn. Hence it has been considered the harbinger of winter, and Linnæus, in his Philosophia Botanica, observes, "*Colchicum autumni et gelu nuncia est.*" It is an indigenous perennial plant, found in several counties, chiefly in the west and north of England, where it grows in tolerable abundance, in moist rich meadows. It occurs, among other places, at Filkins and Bradwell, Oxfordshire; in Weston Park, Staffordshire; at Little Stonham and Bury, Suffolk; near Devizes, Wiltshire; about Derby and Northampton; and at the foot of the Malvern hills, in Worcestershire. Miller observed it, many years ago, in great plenty, in the meadows near Castle-Bromwick, in Warwickshire, in the beginning of September, and says, that the common people called the flowers *Naked Ladies*, because they come without the leaves. In Scotland it appears to be very rare; but Lightfoot, in his "Flora Scotica," mentions it as growing at Alloa.

The stem, which is called a solid bulb, consists of a fleshy succulent cormus, abounding in a milky juice, and covered with a brown membranous coat. This bulb, which is nearly as large as that of a tulip, and furnished at the base with numerous small fibrous roots, perishes after the ripening of the seeds, having first thrown out a lateral offset, that produces the flowers of the ensuing season. From this last arises, in autumn, along a furrow in the side of the old bulb, a long naked tube, which at the upper part expands into the flower. The leaves spring directly from the bulb in spring, along with the capsules. They are dark green, smooth, obtuse, spear-shaped, above a foot long, and pointed; growing erect. On the decay of the leaves, the flower makes its appearance, towards the latter end of September. It is large, of a pale purple or lilac colour, divided into six deep, elliptic-oblong, concave, upright segments, and rising immediately from the bulb, by a tube five or six inches long, two-thirds of which are sunk in the ground. The perianth is single, and the flowers are therefore often described as having no calyx. The filaments are awl-shaped, inserted into the tube of the corollaceous perianth, and support erect, oblong, versatile, yellow, extrorse anthers. The germen is roundish, and imbedded in the bulb. The styles are thread-shaped, the length of the stamens, and terminated by linear, recurved, and downy stigmas. The fruit is a capsule, with three lobes, closely connected; its dehiscence is loculicidal, and it contains numerous whitish, smooth, globular seeds, which are perfected in the month of June, when the capsule rises above ground on a short peduncle, accompanied by the leaves. The seeds are covered by membranous testæ, and inclose a dense, fleshy albumen. A considerable variety obtains in this species, both with respect to the form and colour of the flower. In one variety the flowers accompany the leaves in spring.

For the introduction of Colchicum into modern practice, we are principally, if not wholly indebted to Mr. Want. The first hint he obtained on this subject, was derived from the writings of Alexander of Tralles, a Greek physician of the sixth century, whose book on gout is one of the most valuable clinical records of antiquity; and who, in his chapter on anodynes remarks, that some persons take a medicine called *Hermodactylon*, which produces an evacuation of watery matter from the bowels, attended with such relief that patients are immediately able to walk. But, says he, it has this bad property, that it disposes those who take it to be more frequently attacked with the disease. He speaks, also, of its producing nausea and loathing of food; and proceeds to describe the manner of counteracting its bad properties. The effects here spoken of are so similar to those resulting from the exhibition of the Eau Medicinale, that Mr. Want was led to hope that it might be the same medicine, or, at least, that it possessed powers of the same kind; and on procuring a specimen of this plant from Constantinople, it was found to be the Colchicum. The Hermodactyl was strongly recommended by Paulus Ægineta as a specific for the gout, also by Pepagoneus, who wrote a treatise on that disease at the request of the Emperor Michael Palæologus, in the 13th century; and such was its reputation, that it obtained the name of *Anima Articulorum*, "the soul of joints." Two of the most celebrated gout-specifics, viz. Turner's Gout-powder, and the Vienna Decoction, the latter of which is so strongly recommended by Behrens in the *Ephemerides Naturæ Curiosæ*, are formed principally of Colchicum; and it is notorious to every practitioner acquainted with the history of his profession, that this root has, at different epochs, obtained a celebrity in the treatment of gout, though

its general use has, after a time, been suspended. But Prosper Alpinus says, that Colchicum is perfectly inert, and that the Egyptian women fatten themselves with the wasted roots, often eating twenty in the course of the day, without having any effects produced, either on the stomach or bowels. More modern experimentalists have differed nearly as much on the powers of Colchicum; but, owing to the investigations of Messrs. Battley and Thomson, the time at which the bulb should be taken up has been satisfactorily proved, by its uniform effects. In the spring, *(April)* the root does not materially vary in size and general appearance from that which is ordinarily met with. It is then of full size, but irregularly indented or hollow. At this time it is found with a small attached bulb, about the size of a bean. The growth of this small bulb *proceeds* from the latter end of April or beginning of May, (according to the season,) until the latter end of June or beginning of July, at which time it attains its full growth. The parent root appears to yield as the new production advances, and when the latter attains its full size is no where to be found. The *new* root is then plump, firm, and without any indentation or hollow, and does not undergo any change of appearance from this period until the latter end of August, when in its turn it becomes *old*—for at this period it throws out a new bulb: from that new bulb the flower proceeds, and in the course of a very few days it is fully displayed. Between this latter period and the spring very little apparent change takes place: the root and offset are then found as first described. These changes are, of course, subject to some variation from soil, climate, and season. The state and condition of the root, if subjected to experiment, illustrate the process of nature in a striking and forcible manner. A transverse section of the bulb, exposed to the temperature of 170, if procured in *autumn*, contracts, and when dried is shrivelled; if procured in *spring*, the cuticle collapses, no other part of the then remaining substance being capable of enduring heat; if procured in the months of *July* and *August*, before the new bulb is projected it remains quite solid and firm, and has a creamy appearance.

It may be inferred from these facts, that this root is deprived of its power progressively, from the time of throwing out the new bulb, until its final disappearance; and that, although very little change of appearance occurs during the winter months, it really undergoes a decided deterioration in that period.

