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The New Botanic Garden
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THE NEW
BOTANIC GARDEN,
&c. &c.

THE
SOCIETY OF
MUSICIANS



Painted by Syd Edwards

London Published Mar 1 1826 by G. Kearley Fleet Street

Engraved by F. Sargent

1 *Acanthus mollis*
Smooth Bears Breech

2 *Asclepias tuberosa*
Orange Apocynum

THE NEW
BOTANIC GARDEN,

ILLUSTRATED WITH

One Hundred and Thirty-three Plants,

ENGRAVED BY SANSOM,

FROM THE

ORIGINAL PICTURES,

AND

COLOURED WITH THE GREATEST EXACTNESS

FROM

DRAWINGS BY SYDENHAM EDWARDS.

IN TWO VOLUMES.

VOL. I.

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PLATE I.

1. ACANTHUS MOLLIS.

SMOOTH BEAR'S BREECH.

THIS genus comprehends several hardy herbaceous plants of the perennial flowering kind, which are in use for the purpose of ornament in pleasure-grounds, &c. and also one of the evergreen shrubby sort for the stove.

It is of the class and order *Didynamia Angiospermia*, and ranks in the natural order of *Personatæ*.

The characters are: that the calyx is a perianthium, with leaflets in three alternate pairs, unequal, and permanent: the corolla single-petalled and unequal, having a short tube closed with a beard; no upper lip; very large under lip, which is flat, straight, very broad, three-lobed, obtuse, and of the length of the upper lip of the calyx: the stamina have four filaments, subulate, shorter than the corolla, the two upper rather longer, recurved and incurved at the top: the antheræ are oblong, compressed, obtuse, the lateral ones parallel, and villous before: the pistillum has a conical germ, a filiform style of the length of the stamina, and two acute lateral stigmas: the pericarpium is a subovate pointed capsule, two-celled and two-valved, with a contrary partition, alternate claws, curved and fastened to the partition: the seed is ovate, gibbous and single, but sometimes double.

The species most commonly cultivated are: 1. *A. mollis*, Smooth Acanthus; 2. *A. spinosus*, Prickly Acanthus; 3. *A. ilicifolius*, Holly-leaved Shrubby Acanthus.

The first, or Smooth Acanthus, according to Miller, has the stem from two to three feet in height. The leaves are oblong, smooth on

both sides and shining, from a span to a foot in length, divided deeply into opposite ovate lobes, which are bluntly toothed and finely ciliate about the edges, placed on roundish petioles, with a flat channel running along the upper surface. Both the leaves and flower stems rise directly from the root: the former, by spreading closely upon the ground in circular clusters, produce a good effect. But though the leaves are said to be smooth, they are not without white bristles on both sides, especially along the nerves. The flowers are white, and come out from about the middle to the top of the stalk. They make their appearance in July or August, continuing in bloom a month or six weeks, and then produce seed.

There is a variety of this plant in which the leaves are larger and less sinuated, the upper side shining.

The second sort, or Prickly Acanthus, has the leaves deeply jagged in very regular order; each segment is terminated by a sharp spine, as are also the petioles and the calyx of the flowers, so that the plant is troublesome to handle. In both these species the leaves and stalks are annual.

The Holly-leaved Acanthus is an evergreen shrub, which rises about four feet in height, dividing into many branches; the leaves being similar to those of the common holly both in size and shape, and also armed with spines in the same manner. The flowers come out singly in an upright raceme at the end of the stalk, are white, and shaped like those of the Common Acanthus, but smaller.

The two first are thick, fleshy, fibrous-rooted plants, which spread considerably, and penetrate the earth to a great depth. They are found in their native state in Spain, Italy, and Portugal; but grow without difficulty in the open ground in this climate.

The last is a very tender plant, which in this climate requires the constant heat of the stove to preserve it. It is a native of South America, and also of both the East and West Indies. It is retained in hot-houses for the purpose of variety.

Culture.—Both the Smooth and Prickly Acanthus are found to succeed in any common soil without much attention to the nature of the exposure, and are said by Miller to be lasting plants, which may

be propagated either by seeds or the parting of the roots. If by the former method, the seed should be sown in a light dry soil towards the end of March, either in slight drills or on the plain surface, and immediately raked in. When the season proves favourable, the plants appear in May, and all the after-culture they require is to keep them clean from weeds, and, where they stand too close, to thin them out, so as to leave them about six inches apart; which is room sufficient for them to grow in until the autumn, when they should be transplanted into situations where they are designed to remain. The first, as being the most tender, is advised to be planted in a warm border near a wall, and which, as the plants do not multiply so fast by their roots, do not require more room than about three feet; but the second, as it spreads its roots to a great distance, should have more than twice that space. From this last sort being hardy, it may be proper to be planted between shrubs to fill up vacant spaces; where it will grow without difficulty, provided the ground be light and not over wet; and when in flower will thus make an agreeable variety.

When they are propagated by their roots, the operation may be performed either in spring or autumn: but the former should only be removed in the spring; for, if transplanted in the autumn, and the following winter should prove cold, it will run the hazard of being destroyed. The roots in these cases should not be parted too small, and the plants be at once placed out where they are to remain. As these plants take very deep root, when planted in wet ground, the roots are liable to rot in the winter. They have frequently been traced more than four feet: they should not therefore be wholly removed after they have been growing long in a place; but the side shoots be annually taken off, otherwise they will be apt to spread so far as to overpower the neighbouring plants or shrubs. The remaining culture is only that of affording the flowering stems due support when it becomes requisite, and carefully clearing away the decayed stalks in the autumn.

When these plants are once established in a piece of ground, they are observed by Miller to be eradicated with great difficulty.

Both the Smooth and Prickly Acanthus are mostly kept in the nurseries for the purpose of sale.

The Shrubby species of Acanthus may be propagated with the greatest certainty by sowing seed that has been procured from abroad, in pots; to be plunged in a bark-bed in the stove until the plants are raised, when they are to be managed in the same manner as other hot-house plants. Layers and cuttings likewise sometimes succeed, when planted in pots and placed in the same situations.

2. ASCLEPIAS TUBEROSA.

ORANGE APOCYNUM.

THIS genus comprises various plants of the flowery, perennial, herbaceous, and shrubby exotic sorts; and of the Swallow-wort and Dog's-bane kinds.

It belongs to the class and order *Pentandria Digynia*, and ranks in the natural order of *Contortæ*.

The characters of which are: that the calyx is a five-cleft, sharp, very small, permanent perianthium. The corolla monopetalous, flat or reflex, five-parted: the divisions ovate-acuminate, slightly bending with the sun. The nectaries five, growing to the tube of the filaments below the anthers, fleshy, or cowled; protruding from the bottom a sharp horn, bending inwards. The stamina consist of five filaments collected into a tube, swelling at the base: the anthers oblong, upright, and two-celled, terminated by an inflex membrane lying on the stigma, having a reversed wing on each side, growing broader downwards with its edge contiguous to the next. The pollen is collected into ten corpuscles, inversely lanceolate, flat, hanging down into the cells of the anther by short threads, frequently flexuose; which are annexed by pairs to five cartilaginous, twin tubercles, each placed on the tip of the wings of the anthers, adhering to

the angles of the stigma, between the anthers. The pistillum consists of two oblong acuminate germs; styles two, subulate: stigma common to both, large, thick, five-cornered, covered at top by the apexes of the anthers, umbilicate in the middle. The pericarpium has two follicles, large, oblong, acuminate, swelling, one-celled, one-valved. The seeds numerous, imbricate, crowned with down: the receptacle is membranaceous and free.

The species are very numerous, but those most commonly in cultivation are; 1. *A. vincetoxicum*, Common Swallow-wort, or Tame-poison; 2. *A. nigra*, Black Swallow-wort; 3. *A. Syriaca*, Syrian Swallow-wort, or Dog's-bane; 4. *A. purpurascens*, Purple Virginian Swallow-wort, or Dog's-bane; 5. *A. verticillata*, Verticillate Swallow-wort; 6. *A. decumbens*, Decumbent Swallow-wort, or Dog's-bane; 7. *A. tuberosa*, Tuberous-rooted Swallow-wort, or Dog's-bane; 8. *A. variegata*, Variegated Swallow-wort; 9. *A. arborescens*, Arborescent Swallow-wort; 10. *A. fruticosa*, Shrubby or Willow-leaved Swallow-wort; 11. *A. undulata*, Wave leaved Swallow-wort; 12. *A. crispa*, Curled-leaved Swallow-wort; 13. *A. curassavica*, Curassoa Swallow-wort, or Bastard Ipecacuanha; 14. *A. volubilis*, Twining Swallow-wort; 15. *A. gigantia*, Curled flowered Gigantic Swallow-wort.

The first species has the root very large and much branched: it is composed of many strong fibres, which are connected at the top, like those of Asparagus. From this arise many stems, in number proportioned to the size of the root, near two feet high, very slender at the top, woody, round, hairy, and not branched. The leaves are cordate-ovate, acuminate, smooth, hardish, quite entire, glaucous-green, the midrib and sometimes the edge of the leaves a little hairy: the petioles short. Peduncles axillary, many-flowered, resembling proliferous umbels. The calyx small, green, divided at the end into five bristles. The corolla is commonly white: the follicles ovate-acuminate: the seeds small, brown, and wrapped in white cotton. It flowers in June, sometimes in May, and continues flowering to August, and is a native of most parts of the continent of Europe.

It is said to vary, with yellow flowers; and there is a variety with broader leaves.

The second species agrees with the above in the shape of its roots, leaves, and flowers; but the stalks extend to a greater length, and toward their upper part twist round any sticks or other plants near them; and the flowers are black.

It is by no means so common as the foregoing, having been found only in the south of France, the mountains about Nice, and in Spain. It flowers at the same time with the other.

The third creeps greatly at the root, and sends up strong stems upwards of four feet high; towards the top of them the flowers come out on the side; these are of a worn-out purple colour, smelling sweet; and sometimes they are succeeded here by large oval pods. It flowers in July, and is a native of North America. The French in Canada eat the tender shoots in spring as Asparagus. The flowers are highly odoriferous.

The fourth species has many stems, as thick as the little finger, at bottom quadrangular with blunted angles, and of a brownish green colour; above round and green, a little hairy. The leaves are on short petioles, from four to six inches long, and two or three broad; the midrib purple. The flowers have the petals of a dusky herbaceous colour, the horns of the nectaries pale and gaping, not erect but horizontal. It is a native of North America, and flowers from July to September.

The fifth species rises with slender upright stalks, at the top of which grow umbels of small white flowers, appearing in July, but never succeeded by pods in this climate. The leaves are frequently four together. The peduncles forming an umbel are opposite to the leaves. It is a native of North America.

The sixth has declining stalks, which are hairy, and eighteen inches in length. The leaves are narrow. The umbels grow at the extremity of the branches, are compact, and the flowers of a bright orange colour. It is a native of North America.

In the seventh species the stems are a foot high, hairy, round, and dusky red. The leaves alternate, except on the upper part of

the stem. Below where it branches are generally two leaves, and at the place of branching four: on the branches themselves the leaves are again alternate. The flowers are of a bright orange colour. The tuberous roots very large. It is a native of North America, and flowers from the end of July to September, sometimes ripening seed in this climate.

The eighth, according to Linnæus, is allied to the third; but Dillenius thinks that it approaches very near to the *Amœna*, but that the stems are shorter, and commonly variegated with dusky purple spots; the leaves broader and rounder, more excavated, less rigid, not shining or hoary underneath, with the oblique veins deeper, so as to be even grooved; the flowers larger, pale, dusky flesh-coloured, sweet-smelling, the horns of the nectaries standing out and gaping more.

According to Miller, it resembles the fourth sort, but the leaves are rough, and the umbels of flowers more compact; they come out on the side of the stalk, are of an herbaceous colour, and are not succeeded by pods in this climate. It is a native of North America.

In the ninth species the stem is shrubby, rough with hairs, upright, as thick as the finger. The leaves opposite, on very short petioles, ending rather obtusely, but with a minute point, and smooth. The peduncles from the summit of the stem, umbelled, villose. The corollas are white. It is a native of the Cape of Good Hope, and flowers in December.

In the tenth the nectaries are compressed without a claw, instead of which are two long reflex ears. The foliicles are inflated, and set with soft prickles. It is also a native of the Cape, and flowers from June to September.

The eleventh is a native of the Cape of Good Hope, and flowers here in July.

The twelfth has the stem pubescent, branching at bottom. The leaves sessile, repand. One umbel of yellow flowers terminates the stem. Found at the Cape of Good Hope.

The thirteenth species has the stem from a foot to two or three

feet in height, upright, simple, or generally so, round, pubescent, and milky. The leaves opposite and decussated, petioled, acute, entire, and smooth on both sides. The flowers in umbels: umbellules terminating, or opposite to the terminating leaflet in pairs, peduncled. Involucre none, but only a few subulate leaflets. The peduncle the length of the leaves: pedicels shorter, one-flowered. Calyx of five, lanceolate, reflex leaflets: corolla reflex. Nectaries five, round the middle corpuscle, ovate, ear-cowled obliquely inwards, with a little horn from the nectareous base, sabre-shaped, bent inwards. In the middle is a truncate corpuscle, hollowed at the tip, bluntly five-cornered, covered with five scales at the sides, and gaping with as many chinks. Scales hollowed within. Glands five, roundish, black, to which are fixed above, within the scales, pairs of glanduliferous pedicels, in place of anthers; these glands are oblong, pellucid, panduriform, and filled with prolific moisture. Germs two, ovate, acuminate; styles two, subulate, hid within the column; stigmas simple, and obtuse. Follicles oblong, acuminate, toothless, ventricose, and smooth. It is a native of South America, the West-Indian Islands, and China near Canton, and flowers from June to September.

The fourteenth species is quite smooth, with shining branches. The leaves petioled, ovate-subcordate, and veined. The umbels quite simple, on peduncles the length of the petiole. The flowers greenish. It is a native of Malabar, Ceylon, &c.

The fifteenth rises to six or seven feet in height. The leaves are thick: the flowers white; the pods very large; the base of the petiole bearded above. The nectaries do not put forth awl-shaped horns, but solid converging plates. It flowers from July to September.

Culture.—The method of propagating the different hardy kinds, as the first eight species, is by parting the roots and planting them out, either in the autumn as soon as the stems decay, or in the early spring months before the new shoots are protruded. They require a rather dry soil, as when there is too much moisture they are apt to have their roots destroyed by it in the winter season. They are like-

wise capable of being raised from seed, when it can be procured, by sowing it in beds or pots of light fresh earth in the spring months. With the seventh and eighth species, the pots should be plunged in a hot-bed, and as soon as the plants present themselves they should be exposed gradually to the influence of the open air to strengthen their growth, and when sufficiently vigorous, be either pricked out on warm borders, or in the situations where they are to remain. In the former method they must be transplanted the March following into the places where they are to grow. In either mode occasional shade and water must be provided, and in the winter the roots be protected from the action of the frost by being covered with old tan, litter, or mats. These two sorts may also be occasionally increased by planting the offsets in the early spring.

They last many years when proper care is taken of them in the winter; but do not bear frequent removing well, or flower so strongly under such circumstances.

In the culture of the ninth and three following sorts the protection of a green-house is essentially necessary in the winter season.

The ninth and tenth kinds may be increased either by seeds or cuttings. In the first manner the seed should be sown in small pots filled with a light earthy compost, placing them in a hot-bed; and when the plants have attained a proper degree of size and strength they must be pricked out into separate pots, a due degree of shade and water being given till they have stricken fresh root, and afterwards as occasion may require.

The eleventh, twelfth, and other Cape sorts, may be propagated by sowing the seeds in the latter end of March or beginning of April on a moderate hot-bed, covered with light mould, under glasses, or even sometimes in the open air; and when the plants are become sufficiently strong and a few inches in height, they may be placed out into separate small pots filled with light fresh earth, being at first properly shaded and supplied with moisture: after being fully rooted they may be exposed in warm situations in assemblage with other

exotic plants till the beginning of the autumn, when they must receive the shelter of the green-house.

The principal attention which is afterwards necessary with plants of this description is, that of properly potting them as they increase in size, and carefully exposing them in the open air during the summer months.

These sorts are likewise capable of being raised by setting the cuttings of the shoots in the latter end of the summer in shady situations, and after they have stricken good roots carefully removing them into pots, to be managed as the seedling plants.

The thirteenth and following kinds require to be kept constantly in the stove of the hot-house. They may be increased by sowing the seeds in the spring either on a hot-bed, or in pots, and plunging them into the hot-bed; the plants, when sufficiently grown, being in the first mode transplanted into separate pots of good earth, to be, as in the latter method, plunged into the tan-bed in the stove of the hot-house. Plants of the thirteenth species should be annually raised, as they decline in the production of flowers after the first year.

The first kinds may be employed in the fronts of the clumps and borders of pleasure, or other grounds, where they have a good effect in mixture with other plants of similar growth.

The second sorts afford an agreeable diversity in the green-house during the winter, and in the compartments about the house in the summer season.

Those of the last description present a pleasing variety among other stove plants.



Painted by J. Edwards

London Published June 1 1805 by G. Kearsley Fleet Street

Engraved by F. Santham

1 *Agrastemma coronaria*
Rose campion

2 *Anchusa officinalis*
Official Bugle

3 *Aquilegia canadensis*
Canadian Columbine

4 *Actaea racemosa*
American Herb Christopher

PLATE II.

1. AGROSTEMMA CORONARIA.

ROSE CAMPION.

THE plants of this genus are of the hardy herbaceous, annual, and biennial-perennial kinds.

It belongs to the class and order of *Decandria Pentagynia*, and ranks in the natural order of *Caryophyllei*.

The characters are: that the calyx is a one-leafed, coriaceous, or leather-like, tubulous, five-toothed, permanent perianthium: the corolla has five petals, with claws of the length of the tube of the calyx; and border spreading, obtuse, and undivided: the stamina are ten awl-shaped filaments, five alternately later than the other five, inserted into each claw of the petals: the antheræ simple: the pistillum is an ovate germ, with filiform, erect styles, of the length of the stamina, and simple stigmas: the pericarpium an oblong-ovate, covered, one-celled, five-valved capsule: the seeds are very numerous, kidney-shaped, and dotted: the receptacles free, as many as seeds; the interior ones gradually longer.

There are a number of different species, but those for cultivation as ornamental plants are, 1. *A. coronaria*, Rose Champion: 2. *A. Flos Jovis*, Umbellate Rose Champion.

The first of these species, in its natural state, has the corolla white, with the middle red; and it has the habit of the species below, but is harder, more pulpy, and more tomentose. The calyxes are much harder, callous, and covered with a white pile, with hard thick ribs, not green hairy lines as in that: the petals are much broader, slightly emarginate: the auricles bifid: the flowers not

heaped into an umbel, but scattered on the branches of the stem on very long peduncles. Native of Italy and the Valais.

There are three varieties of this plant: one with deep red, another with flesh-coloured, and a third with white flowers: and the Double Rose Campion, with a large crimson flower, which is chiefly cultivated as being an elegant and beautiful flower.

In the second, the stem is erect, dichotomous at the top, and covered with a white nap. The leaves are conjugate, connate, ovate-lanceolate, quite entire, erect, and pressed to the stem, being all over nappy. The flowers from the top and forks, solitary. The flower-stem rises near a foot or a foot and a half high, and the flowers grow in umbels on the top of the stalk, and are of a bright red colour. It flowers in July, and the seeds ripen in September. It is a native of the mountains of Switzerland.

Culture.—In cultivating these plants all the single kinds may be easily propagated by the seeds, which may be sown either in the spring or autumn on a bed of common earth; and after the plants have attained the height of about three inches, they should be pricked out into another bed, at the distance of six or seven inches from each other, water being immediately applied in not too large a quantity, and afterwards occasionally repeated. In the autumn or spring following the plants will be in a proper situation to be transplanted into the places where they are to remain for the purpose of flowering in the ensuing summer months. And as the plants frequently come up from the self-sown seeds with equal strength and vigour, these may be transplanted in the same manner, and often succeed fully as well.

As the double sorts afford no seed, they can only be propagated by parting the roots; which, as they mostly afford abundance of offsets, may be easily effected. This should be performed in the autumn, as soon as the flowering is over, every head being parted that can be slipped off with roots. These should then be planted out in fresh ground that has not lately received any manure, at the distance of six or seven inches from each other; water being applied in a sparing manner until they have taken fresh root, after which it

must be wholly omitted, as much moisture is very prejudicial. In the spring they should be put into the situations where they are to remain for flowering.

A few plants may likewise be placed in pots of good fresh mould, in order to be set out in the yards or other compartments about the house.

The second sort admits of the same methods of cultivation, but succeeds best in a rather moist soil, where the situation is somewhat shady.

Both the species and all varieties are well suited for the purposes of ornament, affording a very agreeable diversity in clumps and borders.

2. ANCHUSA OFFICINALIS.

OFFICINAL BUGLOSS.

THIS genus comprises several plants, chiefly of the herbaceous perennial tribe, of hardy growth, and of the Bugloss kind.

It belongs to the class and order *Pentandria Monogynia*, and ranks in the natural order of *Asperifoliae*.

The characters of which are: that the calyx is a five-parted, oblong, round, acute, and permanent perianthium: the corolla is monopetalous and funnel-shaped: tube cylindrical, of the length of the calyx; limb semiquinquefid, form erect, expanding, and obtuse; throat closed with five small scales; convex, prominent, oblong, and converging: the stamina have very short filaments in the throat of the corolla: anthers oblong, incumbent, and covered: the pistillum has four germs: the style filiform, of the length of the stamina; stigma obtuse and emarginate; no pericarpium, but the calyx enlarged and erect, contains the seeds in its bosom: the seeds are four, oblongish, obtuse, and gibbose.

The species that are most deserving of cultivation are: 1. *A.*

officinalis, Garden Alkanet, or Bugloss; 2. *A. undulata*, Waved Alkanet; 3. *A. Virginica*, Virginian Yellow Alkanet; 4. *A. sempervirens*, Evergreen Alkanet.

The first has the stems from a foot to eighteen inches in height and more, the thickness of a finger, slightly angular, hairy and rough. The leaves slightly decurrent, seven inches long, above an inch broad, hairy and rough. The spikes conjugate, terminating the stem; the flowers sessile, in a double row: the calyx hirsute: the corollas purple, near half an inch in diameter. At first opening they are red, but afterwards become purple. Sometimes they are white. It flowers in June, July, and August; and the seeds ripen in a month. It is a native of Italy, Spain, &c.

There are several varieties of it; as, Common Bugloss with blue flowers, with white flowers, with red flowers.

The second species is in height three feet, with many strong lateral branches, produced from the main stem near the ground. The leaves stiff and rough, six or seven inches long, and about half an inch broad at the top, closely embracing the branches at the base, where they are two inches broad; indented and waved on their edges; the upper surface beset with hairs, and very rough to the touch. The spikes of flowers axillary, a foot or more in length, and reflex. The corollas fine blue. It is a native of Spain, &c.

The third seldom rises a foot in height where the soil is good; and where it is poor not more than half that height. Its flowers grow in loose spikes upon a smooth stalk. It is perennial, flowers early, and is a native of North America.

The fourth species has the stems at the sides of the crown of the root, hispid. The leaves ovate, marked with lines, petiolate, and remote. The peduncles axillary; with two bractes, opposite, sessile, lanceolate-ovate, many-flowered: the corollas blue, with a short tube, rather salver-shaped than funnel-shaped: the calyx thick set with long, white, bristly hairs: the segments rather longer than the tube of the corolla: the germs imbedded in a hollow, glandular receptacle, one or two generally abortive: the seeds rough, of a bony hardness. It is found native in Spain and Italy.

Culture.—All the sorts may be propagated by the roots, care being taken to plant them on such soils as are pretty dry. They are likewise capable of being raised by sowing the seeds in the autumnal season upon beds of sandy earth, and in the following spring removing the plants that are sufficiently strong, and setting them out in beds two feet apart, water being occasionally given. They also all come up well from the self-sown seed. They may be made use of for the purpose of ornament, where a great variety of easy cultivated plants are wanted, though they possess but little beauty.

3. AQUILEGIA CANADENSIS.

CANADIAN COLUMBINE.

THIS genus contains plants of the hardy herbaceous perennial flowering tribe, and Columbine kind.

It belongs to the class and order *Polyandria Pentagynia*, and ranks in the natural order of *Multisiliquæ*.

The characters of which are: that there is no calyx: the corolla consists of five lanceolate-ovate, flat, equal-spreading petals: the nectaries five, equal, alternate with the petals; each horned, and gradually broader upwards, with an oblique mouth ascending outwardly, and annexed inwardly to the receptacle, produced below into a long attenuated tube with an obtuse top. The stamina consist of numerous filaments, subulate; the outer ones shorter, and oblong erect antheræ the height of the nectaries: the pistillum consists of five ovate, oblong germs; ending in subulate styles longer than the stamina, and erect simple stigmas; the chaffs ten, wrinkled, short, separate, and involving the germs: the pericarpium consists of five erect, distinct, cylindrical capsules, gaping from top inward, containing numerous ovate, shining seeds, annexed to the gaping suture.

The species are: 1. *A. vulgaris*, Common Columbine; 2. *A. alpina*, Mountain Columbine; 3. *A. canadensis*, Canadian Dwarf Columbine.

In the first the stem is three feet high, erect, branching, leafy, and somewhat angular. The leaves smooth, glaucous underneath; the lower ones petiolate, biternate; the leaflets roundish, trilobate, gashed and notched; the upper ones digitate, the lobes oval and quite entire: the radical petioles very long. The flowers are produced from the tops of the naked branches, and hang down; they have generally six pistils and eight nectaries. It is a native of most parts of Europe, and perennial, flowering in June.

There are several varieties, the flowers varying greatly by culture, becoming double either by multiplying the petals or the nectaries. And of all these varieties, there are subordinate variations, both in the degree of doubleness, as with two or more rows of petals, two or three rows of nectaries, curiously inserted one into the other; and in the colours, as blue, white, red, purple, flesh-coloured, ash-coloured, chesnut-coloured, and striped or variegated blue and purple, blue and white, red and white, &c.

The second species has the root biennial. The leaves biternate, tender, and smaller than in the common sort; the leaflets multifid; the lobes sublinear and blunt; with the appearance and tenderness of the Canadian Columbine. It is a native of the Alps, &c. and flowers in May and June.

The third has likewise a perennial root. The stems are very slender, and reddish. The leaves in the lower ones biternate, irregularly divided, the extreme lobes blunt, the upper ones simply ternate, toothed or quite entire; the uppermost simple, lanceolate, and acuminate. The corollas yellow within, and red on the outside. It is a native of Virginia, &c. and flowers in April.

Culture.—The culture in these plants may be effected, either by sowing the seeds, or parting the old roots; but the first is the best practice, as the old roots are apt to decline and degenerate after they have blown a few seasons. The seed may be put in either in the autumn or spring season; but the former is the better, as seed which

has remained long out of the ground seldom grows well. A bed of fresh light earth is the best for the purpose. In the following spring the plants should be kept clear from weeds, and occasionally watered when the season is dry; being transplanted into other beds of the same sort, during the summer or autumn, according to their growth, at the distance of eight or ten inches every way; water being given when necessary. The plants mostly blow in the following summer, but seldom in a strong manner. The best flowering roots should therefore be taken up in the autumn, and planted out in such situations in the garden and pleasure-grounds as they are designed to remain in. In order to prevent the roots from degenerating by the reception of the farina of other flowers, the flower-stems should be cut down immediately after they have blown. And to keep up a proper succession of fine flowers, some plants should be raised every two years from seed.

In saving the seed of the variegated kinds, great care should be taken that no plain flowers be left among them.

The different varieties of these plants are capable of being increased by parting the roots of the young plants, such as those of three years old, in the autumn or spring.

The only general culture these plants require, is that of keeping them free from weeds, and cutting the decayed stems down in the autumnal season.

The last species often flowers sooner by a month than those of the other kinds.

All the varieties of the first, however much they may seem to differ in form, colour, size, structure, and variegation, are capable of being produced from seed of the same plant.

They are all adapted to afford variety in pleasure grounds and gardens; and the Canada sort is esteemed for the early appearance of its flowers.

4. ACTÆA RACEMOSA.

AMERICAN HERB CHRISTOPHER.

THIS genus comprehends plants of the Herb Christopher or Baneberry kind, which are hardy herbaceous perennials, of tall growth.

It belongs to the class and order *Polyandria Monogynia*, and ranks in the natural order of *Multisiliquæ*.

The characters are: that the calyx is a perianthium of four leaves, with roundish, obtuse, concave, and caducous leaflets: the corolla has four petals, acuminate at both ends, longer than the calyx, and caducous: the stamina consist of numerous, usually about thirty, papillary filaments, broader at top: the antheræ are roundish, twin, and erect: the pistillum has a superior ovate germen, no style, and a thickish, obliquely-depressed stigma: the pericarpium is an oval-globose, smooth, one-furrowed, and one-celled berry; and the seeds are many, semi-orbicular, and lying over each other in two rows.

The species that chiefly deserve notice for the purpose of cultivation are: 1. *A. spicata*, Common-spiked, Black-berried Herb Christopher; 2. *A. racemosa*, Clustered, Long-spiked, American Herb Christopher.

The first sort grows two feet and a half high, the footstalks of the leaves rising from the root; these divide into three smaller footstalks, each of which divides again into three, and these have each three lobes, so that each leaf is composed of twenty-seven lobes or small leaves. And the flower-stem which rises from the root has leaves of the same form, but smaller. On the top of the stalk appear the

flowers, which grow in ramose spikes, and are of a pure white; these come out in May, and are succeeded by black shining berries about the size of peas, which ripen in autumn.

There is a variety of this plant with white berries, and another in which they are of a red colour.

The second kind has large compound leaves, which rise immediately from the root, and are branched after the same manner with the first. The flower-stems frequently rise to the height of four or five feet or more. The flowers are white, in a long spike, reflex at the top. It flowers in June, or the beginning of July, but does not perfect seed in this climate. It is a native of North America, where it is often distinguished by the title of Black Snake-root.

Culture.—The propagation of these plants may be easily effected by sowing the seed on a shady border of common earth in the autumn, as soon as they are taken from the plants, as when the sowing is deferred till the spring they are liable to remain in the soil until the same time in the following year before they come up, and much time is lost. From the irregular manner in which the plants mostly appear, the mould of the beds should be as little as possible disturbed, lest they be destroyed. When fully grown in the succeeding autumn, they may be transplanted into the situations where they are to remain, which should be rather shady.

The seeds of the second species are mostly sent annually from America, and should be put into the ground as soon as possible after they arrive.

As these plants rise to a considerable height, and are ornamented with leaves on the lower part of the stems, and with handsome spikes of flowers on the upper parts, they are well suited for adorning the common compartments and clumps of pleasure-grounds, especially where there is a degree of shade without the inconveniences of large trees; and also in the intervals between large shrubs in conspicuous situations, where, from their hardy nature, they will only require the same treatment as them.

As these plants are perennial in root, but annual in the leaf and stem, these last require to be cut off and cleaned away every autumn.

The berries of these plants are believed to have a poisonous property, a single berry being said to be capable of instantly destroying fowls and other birds.