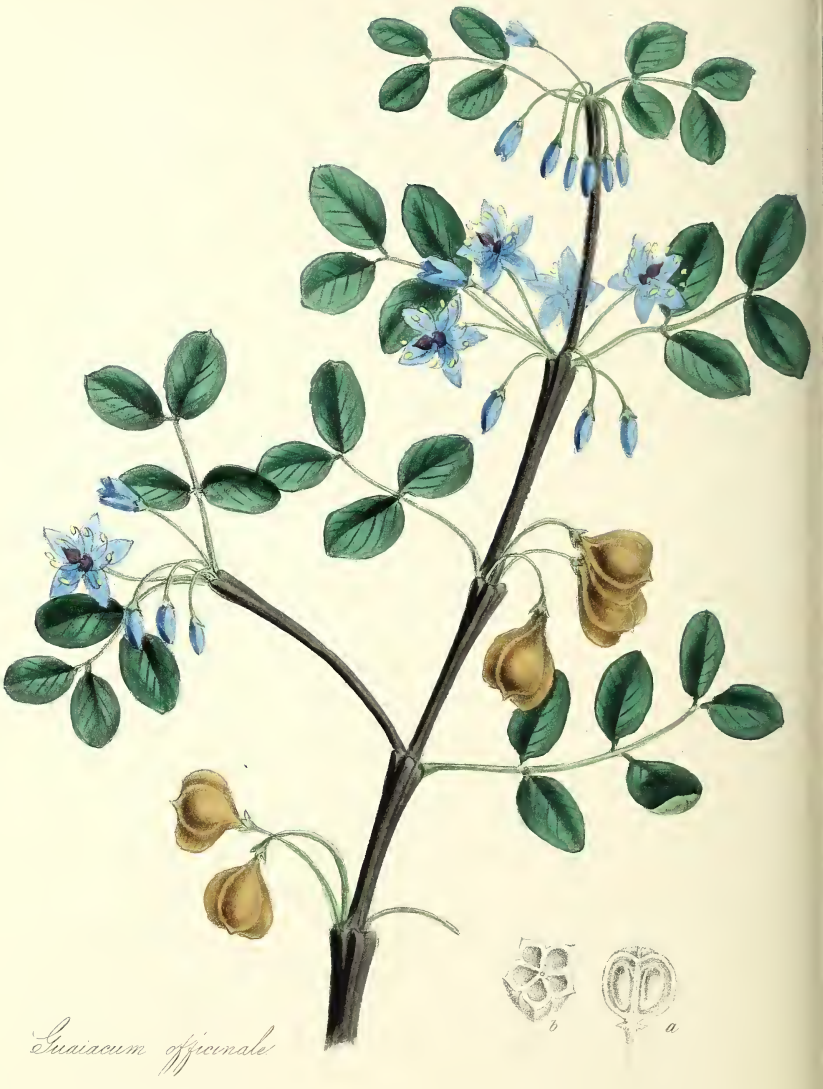
Qualities and Chemical Properties.—The root, when taken from the ground at the time recommended, and cut transversely, exhibits a milky appearance on both surfaces. The exudation is not particularly pungent; it rather impresses the tongue with a cold but peculiar sensation; which remains unabated for some time. This sensation is accompanied by a peculiar excitement, which is conveyed to the fauces, and continues still longer than the first-mentioned sensation of cold. The properties of Colchicum reside in this milky juice, and depend upon an alkaline principle termed *veratrine*, which has also been discovered in the seeds of the Veratrum *Sabadilla*, and the Veratrum *album*. When treating of the latter plant, we shall fully advert to its properties. It contains, also, gum, starch, inulin, and extractive matter, which, when in solution, undergoes a chemical change, supposed by Dr. Paris to be analogous to that which takes place in the infusion of senna. Sir E. Home ascertained, that this deposit in the vinous infusion excites nausea and griping, but that it may be removed without destroying the efficacy of the medicine. It is now generally believed, that Husson's *Eau Medicinale* owes its virtues to Colchicum; for not only does it correspond to our Vinum Colchici in its effects, but it is notorious that Wedelius, a continental physician, sold an empirical preparation of this plant, which was extolled as a panacea; while the catalogue of its virtues bears strong resemblance to Husson's original advertisement, and the account of this nostrum is contained in Geoffroy's system of Materia Medica, well known in France, where Husson lived. Wilson's and Reynolds' specifics are also entirely indebted to Colchicum for any virtues they may possess.

Medical Properties and Uses.—Colchicum is one of the most powerful remedies we are possessed of, in consequence of the direct action it is capable of exerting over the heart, and arteries. On the continent it has been chiefly used in the treament of hydrothorax, and asthma, but although we have had considerable experience in its administration, we could never satisfy ourselves that its effects in those diseases were equal to squills; and as a diuretic it can never be relied on. If given in overdoses it produces distressing nausea, deadly vomiting, and profuse purging; but combined with some saline purgative which acts on the bowels *of itself*, the Colchicum even in large doses exerts its own specific powers, and in a few hours generally succeeds in destroying the paroxysm of gout. It is to be regretted, however, that more recent experience has not confirmed the panegyrics lavished on Colchicum twenty years ago. It often reduces the unhappy patient to a pitiable state, especially if he undertakes the management of his own case.

Dose.—The dose of the powder is from three to eight grains.

Off. Prep.—Vinum Colchici. *L.*
Acetum Colchici. *L.*
Oxymel Colchici. *D.*
Syrupus Colchici Autumnalis. *E.*

In the language of Flowers Meadow Saffron says, "my best days are past."



Guaiacum officinale

GUAIACUM OFFICINALE.——OFFICINAL GUAIACUM, OR LIGNUM VITÆ.

Class X. DECANDRIA.—Order I. MONOGYNIA.

Natural Order, ZYGOPHYLLEÆ.——THE BEAN-CAPER TRIBE.

This tree, the wood of which is well known in England under the name of Brazil wood, or *Lignum vitæ*, is a native of Jamaica, Hispaniola, and the warmer parts of America. It has been long in use, and appears from the MSS. of Sir Hans Sloane, in the British Museum, to have been first cultivated in this country by the Duchess of Beaufort in 1699. It is said to flower from July to September.

The tree rises to the height of thirty or forty feet, and is near a foot in the diameter of its trunk, with numerous divaricated knotty branches, leafy at the ends. The bark is very smooth, variegated with green and white; that of the branches being uniformly ash-coloured, striated, and marked with fissures. The wood is hard and ponderous, dark, olive-brown within, whitish towards the bark, and has a peculiar acid aromatic scent. The leaves are opposite, abruptly pinnate, consisting of two or three pairs of ob-ovate or roundish, obtuse, entire, smooth, dark-green, rigid, leaflets, various in size, with several radiating veins, and nearly sessile. The flowers are pale blue, on simple, axillary, clustered stalks, shorter than the leaves. The calyx consists of five ovate-oblong, obtuse, concave, spreading deciduous leaves; the two outer ones rather the smallest. The petals are five, roundish, ob-ovate, concave, spreading, with short linear claws, inserted into the receptacle. The stamens are ten, awl-shaped, erect and villous, with oblong incumbent, cloven anthers; the germen is obcordate, with a short awl-shaped style. The capsule is somewhat turbinate, on a short stalk, smooth, succulent, pale, ferruginous or yellow, with from two to five rounded, slightly bordered angles, and as many cells bursting at the angles; but two or three of the cells are frequently abortive. The seeds are solitary, pendulous, ovate, convex on one side, angular at the other, the albumen cartilaginous and chinky, the embryo nearly straight with thickish cotyledons.

Guaiacum is a barbarous name, derived from the Spanish one *Guaiac* or *Guayacau*, which itself originated from *Hoaxacan*, the Mexican appellation of the plant.

Qualities and Chemical Properties.—The wood of this tree, and the peculiar matter which it yields, are the parts medicinally employed. The wood is hard and heavy, and is much used for ship-blocks and for toys. It is nearly inodorous, but has a warm, somewhat bitter taste; and its virtues depend upon the resin-like substance which it contains. It is rasped for medical use, but we are inclined to think that it yields little of its powers to decoction.

The Guaiacine exudes spontaneously from the trunk and branches of the tree; and concreting, forms tears of a semi-pellucid and pure nature. By making incisions in the month of May, greater quantities flow, and after becoming hard, by exposure to the sun and air, it is collected and packed in casks for exportation. Another method for obtaining it, is by sawing the trunks and large limbs into billets, about three feet long: an auger hole is then bored lengthways in each, and the other end of the billet being put in a fire, the melted matter flows into calabashes, placed purposely to receive it. By boiling chips, or raspings of the wood in water, with common salt, the Guaiac swims at the top, and may be skimmed off. Sometimes it is adulterated with common resin and the Machineel gum. The former is detected by its smell, if heat be applied, and the latter "by adding to the alcoholic solution a few drops of sweet spirits of nitre, and diluting with water; the guaiac is precipitated, but the adulteration floats in white striæ."

Guaiacum was considered by chemists as a resin, till Mr. Hatchett observed, that when treated with nitric acid it yielded products very different from those of resinous bodies. This induced Brande to examine its chemical properties in detail. To his valuable paper we are indebted for almost all the accurate information which we possess respecting its chemical nature.

"*Guaiacum* is a solid substance, resembling a resin in appearance. Its colour differs considerably, being partly brownish, partly reddish, and partly greenish; and it always becomes green when left exposed to the light in the open air. It has a certain degree of transparency, and breaks with a vitreous fracture. When pounded it emits a pleasant balsamic smell; but has scarcely any taste, although when swallowed it excites a burning sensation in the throat. When heated it melts, and diffuses at the same time a pretty strong fragrant odour. Its specific gravity is 1·2289.

"When *guaiacum* is digested in *water* a portion of it is dissolved, the water acquiring a greenish-brown colour and a sweetish taste. The liquid, when evaporated, leaves a brown substance, which possesses the properties of *extractive*; being soluble in hot water and alcohol, but scarcely in sulphuric ether, and forming precipitates with muriates of alumina, tin, and silver. This extractive amounts to about nine parts in the hundred of Guaiacum.

"*Alcohol* dissolves guaiacum with facility, and forms a deep brown-coloured solution. Water renders this solution milky by separating the resin. Muriatic acid throws down the guaiacum of an ash-grey, and sulphuric acid of a pale-green colour. Acetic acid, and the alkalies occasion no precipitate. Liquid chlorine throws it down of a fine pale-blue, which does not change when dried. Diluted nitric acid occasions no change at first; but after some hours the liquid becomes green, then blue, and at last brown, and at that period a brown coloured precipitate falls down. If water be mixed with the liquid when it has assumed a green or a blue-colour, green and blue precipitates may be respectively obtained.

"*Sulphuric ether* does not act so powerfully on guaiacum as alcohol. The solution obtained by means of it, exhibits the same properties when treated with re-agents as that in alcohol.

"The *alkaline solutions*, both pure and in the state of carbonates, dissolve guaiacum with facility. Two ounces of a saturated solution of potash dissolved about 65 grains of guaiacum; the same quantity of ammonia only 25 grains; or guaiacum dissolves in about 15 parts of potash, and 68 parts of ammonia. Nitric acid threw down from these solutions a brown precipitate, similar to what is obtained when the alcoholic solution is mixed with the same acid. Muriatic acid, and diluted sulphuric acid, throw down a flesh-coloured eurdy precipitate, which in its properties approaches the nature of extractive.

"Most of the *acids* act upon guaiacum with considerable energy. *Sulphuric acid* dissolves it, and forms a deep-red liquid, which deposits while fresh a lilac-coloured precipitate when mixed with water. When heat is applied the guaiacum is charred.

"*Nitric acid* dissolves guaiacum completely without the assistance of heat, and with a strong effervescence. When the solution is evaporated, it yields a very large quantity of oxalic acid. No artificial tannin appears to be formed, but rather a substance possessing the properties of extractive.

"*Diluted nitric acid* converts guaiacum into a brown substance, similar to the precipitate obtained by nitric acid from the alcholic solution of guaiacum. This brown matter possesses the properties of a resin.

"*Muriatic acid* acts but slightly, as the guaiacum soon melts into a blackish mass, which is not acted upon.