Painted by Syd Edwards

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Engraved by F. Varley

1 *Agapanthus umbellatus*
African *Agapanthus*

2 *Asphodelus luteus*
Yellow *Asphodel.*

PLATE III.

1. AGAPANTHUS UMBELLATUS.

AFRICAN AGAPANTHUS.

THIS genus comprehends the *African Lily*.

It belongs to the class and order of *Hexandria Monogynia*, and ranks in the natural order of *Liliaceæ*.

The characters of which are: that the calyx is a spathe common, gaping at the side: the corolla is one-petalled, funnel-shaped, and regular; the tube cornered, as if composed of six claws; the border six-parted, with the parts oblong and spreading: the stamina are six filaments inserted into the throat, shorter than the corolla, declinate: the antheræ are kidney-shaped and incumbent: the pistillum is a superior germ, oblong, three-cornered; the style filiform, of the length of the stamina, and declinate; the stigma simple or trifid: the pericarpium is an oblong capsule, three-sided, three-celled, three-valved: valves navicular, with contrary *dissepiment*: the seeds numerous, oblong, compressed, and enlarged with a membrane.

There is only one species, the *A. umbellatus*, African Blue, or Asphodel Lily.

It has the root composed of many thick fleshy fibres, diverging from the same head, striking deep into the ground, and putting out many smaller fibres, which are of a white colour and fleshy. From the same head arises a cluster of leaves surrounding each other at the base, so as to form a kind of herbaceous stalk about three inches in height, from which the leaves spread only two ways, appearing flat in the other two. The leaves are thick, succulent, about a foot long, and near an inch broad, compressed, and of a dark green co-

lour. Between these comes out the flower-stalk, which is from two to three feet in height, round, and as large as a man's little finger, naked to the top, where it supports a large head or umbel of blue flowers, inclosed in a sheath, which splits into two parts, and is bent backward. Each flower stands on a pedicel about an inch long. The petals are blunt, and waved on their edges; the umbel being large, the flowers numerous, and of a bright blue colour, making a fine appearance.

They appear about the end of August, or the beginning of September, and frequently continue in full beauty till the spring.

It is a native of the Cape of Good Hope.

Culture.—This plant may be easily propagated by means of offsets taken from the parent plant. The operation of parting them is to be performed at the season when the process of vegetation is in the most languid state, which in this plant is generally about the latter end of June. In performing the work the old plants are to be turned out of their pots, and the mould cautiously cleared away from them, that the fibres of the offsets may be better ascertained. The offsets are then to be separated in such a manner as that their heads may not be injured. When they adhere very closely a knife may be employed for the purpose, being careful not to wound the bulb of either the old or new plant. After this has been accomplished the bulbs are to be planted out separately, in pots of good garden mould, and placed in shady situations that admit the morning sun. A little water should be given once or twice a week when the season is dry, care being taken not to endanger the rotting of the roots by applying it in too large a proportion. In four or five weeks, when the new planted bulbs have put out fresh roots, they should be removed into other situations that are more fully exposed to the influence of the sun, a little more water being cautiously applied in order to strengthen their flowering. The flower-stems mostly appear in the beginning of September, and towards the end of it the flowers begin to open. At this period, if the season be not quite favourable, the plants must be brought under shelter, in order to protect them from the effects of frost or too much wet, care being taken to admit the air as freely as

possible, as without this the flowers become pale, weak, and of a bad colour. About the end of October it is necessary to remove them to the greenhouse, and place them in such situations as that they may have the advantage of free air without being shaded by other plants. During the winter season, when the weather is mild, a little water may be given occasionally; but in case of frost it must be wholly omitted, the plants being kept as dry as possible.

The only management that plants of this sort demand is that of protection from the effects of frost and too much moisture; it is of course only necessary to shelter them in the house in the winter months, without the aid of artificial heat, and place them out in the open air in summer.

2. ASPHODELUS LUTEUS.

YELLOW ASPHODEL.

THIS genus contains plants of the herbaceous perennial and annual flowery kinds, having fleshy fibrous roots. The King's Spear.

It belongs to the class and order *Hexandria Monogynia*, and ranks in the natural order of *Coronariæ*.

The characters of which are: that it has no calyx: the corolla is one-petalled, six-parted; the divisions lanceolate, flat, and spreading: the nectary consists of six very small valves, converging into a globe, inserted into the base of the corolla: the stamina have six filaments, subulate, inserted into the valves of the nectary, bowed; alternately shorter: the anthers are oblong, incumbent, and rising: the pistillum is a roundish germ, within the nectary: the style subulate, in the same situation with the stamens: stigma truncate: the pericarpium is a globular capsule, fleshy, three-lobed, and three-celled: the seeds several, triangular, and gibbous on one side.

The species are, 1. *A. luteus*, Yellow Asphodel, or King's Spear; 2. *A. ramosus*, Branched Greater White Asphodel, or King's Spear; 3. *A. fistulosus*, Hollow or Onion-leaved Minor Asphodel, or King's Spear.

The roots of the first are composed of many thick, fleshy, yellow tubers, joined into a head at the top; whence arise strong, round, single stalks, near three feet high, covered their whole length with long three-cornered, boat-shaped leaves, of a sea-green colour: the upper part of the stalk is adorned half way with yellow star-shaped flowers, which begin to open at bottom, so that on the same spike there is often a succession of flowers during a full month from the time of its beginning to flower, which is in June, or towards the end of May. It is a native of Sicily.

The second species has likewise roots composed of many thick fleshy fibres, to each of which is fastened an oblong tuber, as large as a small potato; the leaves are long and flexible, having acute edges; they grow in irregular clusters from the crown of the root; among these come out the stalks, which rise more than three feet high, sending out several side branches, which are naked; the upper parts of these are adorned with many star-shaped flowers, which are white with a purple line running longitudinally along the outside of each segment. They grow in long spikes, flowering successively from the bottom upwards. They appear the beginning of June, and the seeds ripen in autumn. It is a native of the south of Europe.

There is a variety, according to Miller, which is unbranched, with white flowers.

The third species is an annual plant. The roots are composed of many fleshy yellow fibres. The leaves are spread out from the crown of the root, close to the ground, in a large cluster; they are convex on their under side, but flat above, and hollow. The flower-stalks rise immediately from the root, and grow about two feet high, dividing upwards into three or four branches, which are adorned with white starry flowers, having purple lines on the outside: these come out in July and August, and their seeds ripen in October, soon after which the plants decay. It is native of the south of France.

Culture.—These are plants that require little trouble in their cultivation, and which succeed in almost any soil or situation. They are capable of being propagated by seeds and by parting the roots.

In the first method the seeds should be sown as soon as they are perfectly ripened in the autumn, upon a bed of light fresh earth in a warm aspect. The plants will rise in the early spring months, and after being kept clean during the summer, may be transplanted into fresh beds in the succeeding autumn or spring, at the distance of six inches from each other, and in the following autumn be planted out in the situations where they are to remain. But it is probably a better practice to remove the plants from the seed-bed into the places where they are to continue, as in this way they grow with more vigour. The third sort can only be raised from seeds, which should be sown in the autumn; and the plants, when they have put out three or four leaves, be removed into the places where they are to grow.

In the latter mode the slips or parted roots may be planted out, either on beds or in the places where they are to grow, in the autumn or early spring. In the former case the plants are usually allowed a summer's growth before they are removed. In either way the tops of the roots should be covered three or four inches with mold. They usually flower in the following summer.

The first species multiplies rapidly by roots, but the second more sparingly, and does not bear transplanting so well, as it is rendered more weak in its flowering.

The variety with white flowers is less hardy than either of these species.

In severe winters it is useful to protect the roots by the application of tan or stable-dung; and the stems should be annually cleared away when they begin to decay in the autumn.

These plants afford considerable variety, when properly intermixed with others of the flowering hardy kinds in the borders and other parts of pleasure-grounds, producing a good effect from their continuing long in blow.

PLATE IV.

1. ANEMONE HORTENSIS.

STAR ANEMONE.

THIS genus comprehends several plants of the tuberous-rooted flowery ornamental kind; being perennial in their roots, but annual in their stems and flowers.

It belongs to the class and order *Polyandria Polygynia*, and ranks in the natural order of *Multisiliquæ*.

The characters are: that it has no calyx; that the corolla has petals in two or three rows, three in a row, somewhat oblong: the stamina have numerous filaments, capillary, half the length of the corolla: the anthers twin and erect: the pistillum has numerous germs in a head, the styles acuminate, and the stigmas obtuse: no pericarpium: the receptacle globular or oblong, hollowed, and dotted: the seeds very many, acuminate, retaining the style.

The species are very numerous; but those that most deserve the cultivator's attention in the Anemone kind are: 1. *A. coronaria*, Narrow-leaved Garden Anemone; 2. *A. hortensis*, Broad-leaved Garden Anemone; 3. *A. nemorosa*, Wood Anemone; 4. *A. apennina*, Mountain-blue Wood Anemone; 5. *A. ranunculoides*, Yellow-wood Anemone.

In the first species the flower-stems rise between the leaves immediately from the roots, two, three, or more from the same root, to the height of eight, ten, or twelve inches, having a leafy appendage or involucrem a little above the middle. The radical leaves are deeply divided into numerous segments, which are subdivided by threes into many narrow divisions. At the top each stem is adorned with a flower, which in the double sorts is large and very ornamental.



Painted by V. Edwards

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Engraved by P. Simon

1 *Anemone hortensis*
Star Anemone

2 *Albuca minor*
Leijser Albuca

It is a native of the Levant, where it grows single, but has been rendered double by cultivation.

The varietics are very numerous: in the single sorts, the Watchet or Pale Blue; the Common Purple; the Scarlet, and many intermediate varieties. In the double kinds, the Common Double Red and Scarlet; the Parti-coloured Crimson; the Crimson Velvet; the Great Double Blush; the White; the Lesser Blush; the Purple; the Blue; the Rose-coloured; the Carnation; the Purple Velvet; the Purple Velvet of three colours; the Double Brimstone; the Green, &c.

In the second sort the stems rise to the same height. According to Haller, the root-leaves are of two kinds; one very deeply gashed, so that they have the appearance of being five-fingered, but are in reality three-parted, the side-lobes being two-parted to the very base; all the lobes are narrow and sharp: the side ones deeply bifid, the middle ones trifid or quadrifid, the extreme ones sharply lanceolate: the other kind broad, deeply three-lobed, blunt, bluntly and shortly serrate at the tip, with an awn standing out. The leaf on the stem, or involucre, is ternate, the leaflets ovate-lanceolate. The peduncle is solitary and one-flowered, as in the first: the petals three times three (in the natural single flowers,) long, elliptic, marked with lines, the outer ones subhirsute on the outside, white at the base with green lines. The roots in this as well as the first consist of small tubers.

There are several varieties of this both with single and double flowers: the single and double Yellow: the Purple Starre Anemone, darker and paler; Violet Purple; Purple striped; Carnation; Greed-line, between a peach-colour and a violet; Cochenille, of a fine reddish violet or purple; Cardinal, of a rich crimson red; Bloud-red, of a deeper, but not so lively a red; Crimson; Stamell, near unto a scarlet; Incarnadine, of a fine delayed red or flesh-colour; Spanish Incarnate, of a lively flesh-colour, shadowed with yellow; Blush, of a fair whitish red; Nutmegge, of a dark whitish colour, striped with veins of a blush-colour; Monk's-gray, pale whitish tending to a gray; Great Orange Tawnie; Lesser Orange Tawnie: in the double, the great double Anemone of Constantinople, or Spanish Marigold; great double Orange Tawnic; double Anemone of Cyprus; double Persian

Anemone; the common great double Variable Anemone; common double and variegated Scarlet; Red and Purple; variegated of these colours.

The best Star-Anemones are said to come from Brittany, where they raise yearly many fine sorts.

In the third species the root is perennial and creeping. The height of the whole plant from five to ten inches: the stem single, round, and pubescent; bearing one leaf, and one flower. The leaf is doubly ternate; each part being petioled; the petiole is flat and broad, particularly at the base; each part, or leaf (for some consider it as three leaves) is trifid; each leaflet being gash-serrate, and hairy underneath, especially on the nerves. The peduncle is from an inch to two inches in length, is only a continuation of the stem, and springs from the centre of the leaf. The flower consists of six or seven oblong-ovate petals, sometimes ending bluntly, sometimes emarginate, and the Editor of Miller's Dictionary has observed them not unfrequently even gashed or lacerate. The usual colour is white, but they are often tinged with purple on the outside, particularly the three outer ones; and sometimes they are entirely purple on both sides. The joint of the stem, and the backs of the leaves are also apt to be tinged with red.

The varieties are: with single flowers, with double white flowers, with single purple flowers, with double purple flowers, and with reddish purple flowers.

In the fourth species the root is perennial and tuberous; the stem round, purplish, and about a span high: the root-leaves on long petioles, ternate, and leaflets usually three-parted; the segments variously cut and divided, somewhat pointed, hairy on both sides; one three-parted leaf, or three leaves together on the stem, like the others, but on short, sheathing petioles. From the centre of these arises the peduncle, about a hand high, round and purplish, except near the flower, where it is green. The stem, leaves, and peduncle, are commonly slightly hairy: the flowers are upright, of a pale blue colour, and sweet smell; the petals oblong, from twelve to fifteen, and disposed in three rows. It flowers in April.

The varieties are: with single blue flowers, with double blue flowers, with single violet-coloured flowers, with double violet-coloured flowers.

The fifth differs from the above in having a yellow corolla, two petals alternately outer, and two inner, and one having one side within and the other side without the next petal; whereas that has three outer and three inner petals: it differs also in the peduncles being accompanied with two leaflets, the latter of which is furnished with three at the base. It flowers a little earlier than the other. It has sometimes two flowers on a stem, though often but one, the peduncles villose and short, so that the flower scarcely rises above the leaves: the petals are five, and roundish; the stamens about fifty. It grows wild in Sweden, &c.

In the Pulsatilla, or Pasque-flower sort, the species are: 1. *A. pulsatilla*, Pasque-flower; 2. *A. patens*, Woolly-leaved Pulsatilla, or Anemone; 3. *A. vernalis*, Early Spring Pulsatilla, or Anemone.

In the first species the peduncles are erect and round, from four to seven or eight inches in height, villose, one-flowered; lengthening after the flowering is past. The involucre multifid, with the divisions linear and villose. It sits close to the flower, but when that is fallen it is found almost in the middle of the peduncle. The corolla specious, and purple in colour; the petals lanceolate, and villose without; the seeds ovate, tailed, hairy, and scarcely adhering to the receptacle: the leaves rough and finely cut, with three or four pairs of pinnae and pinnules. It grows naturally in Sweden, and flowers in April.

The varieties are; with single blue flowers, with double blue flowers, with single and double white flowers, with single and double red flowers, and with violet-coloured flowers.

The second has the root perennial; the root-leaves are ternate-digitate; leaflets sessile, lacinate and acuminate, the middle leaflet tripartite, the side ones bipartite; the scape one-flowered, shorter than the leaves; the involucre remote and villose; the corolla white and villose underneath; the stamens yellow. It is a native of Siberia.

The third species has the flower red without, white within; it blows earlier than the Pasque-flower; the leaves approach those of Meadow-Rue; the stem is half a foot high, with a very tomentose, yellow, shining involucre in the middle, finely cut. When the flower is young, it is white with a blush of purple on the outside, where it is hairy: these hairs afterwards become yellow. The corolla consists of six convergent ovate-lanceolate petals: the stamens are very numerous. It grows in the woods in Sweden, &c.

In the Hepatica kind the only species is the *A. Hepatica*, or Hepatica.