"When guaiaeum is distilled, 100 parts of it yielded to Mr. Brande the following products:

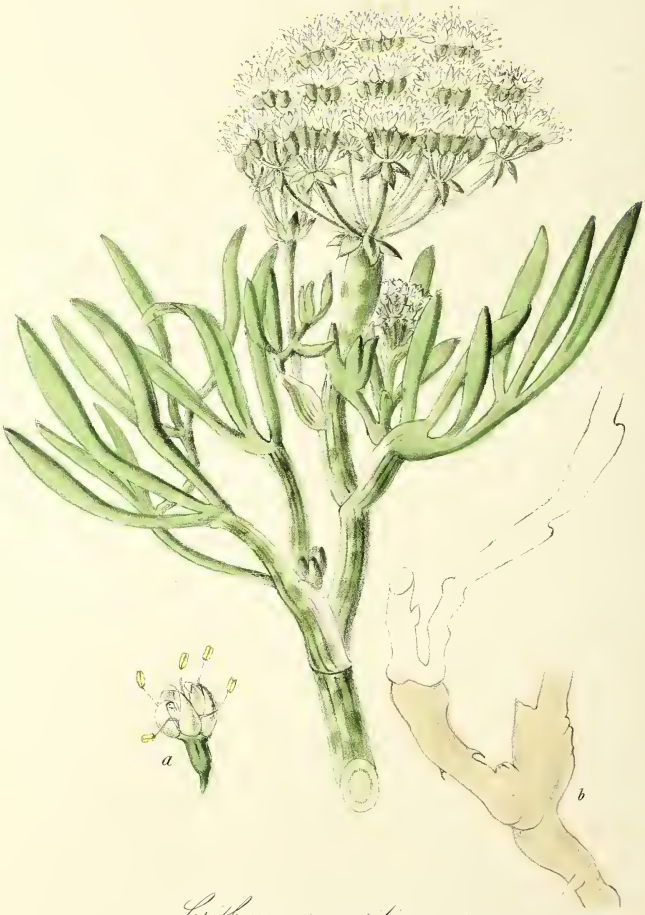
Acidulous water	5·5
Thick brown oil	24·5
Thin empyreumatie oil	30·0
Charcoal	30·5
Gases, consisting of earbonic acid, and carburetted hydrogen	9·0
Loss	0·5
	100·0

Medical Properties and Uses.—The Guaiacum wood was first employed by the natives of St. Domingo. The Spaniards soon acquired a knowledge of its virtues, and introduced it into Spain as early as the year 1501. The fame of this new remedy was diffused with such celerity through the other parts of Europe, that according to the testimony of Nicholas Poll, more than three thousand diseased persons had derived permanent benefits from the use of it, before the year 1517.

A decoction of Guaiaeum excites a grateful sensation of warmth in the stomach; it gives a sense of dryness to the mouth, and creates a thirst; it also increases the natural temperature of the skin, and renders the pulse more frequent. If the patient drink the decoction warm, and lie in bed, it generally proves moderately sudorific; and this effect may be heightened as much as we please, by employing the hot bath, the vapour bath, antimonials combined with opium, or Dover's powder. When the decoction has been continued during ten or twelve days, in the quantity of four pints each day, the patient often complains of heart-burn.

To sum up the virtues of Guaiac, it may be said that it is a stimulating medicine; proving diaphoretic in a dose of a scruple, or half a drachm; and purgative, in large doses; It is frequently employed in chronic rheumatism, to excite perspiration: or in smaller doses still, to keep up a gentle determination to the skin. Combined with opium, its sudorific effects are increased; and the decoction of the wood is said to increase the power of senna, and to prevent its griping. It is either given in substance in the form of a bolus, or diffused in water by the medium of mucilage. The volatile tincture is more highly stimulating than the simple, and is more generally employed.

Off. Prep. Decoctum Sarsaparillæ comp. *L.D.*
Decoctum Guaiaci comp. *E.*
Mistura Guaiaci. *L.*
Tinctura Guaiaci. *L.E.D.*
Tinctura Guaiaci Ammoniata. *L.E.D.*
Pulvis Aloes comp. *L.D.*
Pilulæ Hydrargyri Sub-muriatis comp. *L.E.*



Crithmum maritimum

CRITHMUM MARITIMUM.——SEA SAMPHIRE.

Class V. PENTANDRIA.—Order II. DIGYNIA.

Natural Order, UMBELLIFERÆ.——THE UMBELLIFEROUS TRIBE.

Margin of calyx obsolete. Petals roundish, entire, involute, ending in an obovate segment. Transverse section of fruit nearly terete; mericarps with 5 elevated, sharp, rather winged ribs: lateral ribs a little broader than the rest, and marginating: pericarp spongy, with large cells. Seed semi-terete, constituting a free nucleus, which is covered with copious vittæ in every part. A suffruticose, glabrous, fleshy herb. Petioles sheathing at the base. Leaves bipinnate, leaflets oblong-linear. Umbels compound. Involucre and involucets of many leaves. Flowers white. This genus differs from all others in the present tribe as the genus *Archangelica* does from the rest of the genera in tribe Angeliceæ, in the seed being a free nucleus, covered with copious vittæ. Native of rocky sea-shores and cliffs; as along the Black Sea, in Tauria; and along the Mediterranean Sea; and of Europe, along the shores of the Western Ocean from Spain to Britain; and of the Canary Islands. In Britain on the rocky sea-shore and cliffs. Samphire is called *Perce-pierre* and *Saint-pierre* (of which our English name appears to be a corruption,) in French; *Meerfenchel* in German; and *Finnochio marino* in Italian. The herb makes an old fashioned English pickle. It is sold in the London shops, and is a frequent addition in salads. In taste it is crisp and aromatic, and constitutes a light and wholesome condiment. It is generally gathered in places where it is found wild, and the allusion to the practice, by Shakespeare, in his description of Dover Cliffs, is in the following lines:—

> ————How fearful
> And dizzy 'tis, to cast one's eyes so low!
> The crows, and choughs, that wing the midway air,
> Show scarce so gross as beetles: half way down
> Hangs one that gathers samphire; dreadful trade!
> Methinks, he seems no bigger than his head:
> The fishermen, that walk upon the beach,
> Appear like mice; and yon tall anchoring bark,
> Diminish'd to her cock; her cock, a buoy
> Almost too small for sight: the murmuring surge,
> That on the unnumber'd idle pebbles chafes,
> Cannot be heard so high:—I'll look no more;
> Lest my brain turn, and the deficient sight
> Topple down headlong.
>
> *King Lear, Act* iv. *Scene* 6.