In this the leaves of the year before remain, which are heart-shaped, three-lobed, obtuse, and smooth, beneath being veined in net-work: the petioles are cylindric, long, and rising: the bud has generally four outer scales, ovate and membranaceous; three inner ones, concealing the leaves and flowers; the peduncles three, cylindric, hairy, and one-flowered. The flower lies a year complete in all its parts within the bud. The corolla has six petals in two rows of three each, lanceolate, and spreading: the stamens are about twenty-five: the seeds oblong-ovate, involved in a silky substance; but many of them abortive. It is found wild in Sweden, &c. It flowers early.

The varieties in cultivation are numerous: the single and double blue, single and double red or peach-coloured, single and double white, single and double variegated red and white, single and double violet-coloured, with striped leaves.

Culture in the Garden kinds.—All the species and varieties of the garden and wood Anemones are capable of being propagated by offsets from, or dividing their roots. By sowing the seed, new varieties may also be obtained.

In order to procure the offsets, and dig over and prepare the beds, the best sorts should be annually taken up immediately on their leaves beginning to decay, as in the early part of June for the more forward sorts. They must then be divided, or have the offset knobs taken off. This work should always be performed in a dry season, the root-bulbs, after the earth has been removed, being deposited on

a mat, in an airy dry place, where there is not much sun, being spread out in a thin manner. When they are become quite dry, the remainder of the earth should be rubbed off them, and they may be put up in bags or boxes, and placed in a situation where they cannot be injured by vermin. The roots should not be too much parted where they are intended to flower strongly, and each part should be furnished with a good eye. Where the taking up has been delayed till the roots begin to make new shoots, it will be too late to remove them that season.

In planting the roots or sets thus procured, or which have been purchased from the seedsmen, such situations should be chosen for blowing them in as are free from much moisture, and where the exposure is open to the influence of the sun and air, and free from the shade of trees. They will succeed and flower in tolerable perfection in any soil that is sufficiently light and friable in the mould; but in order to have them blow in the greatest perfection, beds should be prepared with earthy mixtures, made by taking off the surface of such lands as have been long in the state of sward, to the depth of eight or ten inches, where the earth is of the light sandy or hazel mould kind, throwing it up for some time that it may rot and become perfectly mellow; when rotten cow-dung, in the proportion of one-third, should be incorporated with it, by having them thrown up together into a heap, and frequently turned over afterwards; the stones and clods being carefully raked out and reduced; but the earth should not be sifted, as it is apt by such means to become too stiff and compact. Some advise the addition of drift or sea-sand, in the quantity of about one-fourth.

With this earth beds must be formed for the reception of the roots: these should be marked out to the breadth of about three feet and an half, with length sufficient for the quantity of roots, having alleys between them of from a foot to eighteen inches. The prepared mould is then to be dug or filled in to the depth of twelve or sixteen inches, leaving the surfaces of the beds from three to six inches above the common level of the ground, according to the wetness of the soil, giving them a little convexity when there is much

moisture. Some recommend the putting of a layer of well-rotted cow-dung, about five inches in thickness, below the compost materials. The surface of the beds should be raked even before the roots are put in. In planting, six rows should be put in each bed, the roots being set at the distance of six inches from each other in the rows, and to the depth of two or three inches. When this has been done, the surface should be made smooth by raking it over lightly.

The time of planting should vary according to that which it is intended they should blow at. The best season where early flowering is intended is in the latter end of September or the beginning of the following month; for a middle flowering, about the middle of October; and for late flowering, the latter end of February. In this mode of planting a succession of flowers may be provided from April till the middle of June. Those roots that are planted the earliest are in general the strongest, and afford the best flowers, as well as the greatest increase of off-sets. It is always advisable to keep a few roots out of the ground till the spring season, for the purpose of a succession of flowers, and lest the early planted ones should be injured by the severity of the winter, which is sometimes the case where they are not covered to protect them from frost. These spring-planted roots flower a fortnight or three weeks after those which were planted in autumn, and many times blow equally as fair, especially if it prove a moist spring, and care be taken to refresh them gently with water.

But the increase of these roots will not be near so great as in those of the first planting, provided they are not hurt in winter; and it is for this reason that those who deal in these roots are forward in planting; as, although it may sometimes happen, by sharp pinching frosts in the spring, that their flowers are not so double and fair as those planted a little later, yet, if they can preserve the green leaves of the plants from being injured, the roots greatly increase in bulk. But in gardens where these flowers are preserved with care there is always provision made to cover them from the injuries of the weather, by arching the beds over with hoops or frames of wood, and covering them with garden mats or cloths in frosty nights, especially in the

spring of the year, when their buds begin to appear: otherwise, if the best and most double flowers be planted, the black frosts and cutting winds in March will often cause them to blow single, by destroying the thrum that is in the middle of the flower;—a circumstance which has often occasioned persons who have bought the roots to think they were cheated, when it was wholly owing to their neglect of covering them.

But, besides this mode, these roots may be planted in borders, clumps, and other places, with much success and effect, in mixture with other plants; in which method three, four, or more roots should be planted together in patches of the breadth of five or six inches, being properly varied in distance and situation. And whether planted in beds or the borders a showery season should be chosen for the purpose, as in dry weather they are apt to become diseased,—proper care being taken to manage the distribution of the colours in such a way as to produce an agreeable variety. They may likewise be planted in pots, where the varieties are curious and valuable, three or more roots being put into each; and by being protected by frames, a green-house or hot-house during the winter season, they may be brought forward so as to flower very early and in great perfection.

In the wood sorts the propagation may be effected in the same manner as in the garden kinds; but the sooner the roots are taken up and divided after the decay of the leaves the better. The wild Anemones should be taken up when the leaves decline, and be planted out in proper situations.

In raising new varieties of these plants from seed, some of the best and most leafy single, or what are usually termed Poppy Anemones, should be provided, and planted out early that they may grow vigorously and afford good seed, which should be carefully collected a few weeks after their flowering is finished. Some, however, procure the seed from the shops. The best time of sowing is probably in August; but some advise the spring, as in March or the following month. This may be performed in boxes, pots, or broad earthen pans, where a small supply of roots only is wanted; but where the demand is great, it is best sown on beds prepared for the

purpose. The proper soil or earth for this use is that of the light sandy kind. The seed should be sown as evenly as possible, but rather thick, and be covered by sifting light mould over it to the depth of about a quarter of an inch. The only attention necessary afterwards is that of occasionally shading the plants from the effects of the sun in hot weather, and giving them a gentle watering now and then. In about six weeks the plants will show themselves, when they should be kept perfectly free from weeds till the leaves begin to decay, when a covering of light sifted mould should be again applied, and another in the autumn may sometimes be required. During the winter they should be well protected from the frosts. In the second summer many of the plants will flower, and the best may be marked by a stick; but none should be destroyed till the third year. At this period the roots will begin to be too thick, and at the decay of the leaves must of course be taken up, which is best done by passing the mould through a fine sieve. And as when sown in beds many roots will be unavoidably left, they should be levelled, and suffered to remain till the following year. The roots that have been separated should be preserved, as before directed, for future planting.

These are all highly ornamental plants, capable of being employed with much effect in pleasure-grounds: many of them are hardy, flower early, and produce great variety in such situations. The wood sorts are very useful in adorning wilderness quarters. The double sorts, when in beds, afford much beauty and variety.

In the *pulsatilla* kinds the propagation may be accomplished either by the seed or dividing the roots. In the first method the seeds should be sown in boxes or pots filled with very light sandy earth, and not covered too deep with mould, which will prevent their rising, as they require no more than just to be covered. The boxes should be placed where they may have the advantage of the morning sun, but be screened from it in the heat of the day; and when the season is dry the earth be refreshed occasionally with water. The best time for sowing is in July or August, soon after the seed is ripened; as by keeping its vegetative power is apt to be de-

stroyed. The boxes or pots should remain in such shady situations until the beginning of October, when they may be moved so as to enjoy the full sun during the winter season. In March, when the plants begin to appear, they should be again removed so as to have only the forenoon sun; for if they are too much exposed to heat the young plants are soon destroyed. They should be refreshed occasionally with water in dry weather, and be carefully kept clean from weeds.

When the leaves are entirely decayed, the roots should be taken up in the manner directed above; and as there will be many small roots left, the earth should either be returned into the boxes again, or spread upon a bed of light earth, to see what plants may rise the succeeding year. The roots after being thus taken up should be immediately replanted in beds of light fresh sandy earth, about three or four inches asunder; covering them about three inches thick with the same light earth. The spring following most of the plants will produce flowers, but not so large or fair as in the succeeding years. As the roots of these plants are fleshy, and generally run down deep, they will not bear to be kept long out of the ground; therefore, when they are removed, it should be done early in the autumn, that they may take fresh root before the frost sets in.

In this mode of propagation the plants thrive best in loamy soil; as in very light dry ground they are apt to be destroyed by too much heat.

These are plants that afford variety in the borders of pleasure-grounds, especially the first species and its varieties, which are hardy, succeeding in almost any situation.

In the *hepatica* kind the propagation may be effected in the single sorts either by the seed or the parting of the roots; but in the double it can only be done by the latter method. The seed of the single flowers frequently, however, produces double ones. New varieties are likewise raised in the former manner.

In the first method the most proper season for sowing the seeds is in the beginning of August, either in pots or boxes of light earth, which should be placed so as to have only the morning sun until

October, when they should be removed into the full sun to remain during the winter season: but in March, when the young plants begin to appear, they must be removed again to a shady situation, and in dry weather be frequently watered; when about the beginning of August they will be fit to be transplanted: at which time prepare a border of good fresh loamy earth, with an eastern aspect; into which remove the plants, placing them about six inches distance each way, closing the earth pretty well to their roots, to prevent the worms from drawing them out of the ground. In the spring following they begin to show their flowers; but it is three years before they flower strong, till which time their goodness cannot be ascertained: when if any double flowers, or such as are of a different colour from the common sorts, be found, they should be taken up and planted in the borders, where they should continue at least two years before they are taken up or parted; as it is remarkable in these plants, that where they are often removed and parted they are very apt to die; but when they are permitted to remain some years undisturbed, they grow rapidly, and become large roots. In propagating them by roots they should not therefore be often parted, or into too small parts.

Double-flowered plants, as they never produce seeds, are only capable of being propagated by parting their roots, which should be done in March, when they are in flower, care being taken not to separate them into very small heads. They should not be parted oftener than every third or fourth year, as they never thrive or blow well where this is the case.

These are plants that display much beauty, affording flowers very early in the beginning of the year. The double sorts are the most ornamental, as the flowers in them are much larger, and continue in blow much longer. These should therefore be placed in the most conspicuous situations in the borders or elumps of pleasure-grounds; but the single kinds deserve places for the sake of variety.

2. ALBUCA MINOR.

LESSER ALBUCA.

THIS genus furnishes different bulbous-rooted herbaceous perennial plants of the flowery ornamental kind.

It belongs to the class and order of *Hexandria Monogynia*, and ranks in the natural order of *Liliaceæ*.

The characters of which are: that it has no calyx: the corolla has six oblong-oval permanent petals, the three outer spreading, and the three inner converging: the stamina have filaments shorter than the corolla; three opposite to the inner petals, linear-subulate, emPLICATE a little above the base, then flat, three opposite to the outer petals, thicker; antheræ on the former oblong, fixed to the inflex tip of the filament, below the middle upright; on the latter, similar, but effete, or none: the pistillum has an oblong triangular germ: style three-sided: stigma a triangular, three-celled, three-valved capsule: the seeds numerous, flat, lying over each other, and widening outwards.

The species are numerous; but those mostly for the purposes of ornament are: 1. *A. altissima*, Tall Albuea; 2. *A. major*, Great Albuea; 3. *A. minor*, Small Albuea; 4. *A. coarctata*, Channel-leaved Albuea; 5. *A. spiralis*, Spiral-leaved Albuea.

In the first species the leaves are so deeply channelled as to be almost rolled into a cylinder; two feet long, and almost three inches broad at the base. The scape a little shorter than the leaves, the thickness of a finger. The raceme two feet long or more. The peduncles bent downwards in the season of flowering, afterwards spreading and becoming finally erect; they are three inches in length. The braetææ green, except at the edge, where they are of a clear white, an inch long. The flowers are of a white colour; and

the petals more than an inch in length; the outer ones sharp and thickened at the tip, but the inner blunt, bent in, and having a twin gland, composed of two globes, at the end. The fertile filaments are waved on the edge, with the antheræ curved inwards beneath the glands of the petals: the barren filaments are triangular, furrowed on the outside, a little longer than the others, and have no antheræ. The germ is subpedicelled. The style obversely pyramidal, the length of the germ, covered with glandulous scales: the angles terminate in subulate horns, covered also with scales; the centre being elongated into a pyramidal stigma. It flowers in April and May.

In the second the scape is a foot high, upright, roundish, very minutely streaked, smooth, and ash-coloured, with a glaucous bloom on it. The leaves are sharp, smooth, and streaked, a foot long. The bractæ are sheath-form, lanceolate, concave, with a long linear-subulate tip, red, nerved, smooth, straight, and solitary, at the base of the peduncles. The raceme terminating, long, of a crimson colour, and smooth: the flowers alternate, peduncled, slightly nodding; there being fewer at bottom. The peduncles round, smooth, one-flowered, longer than the bractæ, and spreading. The petals linear, longitudinally nerved, marcescent; the three outer broader, a little concave, red, blunt at the end, bent in with a small marginal scale; the three inner narrower, upright, pale red, with a broad, thin, membranaceous, whitish rim on each side, and an ovate, membranaceous, inflex scale at the tip. The filaments erect, the length of the corolla, linear, membranaceous, whitish, joined at the base, inserted into the receptacle; they are alternately free, and fastened below by a broader base to the inner petals. Antheræ from incumbent upright; on the loose filaments barren; on the three others whitish with yellow pollen, linear, blunt at each end, emarginate, a little curved inwards, convex at the back, plano-concave in front, twin-furrowed. The germ fleshy, pyramidal-cylindric, blunt, crimson, smooth, with three calluses at the tip, on a short peduncle, ending in several small blunt teeth pressed close to it. The style very thick, somewhat flattened, with two of the angles nearer to each

other, a little attenuated at the base, pubescent, red, shorter than the germ. The stigma blunt, of a yellowish red colour, pubescent at the edge. Capsule oval, smooth, transversely nerved, compressed, with two rims along the back. The seeds are orbiculate. It flowers in May.

In the third the leaves are a foot long and more, half an inch broad at the base. The scape half a foot high, scarcely a line in diameter. The raceme six inches in length, or even longer. The peduncles an inch and a half long. The bracteæ are green, with clear white edges, half an inch long, quickly withering. The flowers yellow. The petals less than an inch in length; the outer ones thickened at the tip; the inner having a white, inflex, kidney-shaped gland. Barren filaments, linear, with a filiform inflex tip, and no antheræ. The style obversely pyramidal, the length of the germ, covered with glandulous scales. The stigma pyramidal, prominent between the inner converging petals. It flowers in May and June.

The fourth species has the leaves linear-subulate, deeply channelled, two feet long and upwards, scarcely half an inch wide at the base. The scape a little shorter than the leaves, and not so thick as a goose quill. The raceme close, half a foot in length. The peduncles spreading, a little more than an inch in length. The bracteæ are almost the length of the peduncle. The flowers yellow. Outer petals oblong, thickened at the tip, above an inch in length; the inner ones oval, a little shorter than the outer ones. Barren filaments, somewhat shorter than the fertile ones, convex without, channelled within: the antheræ sagittate and effete. The style prism-shaped, the length of the germ, and terminated by a stigma from the angles of the style rounded at the tip. It flowers in May.

In the fifth the root-leaves are few, linear-filiform, upright at bottom, then spiral, and when the plant is more mature, flexuose, villose-scabrous, shorter than the scape, which is simple, filiform, flexuose, nodding at the top, streaked, villose-scabrous, of a finger's length, seldom a span long after flowering, one-flowered, seldom

two-flowered. The bractea lanceolate, acuminate, shorter than the peduncle. There are three filaments without antheræ.

They are all natives of the Cape.

Culture.—The best method of propagating these plants, is by means of offsets from the roots, which should be taken after the plants have flowered in the summer months. These are then to be planted out in pots filled with good light mould, and placed under the protection of hot-bed frames during the winter season. In this way they mostly succeed and produce flowers. But it is a better practice, where the convenience of a border can be had in the front of the greenhouse or stove, to plant them in the natural ground in these situations, as in this method they both thrive better, and flower with more vigour than when kept in pots.

The third sort is asserted by Miller to be capable of being raised from seeds, when they can be procured from abroad, as they seldom or ever ripen any in this climate.

The second species is also said to be of so hardy a nature, as sometimes to succeed when planted out on a border of light earth, in the open ground. All the species are ornamental, and afford variety in the greenhouse or stove.



Painted by Syd Edwards
 1 *Arbutus unedo*
 Strawberry Tree

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Engraved by F. Sanden
 2 *Alyssum saxatile*
 Yellow Alyssum

PLATE V.

1. ARBUTUS UNEDO.

STRAWBERRY TREE.

THIS genus contains plants of the evergreen, shrubby and ornamental kind.

It belongs to the class and order *Decandria Monogynia*, and ranks in the natural order of *Bicornes*.

The characters are: that the calyx is a five-parted, obtuse, very small permanent perianthium: the corolla is monopetalous, ovate, and flattish at the base, diaphanous, with a quinquefid mouth the divisions obtuse, revolute and small: the stamina consist of ten subulate swelling filaments, very slender at the base, affixed to the edge of the base of corolla, and half the length of it: the antheræ slightly bifid and nodding: the pistillum is a subglobular germ, on a receptacle marked with ten dots: the style cylindric, the length of the corolla: the stigma thickish and obtuse: the pericarpium a roundish five-celled berry: the seeds small and bony.

The species of most importance are: 1. *A. Unedo*, Common Arbutus, or Strawberry Tree; 2. *A. Andrachne*, Oriental Strawberry Tree; 3. *A. Uva Ursi*, Trailing Arbutus, or Bearberry.

The first species, Common Arbutus, or Strawberry Tree, rises to the height of twenty or thirty feet in its native situation, but rarely with an upright stem. But with us it is of much humbler growth. It usually puts out branches very near the ground. The leaves keep on all the winter, and are thrust off in the spring by new ones, so that it is always clothed with leaves. The berries have many seeds in them, and are roughened with the tubercles of the seeds.

There are several varieties; as with large oval fruit, with round

fruit, with double flowers, with scarlet flowers; there are also the curled-leaved or cut-leaved, the broad-leaved, and the narrow-leaved.

The second species much resembles the first, but the bark is not rough; some of the leaves have no serratures, and the panicle is upright and viscid, which in that is smooth. It grows in its native state to a middle-sized tree, with irregular branches. The leaves are smooth, large, and somewhat like those of the Bay Tree, but not quite so long: the flowers are like those of the Common Arbutus, but growing thinly on the branches: the fruit oval, of the same colour and consistence with the common sort; but the seeds of this are flat, while in that they are pointed and angular. It grows naturally in the East.

In the third species the branches trail upon the ground two or three feet round the root or more. The leaves are alternate, bluntly oval or oblong wedge-shaped, with a net-work of veins underneath, and corresponding wrinkles above, firm and evergreen, like those of Box: the flowers grow at the extremities of the branches in small clusters, each supported by a short red foot-stalk: they are of an oval-conical figure, flesh-coloured, or white with a red mouth, and divided into five obtuse reflex segments at the rim: the berries are round with a depressed umbilicus, smooth and glossy, red when ripe, and of the size of a holly-berry, replete with an austere mealy pulp, in which are five cells containing five angular seeds. It is a shrub very abundant in many parts of the continent, as Sweden, &c.

Culture.—The most usual method of raising these beautiful evergreens is by sowing the seeds; but they are sometimes capable of being raised by cuttings and layers.

In the first of these methods with the first species, the seeds should be collected when perfectly ripe in November, or the following month, and preserved in dry sand till the period of sowing, which may either be in December or the early spring season. The seed should be sown in pots, and lightly covered with mould, then plunged into an old tan hot-bed, and covered by glasses. In this mode the plants will be up in April, when they should be often but sparingly watered, and kept free from weeds.

As the hot season proceeds, the plants should be shaded during the heat of the days; but in warm weather open all night to receive the dew, and only covered in the middle of the day. In this mode the plants become strong the first summer. In the beginning of October they may be shaken out of the pots, and their roots carefully separated, planting them singly in small pots filled with light earth; then plunging the pots into an old bark-bed under a common frame, carefully shading them from the sun in the middle of the day, and giving them water as they require: in this bed the pots should remain during the winter, exposing them to the open air whenever the weather is favourable; but in frosty weather they should be covered, so as to protect them. In the spring following they may be removed to a gentle hot-bed, which requires no other covering but mats. This enables them to make strong shoots early in the summer, by which they become in a better condition to bear the cold of the succeeding winter. In this bed they should continue during the summer, and be well protected in the following winter.

After the plants are become two or three feet in height, shake them out of the pots, and plant them in the open ground in the places where they are to remain, which should be done in April, that they may have taken good root before the winter, which is apt to injure them when newly planted out; and as all the earth about their roots is thus preserved, they will succeed better.

The plants are tolerably hardy, and seldom hurt, except in extreme hard winters, which often destroy the young tender branches, but rarely the roots.

They delight in a generous but not too moist soil, as when planted in dry ground they seldom produce much fruit: the flowers coming forth in autumn, when the winter proves severe, they are generally destroyed; consequently, to obtain fruit, they should be placed in warm situations, and where the ground is not naturally moist; a good quantity of loam and rotten neat's dung should be laid about their roots, and in dry springs they should be plentifully watered.

The most proper season for transplanting is September, at which

time the blossoms are beginning to appear; and when dry at that season, and they are kept moist, they very soon take root; but towards November their roots should be well covered to keep out the frost. In performing this business the balls of earth round their roots should be preserved.

In raising the second species the seeds must be procured from abroad, and the plants be left longer in the pots, as three or four years, or until they are become perfectly woody; and when put out, warm situations be chosen for the purpose, where the soil is dry, as the plants do not succeed well where the land is too moist.

The third species should be raised in pots filled with bog earth, which should be set out in moist watery situations.

In propagating them by the second method, or that of cuttings, they should be made from the young shoots, and be planted in pots in the spring or summer months, plunging them into a good hot-bed of tan or dung till they have stricken root.

In the layer mode of propagation the young shoots should be chosen, as they otherwise seldom take root in less than two years.

In grafting them, stocks of any of the varieties may be had recourse to.

It continuing the double-blossomed and scarlet varieties, some of these last methods must always be employed.

These are some of the most ornamental plants of the evergreen kind for shrubberies and pleasure-grounds that we possess. The first sort and varieties sometimes rise to a considerable height, as ten or fifteen feet. They are now found in most plantations, and in the months of October and November, which is the season when they are in flower, and the fruit of the former year is ripe, as it is a whole year in growing to perfection; they are very ornamental. When there is plenty both of fruit and flowers upon the trees, they indeed make a handsome appearance, as most other plants are past their beauty. The trees which have large oval fruit make the greatest figure; the flowers of this being larger and oblong. The variety with double flowers is a curiosity; but the flowers, having only two rows

of petals, make no great appearance, nor do the trees produce fruit in any quantity; the other is therefore preferable. That with red flowers makes a pretty variety, when intermixed with the other, for the outsides of shrubberies, as they are of a fine red colour at their first appearance, and afterwards change to purple before they fall off. The fruit in this is the same as in the common sort.

As the leaves of the *Andrachne* are larger than in the other sorts, they have always a better effect as evergreens.

2. ALYSSUM SAXATILA.

YELLOW ALYSSUM.

THIS genus comprises several species of under shrubby, herbaceous, perennial plants of the *Alysson* or *Madwort* kind, that are chiefly flowery and ornamental.

It belongs to the class and order *Tetradynamia Siliculosa*, and ranks in the natural order of *Siliquosæ*.

The characters of which are: that the calyx is a four-leaved, oblong perianthium, the leaflets ovate, oblong, obtuse, convergent, and deciduous: the corolla four-petalled and cruciform: the petals flat, shorter than the calyx, very spreading, having claws of the length of the calyx: the stamina have six filaments of the length of the calyx, two opposite, a little shorter, marked with a toothlet: antheræ from erect spreading: the pistillum has a sub-ovate germ, the style simple, of the length of the stamina; longer than the germ, and the stigma obtuse: the pericarpium is a subglobose, emarginate silicle, or broad and short pod, with a style of the length of the silicle, two-celled, the partitions elliptic, and hemispherical; the seeds are fixed to filiform receptacles issuing forth at the end of the silicle, few and orbicular.

There are many species, but those chiefly cultivated are: .1 *A. spi-*

nosum, Thorny or Prickly Alysson; 2. *A. halimifolium*, Sweet or Sea Purslane leaved Alysson; 3. *A. saxatile*, Yellow Rock Alysson; 4. *A. incanum*, Hoary Erect Alysson; 5. *A. calycinum*, Calycine Alysson; 6. *A. campestre*, Field Alysson; 7. *A. creticum*, Cretan Yellow Alysson; 8. *A. deltoideum*, Deltoid-leaved Alysson; 9. *A. montanum*, Mountain Dark-yellow Alysson.

The first species has woody branches, which rise about two feet high, and are armed with small spines. The leaves are hoary, lanceolate, and thinly placed on the stalks without any order. The flowers grow in small clusters at the extremities of the branches. The petals are white and entire, and the filaments toothless. It is a native of Italy.

The second species spreads itself upon the ground, and never rises to any height. The leaves are narrow, spear-shaped, pointed, and entire. At the extremities of its branches it produces very pretty tufts of small white-coloured flowers, of which the plant is seldom destitute for six or seven months together. In it the stamina are simple, and the siliques roundish and entire. It is a native of the southern countries of Europe.

The third is also a low plant, with a fleshy stalk, which seldom rises more than one foot high, but divides into many smaller branches, which grow near the ground, so that a single plant spreads to a considerable distance. The leaves are spear-shaped, soft waved and entire: the flowers produced in loose panicles at the extremity of every branch, and are of a bright yellow-colour. They mostly appear about the end of April, or beginning of May; and, if the season be moderate, continue three weeks or more in beauty. It is a small, showy, hardy plant, and not disposed to overrun others. It frequently flowers a second time in autumn.

The fourth species grows to the height of two feet, having woody stalks, which divide into several branches towards the top. The leaves are spear-shaped, hoary, and entire. At the extremity of every shoot the flowers are produced in round bunches; and are small and of a white colour. The silicle is entire, oval, and full of brown seeds. It grows naturally in the South of France.

The fifth is nearly of similar growth in the stem, and the leaves have much resemblance; but the four longer filaments are toothed in the middle within, and the two shorter ones put out from their base a lance-shaped scale, the length of the germ. The petals are very small, scarce apparently emarginate, yellow, but growing white with age. Silicle slightly emarginate, with two seeds in each cell. It is found wild in Austria.

The sixth is very like the last in stem, leaves, and petals, but is more decumbent, and has lance-ovate leaves. The filaments have no teeth, but the two solitary ones have a bristle on each side, not growing to the filament, but inserted into the receptacle. Sili-cles ovate, scarcely compressed, more downy. It is found in France, &c.

The seventh species grows more erect, having a shrubby stalk, which sends out a few lateral branches towards the top, with oblong hoary leaves. The flowers grow in small clusters at the extremities of the branches. It seldom continues longer than two years in England, and in a warm, dry situation, will live in the open air. It is found in Spain, &c.

In the eighth, the stems are woody, filiform, diffused, and hairy, the older ones having the bases of the petioles toothleted, and are flexuose. The leaves are lanceolate, with a strong angle or two on each side, as it were deltoid, green, with a few hairs. The raceme is simple, few-flowered: the flowers resemble those of the Stock Gilli-flower, and are of a purple colour; the calyx is oblong, closed, and gibbous at the base. It has been found in the Levant.

In the ninth species, the branches are trailing: the leaves oblong, hoary, rough to the touch, and alternate. The flowers are produced in small clusters at the extremities of the branches, and are of a dark yellow colour. Four of the filaments are bifid at the top; the two others have a toothlet at the base. It grows naturally upon rocks in Burgundy, and some other parts of France, &c.

Culture.—The propagation of these plants may be effected in different ways. It may be accomplished in all the sorts by means of seeds; and in most of the kinds by slips and cuttings from the

shoots. In the first method, the seeds should be sown upon a border of rather poor, dry, light earth, about the beginning of April, being lightly raked in. When sown on rich soils the plants seldom survive the winter in this climate; but if they be put in on such as are of a dry, rocky, or gravelly nature, and of a bad poor quality, they not only withstand the cold better, but continue much longer, as they are less succulent, and of course less affected by frosts in the winter season.

In this mode of sowing, the plants will be ready to be transplanted in the beginning of the following autumn. The business should be performed when the weather is not too moist.

As the second kind rarely continues more than two or three years in this climate, it must be often sown to preserve it; but where the seeds are suffered to fall and remain upon the ground, the plants often rise without any trouble or difficulty.

In the third sort the seeds mostly ripen in July; but it is only from the young plants that they can be expected, as the old ones, or those which are raised from slips or cuttings, rarely produce any in this climate.

The fourth kind mostly flowers from June to September, and the seeds ripen soon after; which, if they be permitted to scatter, the plants will come up, and require little care or trouble afterwards.

The fifth and sixth sorts should always be sown where they are to remain; and if they be thinned and kept clean from weeds, they will flower in July, and perfect their seeds in autumn.

But the seeds in the seventh sort should be sown in August, soon after they are ripe; and where a few of the plants are potted in October, and sheltered under a frame in winter, they will flower the following June, by which means good seeds may be obtained the same year; as those plants, which arise early in the year, grow luxuriantly in summer, but do not often ripen seeds, or live through the winter season.

In the second and third methods, or those by slips and cuttings, the sets are best put in on dry borders about the latter end of April or beginning of May, the mould being applied closely round them.

They should afterwards be shaded in the heat of the day, and watered occasionally till they have stricken root.

The eighth sort, as it rarely produces seed in this climate, may be best propagated from its trailing branches, which, if planted in April, will take root and become good plants by the following autumn, when two or three of them may be placed in a common frame for shelter in winter, in order to preserve the species; as in hard winters, those which are exposed are sometimes destroyed.

This is properly a rock plant, being hardy, and forming with very little care a neat tuft of flowers, and is not apt to encroach on its neighbours. It is valuable as an ornamental plant from its beginning to flower in March, and continuing through the summer. All these plants may be employed in borders for the purpose of affording variety, and some of them in the way of adorning rock works.

PLATE VI.

1. ANTHERICUM LILIASTRUM.

SAVOY ANTHERICUM.

THIS genus includes plants of the herbaceous flowery Spider-wort kinds.

It belongs to the class and order *Hexandria Monogynia*, and ranks in the natural order of *Coronariæ*.

The characters are: that there is no calyx: the corolla consists of six oblong, obtuse, very spreading petals: the stamina are subulate, erect filaments: the antheræ small, incumbent, and four-furrowed: the pistillum is a germ obscurely three-cornered: the style simple, and of the length of the stamina: the stigma obtuse, and three-cornered: the pericarpium an ovate, smooth, three-furrowed, three-celled, and three-valved capsule: the seeds numerous and angular.