There is an interesting incident connected with the rock samphire, the detail of which may not be out of place here. It should be stated, that the Lichens or aerial algæ, never grow submerged; the fuci, or aquatic algæ, never grow emerged: the same may be said of other plants which are the living demarcations of land and sea; e. g. the samphire never grows but on the sea-shore, and yet it never grows within reach of the waves; that is to say, it is never so near as to be covered by the water. It happened not long since that a knowledge of this fact was useful in a way and at a time when botanic knowledge might *a priori* have been expected to be of little practical importance. During a violent storm, in November 1821, a vessel, passing through the English Channel, was driven on shore near Beachy Head, and the whole crew being washed overboard, four escaped from the wreck, only to be delivered, as they thought, to a more lingering and fearful, from its being a more gradual and equally inevitable death; for having in the darkness of the night, been cast upon the breakers, they found, when they had climbed up these low rocks, that the waves were rapidly encroaching, and they doubted not that, when the tide should be at its height, the whole range would be entirely submerged. The darkness of the night prevented any thing being seen beyond the spot upon which they stood, and which was continually decreasing by the successive wave. The violence of the storm left no hope that their feeble voices, even if raised to the uttermost, could be heard on shore; and they knew that, amidst the howling of the blast, they could reach no other ear than that of God. Man could afford them no assistance in such a situation, even if their distress were known. The circle of their existence here seemed gradually lessening before their eyes, their little span of earth gradually contracting to their destruction, already they had receded to the highest points, and already the infuriated waters followed them, flinging over their devoted heads the foremost waves, as heralds of their speedily approaching dissolution. At this moment one of these wretched men, while they were debating whether they should not in this extremity throw themselves upon the mercy of the waves, hoping to be cast upon some higher ground, as

even if they failed to reach it, a sudden would be better than a lingering death,—in this extremity one of these despairing creatures to hold himself more firmly to the rock, grasped a weed, which even wet as it was, he well knew, as the lightning's sudden flash afforded a momentary glare, was not a fucus, but a root of samphire; samphire is a plant which never grows submerged. This then became more than an olive branch of peace, a messenger of mercy; they knew that He who alone can calm the raging of the seas, at whose voice alone the winds and the waves are still, had placed his landmark, had planted his standard here; and by this sign they were assured that He had said to the wild waste of waters, "Hither shalt thou come, and no further." Trusting, then, to the promise of this child of earth, they remained stationary during a dreadful yet then comparatively happy night, and in the morning they were seen from the cliffs above, and conveyed in safety to the shore. *From a lecture by the late Professor Burnett.*

The very existence of a kingdom depends on sea-reeds, sedges, and kindred plants. These form the defence of the dykes of Holland, and prevent not only the invasion of the sea, but the advance of the drift sand on the fertile soil. When in a solitary walk, by the sea side, we have heard in a still night, the sentinel from the rampart, repeat the watch word, "All's well," we have turned instinctively to the 'sea mat weed' on the shore, mantling the beach; the sentinel of providence, that forbids the approach of the waves. To the intelligent mind, the kingdom of vegetation presents remarkable illustrations of a supreme creator:—

"Not a tree,
A plant, a blossom, but contains
A folio volume. We may read, and read,
And read again; but still find something new,
Something to please, and something to instruct,
E'en in the noisome weed."

The Philosopher who was east away on an island, on seeing geometrical figures on the sand, exclaimed 'inhabitants are here;' in like manner, when we survey the physiology of plants, do we receive demonstrable proofs of their infinitely wise AUTHOR:—

Maximus in maximis, maximus in minimis.

Whether we survey vegetable grandeur in mass or in detail; or in the humblest moss that springeth out of the wall, studies such as these have a tendency to soften and to soothe the mind. It is then no light enjoyment—

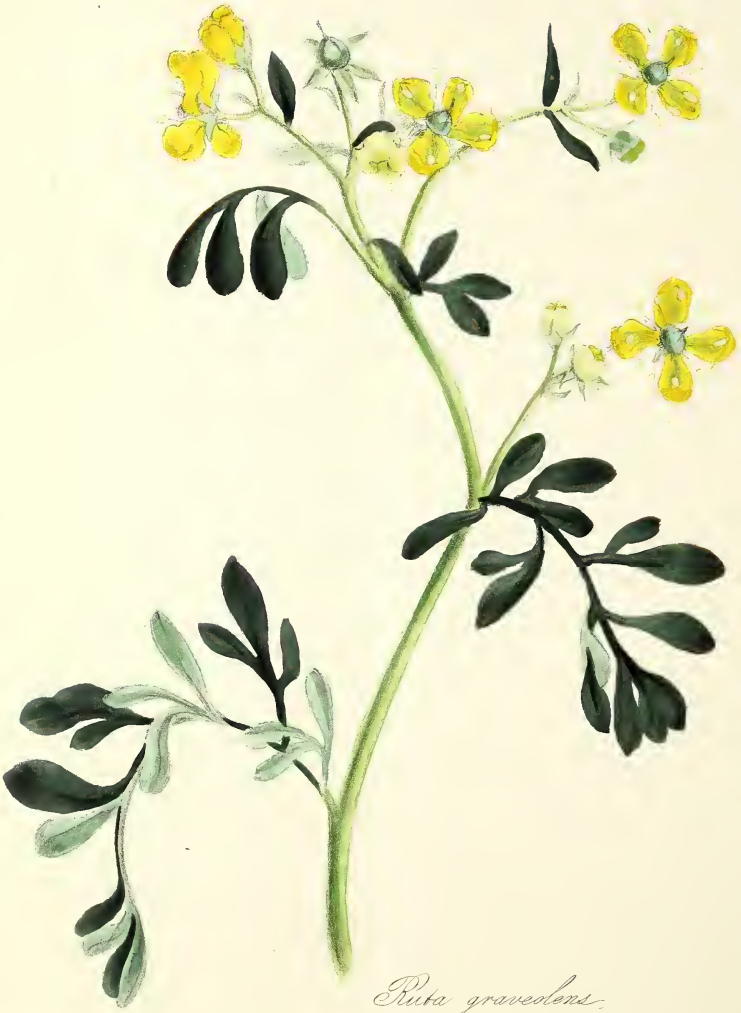
'To consider the lilies of the field how they grow;'

Is it not a privilege to walk with GOD in the garden of creation, and hold converse with his providence?

Gerarde says that "Rocke Sampier hath many fat and thicke leaves somewhat like those of the lesser Purslane, of a spicie taste, with a certain saltnesse; amongst which rises up a stalk diuided into many smal spraies or sprigs, on the top whereof grow spoky tufts of white flowers, like the tufts of Fennell or Dill; after that comes the seed, like the seed of Fennell, but greater: the root is thicke and knobby, beeing of smell delightfull and pleasant. The second Samphier called *Pastinaca marina*, or sea Parsnep, hath long fat leaves very much jagged or cut euen to the middle rib, sharp or prickely pointed, which are set upon large fat jointed stalks; or on the top whereof do grow tufts of whitish or else reddish floures. The seed is wrapped in thorny husks: the root is thicke and long, not unlike to the Parsenep, very good and wholesome to be eaten."

To Pickle Samphire. Put the quantity required into a clean pan, throw over it two or three handfuls of salt and cover it with spring water for twenty four hours; next put it into a clean saucepan, throw in a handful of salt, and cover it with good vinegar. Close the pan tight, set it over a slow fire, and let it stand till the Samphire is green and crisp, then take it off instantly, for should it remain till it is soft, it will be totally spoiled. Put it into the pickling pots and cover it close; when it is quite cold tie it down with a bladder and leather, and set it by for use. Samphire may be preserved all the year by keeping it in a very strong brine of salt and water, and just before using it, put it for a few minutes into some of the best vinegar.

Samphire is propagated by parting the roots, or by sowing the seeds in April; but it is rather difficult of cultivation. Marshall says, "it likes a cool situation, but yet prefers a sandy or a gravelly soil, and plenty of water. "Some" he adds, "I have found do best in pots, set for the morning sun only. J. Braddick placed it in a sheltered dry situation, screened from the morning sun, protected it by litter during winter, and in spring sprinkled the soil with a little powdered barilla. This I do, he says, "to furnish the plant with a supply of soda, since, in its native place of growth, it possesses the power of decomposing sea water, from which it takes the fossil alkali, and rejects the muriatic acid. With this treatment it has continued to flourish at Thames Ditton for some years, producing an ample supply of shoots, which are cut twice in the season, for pickling or to be used in salads."



Ruta graveolens.

RUTA GRAVEOLENS.—COMMON RUE.

Class X. DECANDRIA.—Order I. MONOGYNIA.

Natural Order, RUTACEÆ.——THE RUE TRIBE.

Rue is a hardy evergreen under-shrub, a native of the south of Europe, and has been cultivated in our gardens from time immemorial, where it flowers from June to September. Before the Reformation, it was called the *Herb of Grace*; from the circumstances of small bunches of it having been used by the priests for sprinkling of holy water among the people. The stem is bushy, round, and branched, rising to the height of two or three feet, woody at the lower part, and covered with a rough, striated, grey bark; but the upper branches are smooth, and of a yellowish green colour. The leaves are alternate, stalked, doubly pinnate, slightly tomentose, smooth, dotted, and of a deep bluish glaucous hue; the leaflets obovate, sessile, decurrent, very obscurely crenate, or entire, and tapering at the base. The flowers are of a pale greenish-yellow colour, copious, and produced in terminal corymbose panicles, the terminal ones only having the full number of each of the parts of fructification, while the rest are octandrous, and have the calyx 4-parted, and a 4-petaled corolla. The petals are nearly ovate, concave, spreading, fringed at the extremity, and attached by narrow claws. The stamens are ten, awl-shaped, the length of the corolla, bearing small yellow anthers. The germen is oval, punctured, with crucial furrows, and surmounted by a short awl-shaped style and simple stigma. The capsule is gibbous, 5-lobed, bursting elastically at the summit of each lobe, and containing numerous rough, angular, blackish seeds. The irritability of the stamens in the rue is a physiological phenomenon of interest.

Rue is easily propagated by slips or cuttings in the spring; and like rosemary, lavender, hyssop, and other similar aromatics, it thrives best in poor dry soils.

Qualities.—Every part of the plant has a strong peculiar odour, and a pungent, bitterish, nauscous taste. The bruised leaves are extremely acrid, and excoriate the mouth and nostrils, if incautiously applied, as they often are, to counteract bad smells. Their specific virtues reside chiefly in an essential oil, which they yield on distillation with water.

Medical Uses.—Rue is a moderately active stimulant, and antispasmodic, and was much extolled by the ancients. Hippocrates commends it as a resolvent and diuretic, and attributes to it the power of resisting contagion and poisons. An infusion of the leaves was formerly in much repute, as an anthelmintic, and if taken in sufficient quantity it certainly proves noxious to intestinal worms. Boerhaave, speaking of rue, observes, that the greatest commendations he can bestow upon it fall short of its merits. "What medicine," says he, "can be more efficacious for promoting perspiration, for the cure of hysteric passion, and of epilepsies and for expelling poison?" Externally it has been employed in fomentations to gangrenous ulcers; but it possesses no superiority over chamomile or wormwood for these purposes, and it is but seldom employed.

Dose.—The dose of the powdered leaves is from ℈i to ℈ij.