The species are numerous, but those that most deserve cultivation are: 1. *A. revolutum*, Curled-flowered Anthericum; 2. *A. ramosum*, Branching Anthericum; 3. *A. elatum*, Tall Anthericum; 4. *A. liliago*, Grass-leaved Anthericum; 5. *A. liliastrum*, Savoy Anthericum, or Spider-wort; 6. *A. frutescens*, Shrubby Anthericum; 7. *A. alooides*, Aloe-leaved Anthericum; 8. *A. asphodeloides*, Mock Asphodel, or Glaucous-leaved Anthericum.

In the first the roots are fleshy, and composed of tubers joined at the crown, like those of the Asphodel: the stalk rises near two feet high, and branches out on each side; each branch being terminated by a loose spike of flowers, which are white, and the petals are turned backward to their peduncle. And according to Murray,



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Engraved by E. Sartem

Anthericum lilastrum
1 Savoy Anthericum

Amaryllis formosissima
2 Jacobean Amaryllis

the root-leaves are numerous, only one-third of the height of the scape, subulate, channelled at the base, then keeled and flat, striated, an inch and half broad, and spreading: the scape four feet high, almost naked, round, smooth and oblique: the bractes five, gibbous at the base, pressed close, subulate, the lower ones larger like the leaves, the upper ones scaly and shrivelling: the corymb terminating, compressed, having six round, long, alternate branches, knotted where the flowers spring forth: the flowers alternate, solitary, or two, sometimes three together, on small gray pedicels, thicker at the top, each supported by a little subulate bracte: the corolla inferior: the petals lanceolate-ovate, reflex, obtuse, concave at the tip, white, except towards the end on the outside, where they are brownish green: the filaments a little shorter than the corolla: anthers erect, oblong, revolute as they wither: the root similar to that of the *Hæmanthus puniceus*. It is a native of the Cape of Good Hope.

In the second species the root is round, and the stalks rise about the same height as the former, sending out many lateral branches in like manner, which are terminated by loose spikes of flowers: the leaves are hard and grassy, none on the scape, which is loosely panicled, with one-flowered peduncles: the corollas white: the petals flat, and not turning back as in the former sort: the three outer petals narrower than the others, lanceolate and sessile: the three inner oval and petioled. In each angle of the germ a small melliferous pore. It is a native of Sweden, &c. The flowers watch from seven in the morning to three or four in the afternoon.

The third has the roots composed of many tubers, each about the size of a little finger at top, and diminishing gradually to the size of a straw: the leaves from seven or eight, to nine or ten inches in length, and an inch and half broad in the middle, lessening gradually to both ends; they are smooth and glaucous: the flower-stem about two feet high, dividing into several branches, having a few narrow leaves, generally one at every division of the branch: the flowers form a loose spike, and are white. This plant has been

lately recovered from seeds which were sent from the Cape to England and Holland. It usually blows in August and September.

In the fourth species the roots are numerous, round, and collected into a tuber crowned with bristles; the leaves from the root many, firm, a foot long, carinated and grassy: the scape erect, eighteen inches high, firm: the spike loose, ten-flowered, and the peduncles simple: the flower two inches wide; petals in two ranks: the inner widest, petiolate and pure white: the outer have a green line running along beneath. It is a native of Italy, &c.

The fifth species has the root fasciated, with fleshy fibres. It has the corolla of the white Lily: the leaves grassy, soft, broader than two lines, the radical ones very long: the scape a foot or eighteen inches high: the spike thin-set with spreading flowers, on simple peduncles: the stipules coloured, ovate-lanceolate: the corolla above an inch in diameter, gradually widening; petals tender and white; ovate, thin, lanceolate, with a reflex point, which is thicker and has a green dot: they are marked with lines, and sweet-scented: the stamens almost as long as the petals, with weak filaments. In France it is called St. Bruno's Lily.

There are two varieties of this, one with a flower-stalk more than a foot and half high, the other with the stems much the same: the flowers are much larger in the former, and there is a greater number upon each stalk than in the latter. It is a native of Switzerland and Savoy.

The sixth species differs from the seventh by rising into a stem and branches, by having the leaves greener, longer, and narrower, with a firmer pulp, and a viscid juice flowing copiously from them when cut, of a greenish yellow colour: the root is fibrous, and not only the stem, but even the branches put out fibres, which hang down, and when they reach the ground strike root. It is a native of the Cape of Good Hope, and was formerly known by the name of Onion-leaved Aloe.

The seventh has broad, flat, pulpy leaves, resembling those of some sorts of Aloe, and was formerly on that account called Aloe

with flowers of Spiderwort. The leaves spread open, are broader and more translucent, soft and pulpy, than the above, pouring out a limpid juice: the root is tuberous: the flowers are produced on loose spikes, like the former, but are shorter; they are yellow, and appear at different seasons. This species grows close to the ground, never rising with any stalk. It is a native of the Cape of Good Hope.

The eighth has the leaves scarcely striated, but rough at the edge; more gibbous at the back towards one side; they are long, narrow and pulpy, almost taper, but flattened on their upper side: the flowers are yellow, and grow on long loose spikes as the former; these appear at different seasons; those of the spring and summer are succeeded by seeds in great plenty, which ripen. It is a native of the Cape.

Culture.—These perennials are in general capable of being propagated by the roots, offsets and suckers; but as some of the species do not supply them in sufficiency, they may be raised from the seeds.

In the first method the best season for the purpose is in the latter end of summer and beginning of the autumn, in beds of light vegetable earth in warm open situations, free from the shade and droppings of trees. An eastern aspect, where the plants are properly shaded from the sun in the mid-day, is preferable for some of the sorts, as they keep longer in blow and beauty.

This is likewise the proper period of transplanting, as when the business is performed in the spring the plants seldom flower the same year. This should not be done oftener than once in about three years, where increase is intended; and in the execution of the work the roots should not be too much divided, as when that is the case they do not flower well.

In the second method, or that by sowing the seeds, the best season is probably the spring, though they may be sown in the autumn. A bed of good light vegetable mould is the best for the purpose, and the situation should be sheltered and warm. The plants soon appear, and when their leaves begin to decay in the autumn they should be taken up carefully, and transplanted out into another bed.

of the same sort of earth, at the distance of from nine inches to a foot from each other. When the winter season is severe they should be protected from the frost by a thin covering of tan or some other substance. In this situation they should continue for about twelve months, when they will in general be sufficiently strong for flowering. In the following autumn they must of course be taken up without injuring the fibres of the roots, and be planted out in the clumps, borders, or other places where they are to remain. As they are apt to be destroyed by frost in the winter season, care should be taken to protect them as much as possible.

The Cape sorts are capable of being raised by seeds; but this is seldom necessary, as they multiply greatly by offsets and suckers; which may be taken off at the period mentioned above, and planted out in pots of good bog earth, a very small portion of water being given, as much is apt to rot and destroy the roots. As these are tender plants they require the constant protection of a green-house stove or frames during the winter season. In these situations they should be managed with great attention and care.

2. AMARYLLIS FORMOSISSIMA.

JACOBAN AMARYLLIS.

THIS genus comprehends several species of the *Lily-Daffodil* kind of plants; all of which are of the bulbous-rooted tribe, and mostly ornamental.

It belongs to the class and order *Hexandria Monogynia*, and ranks in the natural order of *Liliaceæ*.

The characters are: that the calyx is a spathe, oblong, obtuse, compressed, emarginate, gaping on the flat side, and withering: the corolla has six petals, lanceolate: the nectary has six very short

scales, without the base of the filaments: the stamina have six awl-shaped filaments, with oblong, incumbent, rising antheræ: the pistillum has a roundish, furrowed, inferior germ, the style filiform, almost of the length and in the situation of the stamina: the stigma trifid and slender: the pericarpium is a subovate, three-celled capsule, and the seeds are several. The inflection of the petals, stamina, and pistillum, is very various in the different species of this genus; and the corolla in most of the species is rather hexapetaloid than six-petalled.

The species are very numerous, but those principally cultivated are: 1. *A. lutea*, Yellow Amaryllis, or Autumnal Narcissus; 2. *A. atamasco*, Atamasco Lily; 3. *A. formosissima*, Jacobæa Lily; 4. *A. reginae*, Mexican Lily; 5. *A. purpurea*, Purple-flowered Amaryllis; 6. *A. belladonna*, Belladonna Lily; 7. *A. vittata*, Superb or Ribband Amaryllis; 8. *A. longifolia*, Long-leaved Amaryllis; 9. *A. orientalis*, Broad-leaved African Amaryllis; 10. *A. sarniensis*, Guernsey Lily; 11. *A. zeylanica*, Ceylon Lily; 12. *A. latifolia*, Broad-leaved Amaryllis.

In the first species, or Yellow Amaryllis, the flower-stems seldom rise above three or four inches in height: the flowers are shaped somewhat like those of the Large Yellow Crocus, one coming up from each sheath: the leaves are green, and come up at the same time, like the Saffron; and after the flowers are past, they increase all the winter. The roots are shaped like those of the Narcissus. It flowers in September, and is a native of the South of France.

The second species, or Atamasco Lily, has the flowers at their first appearance of a fine carnation colour on the outside, but which fade till they are almost white. They are nearly as large as those of the Small Orange Lily, but do not grow above six or eight inches in height. They appear about the end of May or beginning of June, and sometimes in August. It is a native of Virginia.

In the third, or Jacobæa Lily, the flower-stems are produced from the sides of the bulbs, so that after the flower produced on one side is decayed, another stalk arises from the other side of the bulb; but there is usually no more than one flower produced on the same

stalk. The flowers are large, and of a very deep red; the under petals are very large, and the whole flower stands nodding on one side of the stalk, making a most beautiful appearance. It is a native of South America.

The fourth, or Mexican Lily, has the bulb of a green colour; the scape round, and sub-compressed. The corolla scarlet, with a bottom of a whitish green: the three outer petals reversed at the tip, the three inner fringed at the base, the style red. The flower-stems seldom rise more than one foot in height; each stem supports two, three, or four flowers, rarely more; they are large, and of a bright copper-colour, inclining to red: the spathe, which covers the buds before they open, divides into two parts to the bottom, standing on each side the umbel of flowers, joined to the peduncles. It flowers constantly in the spring, when it is placed in a very warm stove; and is in beauty in February; those which are in a moderate temperature of air, flowering in March or April.

In the fifth the corolla is large, and of a blood-red, or purple-colour, and there are three or four large bell-shaped, rather erect flowers coming from each sheath. It is a native of the Cape of Good Hope.

The sixth, or Belladonna Lily, differs from the fourth species in having the edges of the petals waved, and not reversed at the tip. The scape is purple, sustaining from five to seven flowers, in shape like the Common Red Lily, and nearly as large, but of a soft purple colour, inclining to white on the inside toward the bottom, and having an agreeable scent. It usually flowers about the end of September, or the beginning of October, in this climate; and if the roots are strong, the stems will rise upwards of two feet high. If the season is favourable, or the flowers be screened from frosts, violent winds and heavy rains, they continue in beauty a month or longer; and are very ornamental plants at a season when there is a great scarcity of flowers. It is a native of the West Indies.

In the seventh, the petals uniting at bottom form a fleshy tube, but the edges of the outer ones are free at the base. It has been named *vittata*, from its ribband-like appearance, being striped

with red on a white ground. The stem rises to the height of three feet or more, and produces from two to five beautiful flowers. It usually blossoms in April or May, but may be forwarded by artificial heat.

In the eighth species, the flower-stem rarely rises more than three or four inches in height, but supports a great number of flowers, of a deep purple colour, appearing in December. The bulbs are large, and the leaves long and narrow. It flowers here in July, and is a native of the Cape of Good Hope.

In the ninth, or Broad-leaved African Amaryllis, the bulbs are large and almost round; the leaves long, broad, and rounded at their extremities, spreading two ways on the surface of the ground, and do not come up till after the flower-stem appears, which is generally in November; and after the flowers are past, the leaves increase till spring, and in May they begin to decay, so that from the middle of June to October the plant is void of leaves. It grows naturally at the Cape of Good Hope.

In the tenth species, or Guernsey Lily, the bulb is an oblong spheroid, flattened most at the lower end, six or seven inches round where thickest: the leaves are of a dark willow green colour, shining, from half an inch to three quarters of an inch in breadth, a little blunt at the end, from two to four in number, rarely five. The scape is flattened, twelve or fourteen inches in height, and more. The spathe splits, and falls back in two unequal pieces of a reddish colour and triangular figure. The pedicels are from an inch to almost two inches in length. The number of flowers commonly from eight to twelve, the circumference of each being about seven inches. The corolla, when in its prime, has the colour of a fine gold tissue wrought on a rose-coloured ground; and when it begins to fade, it is a pink: if beheld in a full-shine, it seems to be studded with diamonds, but by candle-light the specks or spangles look more like fine gold dust: when the petals begin to wither, they assume a deep crimson colour. The flowers begin to come out at the end of August, and the head is usually three weeks in gradually expanding itself. This beauti-

ful plant is a native of Japan, and has been long naturalized in Guernsey.

The eleventh species has the stature of the *Crinum Americanum*. The leaves are fleshy, scabrous with a toothleted edge. The spathe bivalve, besides some interior scales or fragments. The germs are sessile. The tube of the corolla of the same colour with the scape, which is rufous. The border white, with lanceolate, recurved petals, with a red keel underneath. The filaments and style are of a blood-red colour, and the pericarps viviparous.

The twelfth has roots like the *Crinum* mentioned below: the leaves narrower at their base, and stained with purple on their under side; the scapes purple, and growing to the same height as those of the *Crinum Asiaticum*; the flowers of the same shape, but the tube purple, and the segments having a purple stripe running through them: the stamina are also purple; it is however more beautiful than that plant. This is a native of the East Indies.

Culture.—In all the different sorts, the propagation is performed by the small bulbs or offsets that are removed from the sides of the old roots every year at the time they are transplanted. Some of the sorts, as the first and second, are often capable of being raised on dry warm borders; but most of the others stand in need of artificial heat to raise them in the most perfect manner.

They all delight in a loose, sandy, dry soil, that contains a good proportion of vegetable mould; and require but little water, except where the roots are in a high state of growth, and sending forth their flower-stems; when they should have it frequently in small quantities. When applied under other circumstances, it is apt to rot and destroy the bulbs.

All the more tender sorts should be put in pots, and placed in stoves, where they must be constantly kept; as much air as possible being admitted to them during the hot summer months. Some of them are, however, capable of bearing the open air at this season: but in this method of management they neither grow so well, or flower so regularly, as in the stove mode of treatment.

The most suitable season for transplanting the roots of all the different species, is at the time when their leaves are wholly destroyed, as about the latter end of July, or the beginning of the following month, before they begin to send forth new root-fibres, as after that has taken place they are liable to be greatly injured by being removed from their situations.

The first kind, or Yellow Autumnal Amaryllis, is a hardy plant, and may be increased with great facility by offsets from the roots. The best season for transplanting the root-bulbs of this sort is any time from May to the end of July, when their leaves are decayed: but after that period it will be too late to remove them, as they mostly begin to push out fresh root-fibres about the middle of August or sooner, if the season be moist and warm, frequently flowering the beginning of September; so that, if the business of transplanting be performed so late as this, it will spoil their flowering. This plant is capable of growing in any soil or situation; but it thrives to the best advantage in those of the above kind, when sufficiently fresh and light, and in open situations, that are not under the dripping of trees, or too near walls, or other tall fences that produce much shade. Miller observes that it is commonly known to gardeners by the name of Yellow Autumnal Narcissus; and usually sold by them with *Calchicums* for autumnal ornaments to gardens; for which purpose it is a pretty plant, as it will frequently keep flowering from the beginning of September to the middle of November, in case the frost is not so severe as to destroy the flowers; for though there is but one flower in each cover, a succession of flowers is produced from the same root, especially when they are suffered to remain three or four years without being removed.

A dry warm border is the best exposure for this sort.

The second species, or Atamasco Lily, is also so hardy as to thrive in the open air in this climate, when the root-bulbs are planted out in a warm situation and on a dry soil: it is likewise best propagated by offsets from the root-bulbs of the old plants. As very severe frost is liable to destroy the bulbs in some cases, a few should always be

planted in pots, in order that they may be protected in the winter season.

The third sort, or *Jacobæa Lily*, is of the more tender kind, but is now become common in the gardens of the curious in this country. The root-bulbs send forth plenty of offsets, especially when they are kept in a moderate warmth in the winter season: for the roots of this kind will live in a good greenhouse, or they may be preserved through the winter under a common hot-bed frame; but in this way they do not flower so often, or send out so many offsets, as when they are placed in a moderate stove in that season. This sort produces its flowers two or three times in the year: it is not however regular to any season; but the flowers are mostly produced from March to the beginning of September, when the roots are in a vigorous state of growth. It is best propagated by offsets from the old root-bulbs, which may be taken off every year: the most proper time to part and shift the roots in this kind is in August, as by this means they may take good root before the winter sets in. In doing this, care should be taken not to break off the fibres from their roots. They should be planted out separately in pots of a middling size, and be kept in a moderate degree of warmth in the stove, as by that means they produce their flowers in greater plenty, and the roots make a greater increase, than where they are managed in a more hardy manner.

The fourth sort, or *Mexican Lily*, is not so hardy as either the above or the *Belladonna Lily*; it must of course be placed in a stove of much greater warmth; and if the pots are plunged into a hot-bed of tanner's bark, the roots will thrive better, and the flowers be stronger.

It is increased by offsets from the old root, in the same manner as the other sorts, and usually flowers in the beginning of the spring, when it produces a fine appearance in the stove with others of similar growths.

The fifth species, or *Purple-flowered Amaryllis*, is likewise of the tender kind, and is capable of being propagated in the same manner as the above. It also succeeds the best, and flowers to the

greatest advantage and effect, when constantly kept in the stove in a similar degree of temperature with that of the above species.

The sixth kind, or Belladonna Lily, is more hardy. It has been cultivated, according to the editor of Miller's Dictionary, with great success in the following manner:—A border was prepared close to a wall which had a south-west aspect, about six feet in width, in this manner. All the earth to the depth of three feet was removed, and some very rotten dung put in the bottom six inches thick, upon which light garden mould was applied, about twenty inches in depth. After making this level, the roots were placed at six inches distance every way, being then covered over with light sandy earth, to the height of the border; by which means the upper parts of the roots are five or six inches buried. In the winter season the border was covered all over with rotten tanner's bark, to the depth of three inches, in order to prevent the frost from penetrating the ground. And when it proved very severe, some mats or straw were laid over the leaves to protect the plants from being destroyed. In this management the roots have greatly increased, and the plants have constantly flowered every year; some of them having put out two or three stems which grew near three feet in height, producing many flowers in each umbel, which made a fine appearance during the month of October. It is added, that the green leaves come up soon after, and abide all the winter and spring until June, at which time they decay. Soon after this period the roots should therefore be transplanted; for, if they are suffered to stand till July, they will have sent forth new root-fibres, in which state it would greatly injure the roots if they were disturbed. If some of the roots be planted in a warm border close to a south wall, and in a dry soil, they mostly thrive well, especially if they be covered in severe weather; and these roots generally flower much stronger than those which are kept in pots, and multiply faster than under other circumstances.

The seventh species is more tender than the above, as it rarely puts forth offsets from the roots. But as it produces ripe seeds in sufficient quantity, it may be propagated in that way without much difficulty. These should be sown in pots of good mould in the spring

season, and immediately afterwards plunged into a bark bed of moderate temperature, a little water being occasionally given till the plants appear, and become of sufficient growth to be transplanted out into separate pots, which should be performed in a careful manner, and a little water given immediately afterwards, the pots being directly placed in the stove, where they are to be constantly kept, as in the above kinds.

The eighth sort is likewise tender. It requires to be treated in the same manner as the *Jacobæa Lily*. It is found to increase pretty fast by offsets. When properly managed, it usually flowers in the winter season, especially if the pots be placed in a stove of moderate temperature; and as at this period there are but few flowers in the open air, it is more valuable on that account as an ornamental plant for the stove.

The ninth species is still more tender: it must of course be placed, during the winter season, in a stove where there is a moderate share of warmth; but it should not have so much water as the *Jacobæa Lily*. It may be raised from offsets.

The tenth species, or *Guernsey Lily*, is supposed to have come originally from Japan; but has been long cultivated in the gardens of Guernsey and Jersey; in both of which it seems to thrive and succeed as well as if it were in its native soil. From those islands its roots are annually sent to the curious in different parts of Europe.

The root bulbs are generally sent to us in June and July; but the sooner the bulbs are taken out of the ground, after their leaves decay, the better they are; for though the roots, which are taken up when their flower-stems begin to appear, may flower, their flowers are not so large, or their roots so good afterwards, as those which are removed before they have sent out fresh root-fibres.

On obtaining the roots, they should be planted in pots filled with fresh, light, sandy earth, well mixed with a little very rotten dung, to the depth of two or three inches, and then placed in a warm situation; or what is better, in a moderate-stove heat, the earth being refreshed with water occasionally; but they should not have too much, as it would rot their roots, especially before the stems rise.

About the middle of September, the more vigorous roots will begin to show the buds of their flower-stems, which are commonly of a red colour; therefore these pots should be removed into a situation where they may have the full benefit of the sun, and be sheltered from wet, and strong winds; but by no means too near a wall, or under glasses, which would draw them up weak, and render them less beautiful in their blow. At this season they should be gently refreshed with water occasionally, when the weather is warm and dry.

As soon as the flowers begin to open, the pots should be removed from the open air, to prevent the flowers from being injured by too much moisture; but they must not be kept too close, or be placed in situations too warm, as that would occasion their colour to be less lively, and hasten their decay. The flowers of this plant often continue in beauty, when managed in the above manner, a full month: and though they have no scent, from the richness of their colour, they are justly esteemed as flowery ornamental plants.

When the flowers are decayed, the leaves begin to shoot forth in length, and, if sheltered from severe cold, continue growing all the winter season; but they must have as much free air as possible in mild weather, and be covered only in severe rains or frosts; for which purpose a common hot-bed frame is the best, as the glasses may be taken off constantly every day in dry open weather, which will encourage the leaves to grow strong and broad; whereas, when they are placed in a greenhouse, or not exposed to the open air, they are apt to grow long and slender, and have a pale weak aspect, by which the roots become weak, seldom producing good flowers.

The roots should be transplanted every fourth or fifth year, about the latter end of June or beginning of July, into fresh earth; but not oftener removed, as that would retard their flowering.

The offsets may also be taken off, and planted out into different pots; which, in three years time, mostly produce flowers. Consequently, after a person is once stocked with these roots, he may increase them, so as to have a constant supply of blowing roots, without being at the trouble or expense of sending to the above places annually for them; and the roots, thus preserved, will flower stronger

than those which are brought from thence, as the inhabitants of those islands are not very curious in cultivating them;—their usual method, according to Miller, being to plant them at a great distance in beds of common earth, where they let them remain for many years; in the course of which they produce such a number of offsets that one single cluster has frequently contained above a hundred roots; by which means those which grow on the inside are so much compressed by the outer roots, that they are perfectly flattened: and from the number of roots growing in each cluster, they are all rendered weak, and unfit to produce such large stems of flowers as those which have grown singly and are of a spherical form. As when a person is possessed of a great number of these roots, it will be troublesome to preserve them in pots, a bed should be prepared in the following manner, in some well sheltered part of the garden. In doing this, a third part of fresh virgin earth, from a pasture ground, which is light, should be provided, with an equal portion of sea-sand, to which should be added rotten dung and sifted lime rubbish, of each an equal quantity. With this earth, when well mixed and incorporated, a bed should be made about two feet thick, raising it about four or five inches above the surface of the ground, where the situation is dry; but where the ground is wet, it should be raised eight or nine inches higher. In this bed, about the beginning of July, as before directed, plant the roots about six or eight inches asunder each way; and in the winter, when the frost begins, cover the bed with a frame, or arch it over, and cover it with mats and straw, to prevent their leaves from being pinched by cold. In the spring, the covering should be entirely removed, and the bed kept constantly clean from weeds during the summer, stirring the surface of the earth now and then; and annually, when the leaves are decayed, sift a little fresh earth over them, to encourage the growth of the roots.

The roots may remain in these beds until they are of sufficient strength to produce flowers, at which time they may be taken up and planted in pots, as before directed, or be suffered to remain in the same beds to flower. These plants do not flower again the succeeding year, as in many other sorts of bulbous-rooted plants; but

where the bulbs contain two buds in their centres, as is often the case, they frequently flower twice in the course of about three years; after which the same individual root-bulb does not flower again in several years; but this is performed by the offsets, which are taken from it at different times

The eleventh species, or Ceylon Lily, is of a tender nature, and must be treated in the same manner as the Mexican Lily. It is not common in the gardens in this country, as it is a plant which increases but slowly by offsets from the roots. It usually flowers in June and July; and sometimes the same plant will produce flowers again in autumn if the pots be plunged into a bed of tanners' bark; but the flowers are seldom of long duration or great beauty.

The twelfth species is also of the tender kind, but may be increased by offsets from the roots, or by the bulbs which succeed the flowers. It should be treated in the same manner as is directed for the Crinums; the proper culture of which may be seen under that head.

All these bulbous-rooted plants, as being both curious and ornamental, deserve to be cultivated; those of the more tender kinds affording much variety in the stove or greenhouse; while the more hardy sorts produce a pleasing effect in the fronts of beds or borders in the garden or pleasure-grounds.

PLATE VII.

1. ASTER AMELLUS.

ITALIAN ASTER.

THIS genus comprehends different fibrous-rooted flowery plants of the annual and perennial herbaceous and shrubby kinds. The Starworts.

It belongs to the class and order *Syngenesia Polygamia Superflua*, and ranks in the natural order of *Compositi Radiati*.

The characters are: that the calyx is common imbricate; the inner scales prominent a little at the end, the lower ones spreading: the corolla compound radiate: corollules hermaphrodite numerous in the disk: the females ligulate, and more than ten in the ray. Proper, of the hermaphrodite, funnel-shaped, with a five-cleft spreading border; of the female ligulate, lanceolate, three-toothed, at length rolling back: the stamens hermaphrodite, five filaments, capillary, and very short: the anther cylindrical and tubulous: the pistillum is hermaphrodite: one oblong germ: the style filiform, the length of the stamens: stigma bifid, spreading: females, germ and style the same: stigmas two, oblong, and revolute: no pericarpium: the calyx scarcely changed: the seeds solitary, oblong, and ovate: down capillary: the receptacle is naked and flattish.

The species principally cultivated are, 1. *A. Chinensis*, China Aster, or Chinese Starwort; 2. *A. Tradescanti*, Tradescant's or Virginia Starwort; 3. *A. Amellus*, Amellus, or Italian Starwort; 4. *A. Alpinus*, Alpine or Great Mountain Starwort; 5. *A. Novæ-Angliæ*, New-England Starwort; 6. *A. grandiflorus*, Great Blue Pyramidal Aster, or Catesby's Starwort; 7. *A. puniceus*, Red-stalked American Starwort; 8. *A. undulatus*, Waved Starwort; 9. *A. linifolius*, Flax-leaved Star-



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1 *Aster amellus*
Italian Aster

2 *Amaranthus Hypochondriacus*
Princes Feather

wort; 10. *A. tenuifolius*, Fine-leaved Starwort; 11. *A. Ericoides*, Heath-leaved Starwort; 12. *A. dumosus*, Bushy Starwort; 13. *A. concolor*, Single-stalked Starwort; 14. *A. divaricatus*, Divaricate Starwort; 15. *A. Novi-Belgii*, New-Holland Starwort; 16. *A. paniculatus*, Panicked Starwort; 17. *A. fruticosus*, Shrubby Starwort. In this numerous genus there are several other species equally deserving the attention of the cultivator.

The first is an elegant annual plant, rising in height from eighteen inches to two feet; the stem is erect, stiff, furrowed, and as thick as the little finger, putting out long bending branches from top to bottom. The leaves next the ground and at the origin of the branches are large, and resemble those of common *Chenopodium*: those on the branches are much smaller, and the upper ones narrow and very entire: the flowers are the largest and handsomest of any of the species in this genus: the disk yellow, at first flat, then convex; the floscules of the ray are broad and long, scarcely notched at the end.

There are varieties of this plant with single white flowers, single blue flowers, single purple flowers, single red flowers: with double white flowers, double blue flowers, double red flowers, and with variegated blue and white flowers.

The second species has radical leaves three or four inches long, like those of the willow, from green inclining to brown, with small scattered serratures. Among these come out round, smooth, woody, brownish stems, clothed with similar leaves, only shorter; they are elegantly divided into many slender, hard branches, two or three feet high, adorned with abundance of very small white flowers during the months of September and October. According to some, the disk is purple. The ray of the corolla is first white, and afterwards purplish. It is a native of Virginia.

The third sort has the stems growing in large clusters from the root, each of them branching at the top into eight or ten peduncles, each terminated by a single large flower, having blue rays, with a yellow disk. It flowers in August or September, and in mild seasons will often continue till the middle of November. It grows naturally in Italy.

There are varieties with white flowers and with wrinkled leaves.

The fourth species seldom rise more than nine, commonly from four to six inches high, in its native situation, and when transplanted into gardens, from nine to ten, but rarely above sixteen. At the top of each stalk is one large blue flower, somewhat like that of the Italian Starwort. It flowers in June, and is a native of the Alps, &c.

There are varieties with white rays and with blue rays.

The fifth species has many stems, five feet high, brown, terminated by large purple violet flowers, growing in a loose panicle, and expanding in August. The peduncles are so short as scarcely to appear among the flowers. It is a native of New England.

The sixth has many stems, three and even four feet high, stiff, reddish, hairy, and branching pyramidically. The branches have small lanceolate leaves, growing alternate, hairy and rough to the touch, the size of those of common Hyssop, and each terminated by one large blue flower, coming out at the end of October. It is a native of Virginia.

The seventh sort has several strong stems, upwards of two feet high, of a purple colour; but the flowers are on single peduncles, forming a corymb at top, and of a pale blue colour: they appear about the end of September. It is a native of North America; varies in height from eight to three feet, having the stems either dark purple or reddish green.

There is a variety, in which the flowers are purple inclining to red, and surrounded by a few narrow leaves. This is from Philadelphia, and flowers in November.

The eighth species has the leaves broad and heart-shaped at bottom; the stems between two and three feet high, with small side branches, upon which the flowers come out in loose spikes; they are of a pale blue colour, inclining to white. It flowers in August. It is a native of North America.

The ninth has the leaves lanceolate, gradually narrowing to the end: peduncles with very small subulate scales: the stems strong, from two to three feet high, putting out many side branches near half

their length, terminated by one blue flower, which appears in August and September.

In the tenth species the stems are five feet high, slender, angular, smooth, but not branching much; the leaves alternate, not very rough; the flowers terminal, solitary, small, and white; the peduncles have very small subulate leaflets scattered over them.

The eleventh has the stems slender, three feet high, with slender side branches most of their length, so as to form a thick bush; they are terminated by single flowers.

The twelfth species has the stems upright, two feet high, full of branches, which are filiform; the stem-leaves being narrow-lanceolate; on the branches linear: the peduncles filiform, striated, one-flowered, with very narrow leaflets on them; the flowers small, with an erect, imbricate, loose calyx; the ray copious, and white; the disk yellow, with fewer flowers.