Rue was anciently also named *herb grace, or herb of grace,* and it is to this day called *ave grace* in Sussex, in allusion doubtless to *Ave Maria* gratiâ plena; and it is remarkable that Mary, in Hebrew, signifies bitter. Warburton says, that *rue* had its name *herb of grace* from its having been used in exorcisms. When Ophelia, in Shakespeare's Hamlet, says to the Queen, "There's rue for you and here's some for me; we may call it herb of grace o 'Sundays:' the fair moralist has no reference to this plant being used in exorcisms, performed in churches on Sundays; but means only, that the Queen may with peculiar propriety on Sundays, when she solicits pardon for that crime which she has so much occasion to rue and repent of, call her rue *herb of grace.* It was, indeed, the common name for rue in Shakespeare's time; and Greene, in his Quip for an upstart Courtier, has this passage: "some of them smiled and said rue was called herbe-

grace, which though they scorned in their youth, they might wear in their age, and that it was never too late to say *miserere:*"

The gardener in Richard II. says of the Queen:—

> Here did she drop a tear; here in this place,
> I'll set a bank of rue, sour herb of grace;
> Rue even for ruth, here shortly shall be seen
> In the remembrance of a weeping Queen.

Here the gardener plays upon the name, and might mislead an etymologist who knew no better. He might, with more truth, have called rue bitter than sour, and he whimsically enough makes it take the place of rosemary, which was the emblem of remembrance, as rue was of *grace*. Thus Perdita, in the Winter's Tale:

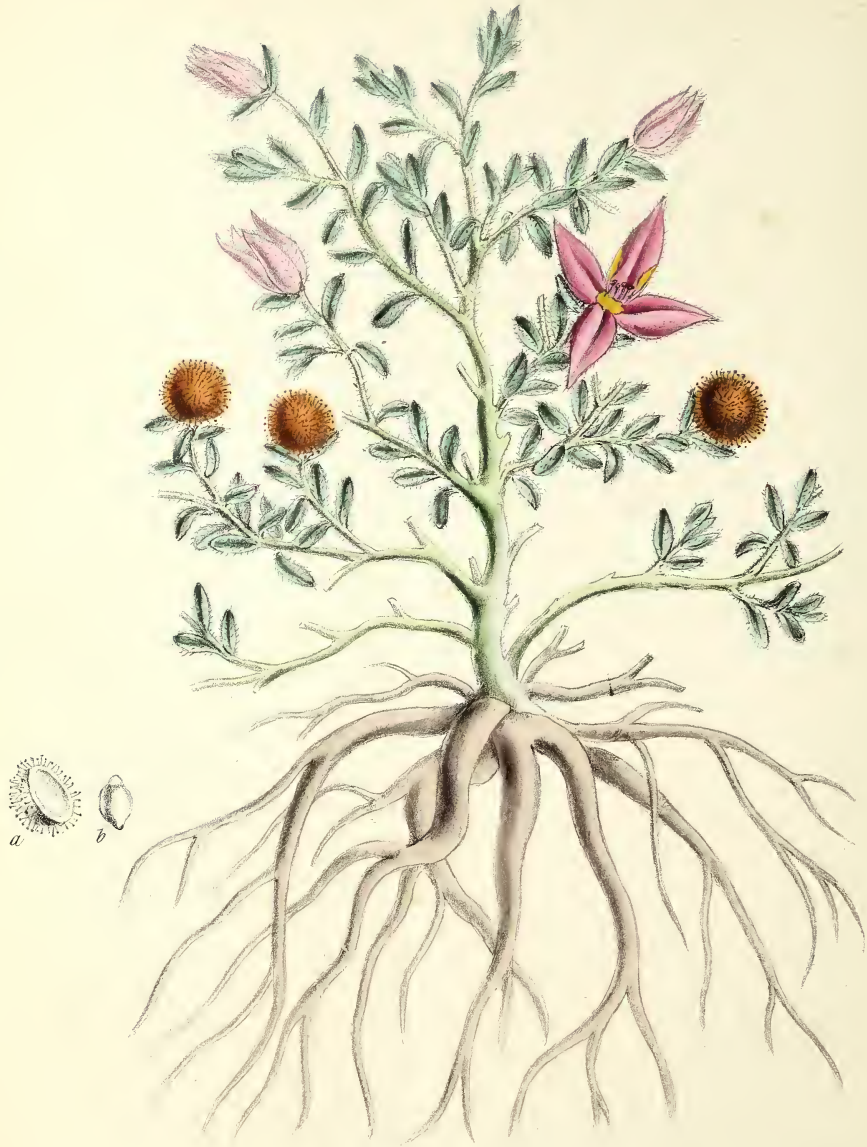
> "Reverend sirs,
> For you there's rosemary and rue, these keep
> Seeming and savour all the winter long,
> Grace and remembrance be to you both."

They are both evergreens, retaining their appearance and taste during the whole year, and therefore are proper emblems of remembrance and grace. Rue seems to have been used formerly in nosegays; for the Clown in All's Well that End's Well, having said of the Countess, "she was the sweet marjoram of the salad, or rather the herb of grace:" Lafeu replies, "they are not salad herbs, you knave; they are nose herbs;" upon which the clown in character, remarks, "I am no great Nebuchadnezzar, sir, I have not much skill in grass:" thus punning upon the name of grace, as the gardener did upon the other name of rue.

Rue is used by some as a tea, and also externally in discutient and antiseptic fomentations. Among the common people the leaves are sometimes taken with treacle, on an empty stomach, as an anthelmintic. A conserve, made by beating the fresh leaves with thrice their weight of fine sugar, is the most commodious form for using the herb in substance: The dose of the powdered leaves may be 15 to 20 grs: given twice or thrice a day. The officinal preparations are the oil and an extract. The former is procured in the quantity of 59 grains of oil from 21 pounds of rue, and has the strong ungrateful odour and taste of the plant. When recently drawn, the colour is yellow, but by age it deepens to a brown, and deposits a brownish resinous sediment. It congeals at 40° Fahrenheit." The extract of *rue* is prepared like other simple extracts: it is inodorous, but has a bitter acrid taste. The medicinal properties are different from those of the plant, the stimulant and narcotic powers of which depend on the volatile oil it contains, which is dissipated during the inspissation of the extract.

Gerard says, "The herb a little boiled or skalded, and kept in pickle as Sampier, and eaten, quickens the sight. The leaves of Rue beaten and drunke with wine are an antidote against poisons, as Pliny saith. Dioscorides writeth, that a twelve penny weight of the seed drunke in wine is a counterpoison against deadly medicines or the poison of Wolf's-bane, Mushrooms or Toad-stools, the biting of Serpents, the stinging of Scorpions, Bees, Hornets, and Wasps; and is reported, that if a man bee anointed with the juice of Rue, these will not hurt him, and that the serpent is driuen away at the smell thereof when it is burned: insomuch that when the Weesell is to fight with the serpent, shee armeth her selfe by eating Rue, against the might of the serpent."

In the Language of Flowers Rue represents *Purification.*



Krameria triandra

KRAMERIA TRIANDRA.—TRIANDROUS, OR PERUVIAN KRAMERIA.

Class VI. TETRANDRIA.—Order I. MONOGYNIA.

Natural Order, POLYGALEÆ.—THE MILK-WORT TRIBE.

This species of Krameria, called by us Rhatany, and by the Spanish inhabitants Ratanhia, 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 provinces of Tarma, and Xanca; and subsequently by the same naturalist in the provinces of Huanuco, Huamalies, and Canta; it is also found in abundance in the vicinity of Lima, on the high-lands of Puellcs, and other hilly districts. It flowers nearly throughout the year; but blossoms most luxuriantly in October and November. It is gathered in large quantities, and from it a beautiful extract is prepared, which, as well as the root, is imported into 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 Peninsular 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 a colouring liquor, but were unacquainted with its name. One of them afterwards furnished Dr. Reece with a preparation, that in Portugal was known by the name of wine *colouring;* it proved to be a saturated infusion of the root in brandy; and the deep colour and richness it communicates to port wine renders it an article of great and deserved value to the manufacturer. Some of this root, and extract, forming part of a Spanish cargo, taken by our cruisers, was afterwards sold in London, and Dr. Reece was thereby enabled to enter upon an investigation of its nature and medicinal qualities; and in consequence of the facts which he established, it has become a favourite remedy, and is admitted into the list of our materia medica. Continental writers, however, on the contrary, impute the practice of colouring wine with Rhatany to the British manufacturers, and speak of its use in France and Spain merely as a styptic.

The Krameria *triandra* is an under-shrub, with very long, much branched, spreading roots, of a blackish red colour externally, red internally, and having an intensely styptic, bitter taste. The stem is procumbent, round, and divided into numerous spreading branches, which when young are white and silky, but afterwards become naked below, and acquire a black colour. The leaves are scattered, sessile, oblong-ovate, pointed; entire, white and silky on both surfaces. The flowers are terminal, solitary, and placed on short foot-stalks. The calyx consists of four lake-coloured sepals, the inferior larger than the others, scriceous externally, but internally smooth and shining; the corolla is composed of four petals, the two lateral being sessile, and the two longer ones unguiculate. The stamens are three, fleshy, inserted between the germen and the superior leaflets of the nectary; the anthers urceolate, small, terminated with a pencil of very short hairs, and perforated with two holes at the apex. The germen is ovate, supporting a red awl-shaped style, and simple stigma. The berry or drupe is dry, globose, echinated on all sides with stiff reddish hairs.

The stamens being usually four in number and of unequal lengths, the genus is referred by Sprengel, in his edition of the Linnæn System, to the class and order Didynamia Angiospermia.

Qualities and Chemical Properties.—The root, which is somewhat larger than a goose-quill, is of a ferruginous colour: and the cortical part, in which its sensible qualities predominate, is very thick, and breaks short. The ligneous part is tough, and fibrous, and somewhat mucilaginous. On being slightly masticated, the root discovers a very grateful astringency, leaving a lasting impression on the palate; and is slightly aromatic and bitter. These qualities are imparted, as well as its colouring matter, both to cold and boiling water, and to proof spirit. The tincture made with brandy approaches very nearly to the flavour of port wine. The foreign extract, which is a gum resin, is a very beautiful transparent article; and Dr. Reece informs us, that on mixing it with the foreign extract of bark, or any astringent extract, it loses its adhesive quality, and becomes "powdery," and at the same time loses its astringency. The extract

made from a decoction or infusion of the root is "powdery," and not so astringent as the powdered root, although evaporated in vacuo, or in a water-bath. Dr. Duncan asserts that the foreign extract is so similar to kino, that the difference cannot be discovered; now the former varies from the latter both in appearance and taste, being slightly bitter, and readily dissolving in the saliva in the mouth. Vogel says that Kino is charred on exposure to heat, without changing its form; whilst the foreign extract of rhatany previously melts and swells, and this it does when as dry as kino.

From a careful analysis it appears, 1stly, that the most efficacious part of rhatany is that which dissolves in considerable quantity in water and alcohol, and imparts to these menstrua a brown colour; 2ndly, that in prescribing a decoction, or the extract, the mineral acids should not be added; 3rdly, that the astringent principle possesses, in great part, the properties of tannin, and seems to be a modification of this immediate matter of vegetables; 4thly, that the dried root contains an astringent principle, which is a modification of tannin, gallic acid, gum, fecula and a ligneous matter; 5thly, that the ashes of rhatany contain pure lime, carbonate of lime, carbonate of magnesia, sulphate of lime, and silex; lastly, that in one hundred parts of the powder are found,

Modified tannin	40
Gum	1.5
Fecula	0.5
Woody matter	48
Gallic acid, a trace; water and loss	10
	100

M. Peschier, of Geneva, believed that he had discovered a peculiar acid in this plant, which is called the *krameric*, but his observations have not been confirmed.

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 with the most marked success. It is also an excellent tonic to accompany the use of diuretics, cathartics, and absorbent stimulants in case 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. As in the case of other vegetable astringents, ipecacuanha and its preparations are incompatible with the infusion of Krameria.

Preparations.—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.

℞.—Rad. Krameriæ Triandræ contus.	ʒiij.
Cort. Aurantii	ʒij.
Rad. Serpentariæ Virg.	ʒss.
Croci Anglic.	ʒi.
Sp. Vini Rectificat.	℔. ij.

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 any unpleasant fœtor of the mouth. Equal parts of powdered Rhatany-root, orris-powder, and areca-nut charcoal, form the best tooth-powder with which we are acquainted.