The thirteenth species rises four feet high; the flowers are pale blue, appearing about Michaelmas. The whole plant is tomentose, especially the leaves and calyxes. The raceme simple, with very short peduncles. It is a native of Virginia.

The fifteenth species has the stem obscurely furrowed, of a pale red, not very erect, but irregularly flexuose, corymbosely branched, the branches divaricate and much divided; the leaves of the same form, sometimes having a single serrature, the edge scabrous, if the finger be drawn toward the base, the surface rough with invisible hairs; the flowers rather solitary, somewhat small, on long, scaly, yellow peduncles; scales of the calyx distant, in five rows; disk of the corolla yellow; ray pale blue, revolute; the height near four feet, having broad leaves at the bottom, which diminish gradually to the top. The flowers appear at the latter end of August. It is a native of Virginia.

The sixteenth rises to the height of four feet, the stems putting out side branches towards the top, which grow erect, forming a loose spike of large blue flowers, expanding about the end of October. It is a native of North America.

The seventeenth species has the stems three feet high, with side

woody branches having clusters of narrow leaves like those of the Larch-tree; the flowers are produced from the side of the branches, upon long slender peduncles singly; they are of a pale blue colour, and appear the beginning of March. It is a native of the Cape.

Culture.—The hardy kinds of these plants easily succeed in almost any soil or situation. The first sort, and varieties being annual plants, are propagated by sowing the seeds of the different kinds from the beginning of March to May, on a very moderate hot-bed, just to bring up the plants, the air being admitted as much as possible when the weather is suitable, in order to promote the vigorous growth of the plants; when they are sufficiently strong they should be planted out either into beds of good earth at six inches distance each way, or into the places where they are to remain, in the borders or other parts: the latter is probably the better practice, as they grow more strongly. In the bed method they are usually transplanted after a few weeks, with large balls of earth to their roots, into the situations where they are to flower, the mould being made fine about them. A few of the fine double varieties may also be put in pots. Moist weather is the most suitable for this business, but in other circumstances a little water should be given immediately after the earth has been closed round their roots, as well as in future when it may be necessary.

But when the sowing is not made at an early period, the best practice is to let it be done in the situations where the plants are to grow, which should be rather warm and dry, the mould being made fine by a rake in the spots where they are to be put in, as in this way their growth is less checked than when transplanted.

In either method of sowing, care should be taken that the seed be only covered in a very light manner, and that the mould be made very fine.

The only further culture which they require, is that of keeping the plants perfectly free from weeds, and well supported in the time of flowering.

The whole of the hardy American sorts as well as the Italian species may be readily increased by parting the roots. In the

former it is best performed in the autumn, the parted roots being immediately planted out in the places where they are designed to flower.

The latter or Italian sort should have the roots parted and replanted as soon as the flowers begin to decline, as, when the business is deferred till late in the autumn or the spring, the plants neither grow so strong nor flower so completely. The roots in this kind should not be taken up oftener than once in three or four years, where a full display of flowers is the principal object.

This sort has not been so much attended to since the introduction of the American species; but from the plants creeping less by the roots, and requiring less support in the stems, they are equally deserving of regard for the purpose of cultivation.

As this sort is not, however, capable of increasing fast by dividing the roots, it may be readily multiplied by planting cuttings from the young shoots in the later spring months, in situations where the mould is light and fine, being well shaded from the effects of the sun till they are perfectly established in the soil.

The last or shrubby sort must be propagated by setting the cuttings of the young shoots, in pots of light earth, in the spring or summer months, which should be plunged in a hot-bed to promote their striking root. They may then be placed out in the open air during the summer season, but in the autumn and winter they require the protection of a green-house.

The first sort, or *China Asters*, are elegant plants for the purpose of variety, in the clumps and common borders of gardens, or pleasure grounds. In saving the seeds, they should be selected from the best coloured flowers of the most perfect plants, in October, when they are fully ripened, and be gathered when quite dry.

The perennial sorts have likewise a showy appearance, in large clumps and borders, when judiciously distributed among other hardy shrubs and herbaceous plants; some of the species continuing to flower to a late period in the autumnal season.

The shrubby kind affords variety among other green-house plants, both in the summer and winter season.

2. AMARANTHUS HYPOCHONDRIACUS.

PRINCE'S FEATHER.

THIS genus comprises many plants of the *Prince's Feather* kind. They are universally herbaceous annuals, several of them being highly beautiful and curious. They are likewise sometimes distinguished by the titles of Flower Gentle, Love-lies-bleeding, &c.

It belongs to the class and order *Monœcia Pentandria*, and ranks in the natural order of *Miscellaneæ*.

The characters are: that those species which have male flowers on the same plants with the females have a calyx, which is a five or three-leaved perianthium, upright, coloured, and permanent; the leaflets lanceolate, and acute: no corolla: the stamina have five or three capillary filaments, from upright patulous, of the length of the calyx, the antheræ oblong and versatile. Of those which have female flowers in the same raceme with the males, the calyx is a perianthium the same with the former: no corolla: the pistillum has an ovate germ; the styles three, short and subulate: stigmas simple and permanent: the pericarpium is an ovate capsule, somewhat compressed, as is also the calyx on which it is placed, coloured, and of the same size; three-beaked, one-celled, cut open transversely: the seed is single, globular, compressed, and large.

The species that demand attention for the purpose of cultivation are very numerous, but those most generally cultivated are: 1. *A. melancholicus*, Two-coloured Amaranthus; 2. *A. tricolor*, Three-coloured Amaranthus; 3. *A. sanguineus*, Spreading or Bloody Amaranthus; 4. *A. caudatus*, Pendulous Amaranthus, or Love-lies-bleeding; 5. *A. maximus*, Tree Amaranthus; 6. *A. cruentus*, Various-leaved Amaranthus; 7. *A. hypochondriacus*, Prince's-feather Amaranthus.

The first, or Two-coloured *Amaranthus*, has the stem upright, half a foot high, dark purple, smooth, streaked, and simple: the leaves are blunt, wrinkled, waved, emarginate, mucronate, with a short white point; the lower ones rufous liver-coloured on the upper surface, bright purple on the lower, with elevated veins: the upper ones green, with red tips: the petioles channelled, bright purple, smooth, edged at top with the decreasing leaf: the lower ones nearly the length of the leaves: the glomerules subsessile, dark purple, on a very short undivided peduncle: the calyxes five-leaved: the leaflets oblong, purple, membranaceous, ending in a dark red point. Professor Martyn observes that this species varies in the colour of the leaves; as in the open air they are of a dirty purple on their upper surface, and in the younger ones green; while in the stove the whole plant is of a fine purple colour. It is, however, easily distinguished in all states by its colour, its leaves, and the lateness of its flowering, which is after all the others are past. It is a native of Guiana and the East Indies. Mr. Miller remarks that it grows to the same height with the Tricolor, and in the manner of its growth greatly resembles it; but that the leaves have only two colours, an obscure purple and a bright crimson, so blended as to set off each other, making a fine appearance when the plants are vigorous.

The second species, or Three-coloured *Amaranthus*, has the stem a foot and half or two feet in height, obscurely angular, smooth, and upright: the leaves blue with a red point, smooth, and waved: the younger ones red with yellow tips: those in a more mature state coralled at the base, violet in the middle, and green at the end: the old ones green with a violet base: the petioles very long, smooth, green, channelled, and bordered: the glomerules geminate, green, axillary: the calyxes three-leaved: the leaflets oblong, acuminate, membranaceous, with a green nerve. It varies in the colour of the leaves, which are less painted in the open air than in the stove. It has been long cultivated for the beauty of its variegated leaves, in which the colours are elegantly mixed. When the plant is in full vigour these are large, and closely set from the bottom to the top of the stalk: the branches also form a sort of pyramid; so that there is

scarcely a more handsome plant when it is in full lustre. It flowers from June to September. And it is a native of Guiana.

The third, or Bloody-leaved *Amaranthus*, has the stem upright, four feet high, firm, red, round, and streaked: the leaves somewhat convex, or rather so contracted as to have the form of a boat, and pointed; the older ones rather blunt: the upper surface is a mixture of red and green, the lower more or less purple: the petioles are tinged with purple, channelled, roughish; winged at top with the leaf: the racemes very red: the branches smooth, the lower one spreading: the calyxes five-leaved: leaflets oblong, blunt, membranaceous, and red: the bractæ subdulato-setaceous, red, longer than the flowers, closely surrounding the glomerules.

The fourth species, or Pendulous *Amaranthus*, has the stem generally two feet high, green, obscurely angular, grooved and streaked, smooth, covered at top with thin, whitish, scattered hairs: the upper part nods on account of the great length of the racemes: the leaves are smooth, bright green, blunt, emarginate, with an incurved transparent point: the petioles much shorter than the leaf: the racemes terminating, elegantly purple, very long, cylindrical, composed of flowers very closely glomerate: the calyxes five-leaved: the leaflets oblong, red, acuminate, membranaceous: the bractæ oblong, pointed, and scattered.

The fifth, or Tree *Amaranthus*, rises to the height of seven or eight feet, sending off numerous horizontal branches at every ten or twelve inches: the leaves are rough, green, and luxuriant: the spikes are seldom half the length of those of the other sorts, but are much thicker. It is said to degenerate gradually into the smaller kind. The seeds, which at first are white, also become red. It flowers in August and September. And it is a native of Persia, &c.

In the sixth species, the stem is a foot and a half or two feet in height, grooved, green with red streaks, smooth, and slightly pubescent among the flowers: the leaves are green, spotted with brown above, red beneath, bluntish with a reddish short point: the petioles red, channelled, and smooth: the racemes red and green, with branchlets spreading and nodding a little: the calyx five-leaved: the

leaflets oblong, pointed, white-membranaceous, with a red nerve, and a point of the same colour.

It varies of a shining red colour,—with a red stalk with pale leaves,—with a green stalk with variegated leaves, &c. As first cultivated in this climate, according to professor Martyn, the stem was wholly red and smooth; the petioles, ribs, and nerves of the leaves underneath purple; the spikes purple, much spreading, and a little nodding. They were of course very beautiful, and made a gay appearance for the two first years: but afterwards the seeds degenerated, and the plants had little beauty; which is the same with some other species of this genus. It is a native of the East Indies.

In the seventh species, the stem is erect, a foot and a half or two feet in height, smooth, except under the leaves, where it is a little scabrous, reddish, roundish, streaked, and grooved: the leaves are red and green, acute, with elevated veins: the petioles are channelled, and of a reddish colour: the racemes are naked, red, lateral, short, and placed about the stem without order: the calyxes are five-leaved: the leaflets oblong, acute, membranaceous, and red.

It varies with leaves more or less red,—with very red and paler racemes, with a green and red,—with a rough and smooth stalk. It flowers from July to September. And it is a native of Virginia.

Culture.—The propagation in most of these species is not effected without considerable trouble, as they require the aid of artificial heat, in order to bring them forward in the greatest perfection. There are a few, however, that may be raised in the open ground without the assistance of heat applied in the above manner.

The two first, as being the most tender, demand much greater attention and more artificial heat in producing them, than those of the third, fourth, and fifth kinds. And the sixth and seventh species are capable of being raised with still less heat than those of the above sorts, though not in the fullest perfection without a slight degree of it.

In all the different species the business is accomplished by sowing the seeds annually in the early spring months, as about the latter end of March or beginning of April, on beds of good earth, either

over heat or in the natural ground, according to the nature of the plants. The earlier the sowing can be performed, the better growth the plants will attain in the summer season.

In raising the two first sorts in the greatest lustre and perfection, the aid of two or three different hot-beds is necessary; which should be covered with frames and glasses, so as to slide with ease and convenience. The first of these hot-beds should be small, and made in the ordinary way, for the purpose of receiving the seed, and which may likewise serve for that of other annuals of the tender kind of similar growth. They should be earthed over the top within the frames, to the depth of five or six inches, with good light dry mould. In this the seed should be sown in small shallow drills, and covered over very lightly with fine sifted mould: the glasses are then to be placed over. In these situations the plants should be suffered to remain till they have attained the height of two or three inches, air being admitted in fine days, and the glasses covered at nights with garden mats. When the plants are in this situation, a second hot-bed is to be prepared in the same manner, into which the young plants are to be pricked out to the distance of about four inches from each other, moderate waterings being occasionally given, and the plants well shaded from the sun till they have taken fresh root. Air should now be admitted more freely when the weather is fine, by raising one end of the glasses, and the night coverings be carefully applied. After the plants have remained in these beds a month or six weeks, and are become tolerably strong in their growth, so as to require more space, the final hot-beds should be made ready. These ought to be of much larger dimensions. When the frames are placed over them, earth to the depth of four or five inches should be laid over; and the plants, after being taken up with balls of earth about their roots, planted in pots of about the twenty-fourth size, water being immediately applied in a sparing manner, and the pots plunged in the earth of the beds, the frames being raised occasionally, as the plants advance in growth. The lights are to be constantly kept on, but air freely admitted by raising the ends daily, and water applied every day or two. Towards the end of June the plants will have

risen to nearly their full size; when they may be placed out in the open air, where they are fully seen when the weather is fine and settled, each of them being supported by a handsome stick.

In their after culture, they require to be kept constantly in the pots, and to have water freely applied almost every day when the season is hot.

In order to procure the seed of these kinds in perfection, it is the best method to put a few of the best plants in a deep frame towards the latter end of the summer, that they may, by being more perfectly sheltered by the glasses, be rendered more fully ripe.

In the culture of the third and fourth sorts, as they are more hardy, one or two moderate hot-beds at most will be fully sufficient for raising the plants. In these cases, the seeds should be sown upon a moderate hot-bed towards the end of March; and when the plants come up they should have a considerable share of air admitted to them in mild weather, in order to prevent their drawing up in too weak a state: and when they are become large enough to be transplanted out, another moderate hot-bed should be provided, into which they should be removed, placing them at six inches distance in every direction, care being taken to water them as well as to shade them from the sun in hot weather, until they have taken new root: after which the air should be freely admitted to them at all times when the season is favourable. Their waterings should likewise be frequent, but not given in too great quantity at a time. As the plants advance in growth, and the warmth of the season increases, they should have a greater proportion of air, that by degrees they may be hardened so as to bear the open exposure. In the beginning of June the plants may be taken up with large balls of earth about their roots, and planted some into pots, and others in the borders or other parts of the pleasure-grounds, shading them carefully until they have taken good root: after which they should be frequently watered in hot dry weather, especially those in the pots; as every evening or oftener.

As the Tree Amaranthus does not thrive well in pots, it should be planted in a rich light soil, and be allowed plenty of room, and a

full supply of water, as often as may be necessary. In these circumstances it frequently attains a considerable size, especially in dry seasons.

The two last species are capable of being raised upon warm dry borders with tolerable facility; but they neither attain the full growth, afford such large flower-spikes, or appear in such early perfection, as when managed in the manner of the above.

In preserving the seed of the last five sorts, some of the largest and finest spikes should be collected, as they ripen towards the latter end of September, and exposed to the full sun in some dry airy situation until they become perfectly dry, when the seeds may be rubbed out and put by in a dry warm place.

Persons who are curious in raising these annual plants in great perfection, find it convenient to have a glass case erected, with upright sloping glasses on every side, having a pit in the bottom for tan, in which the pots are plunged. If this be raised eight or nine feet to the ridge, and the upright glasses are five feet, there will be room and light enough to raise these as well as many other plants of a similar growth to great perfection: and, by such a contrivance, many of those tender annual plants, which rarely perfect seeds in this climate under other circumstances, may be brought forward so as to ripen their seeds in a perfect manner.

All these plants are highly ornamental, the more tender sorts being mostly distributed in mixture with others of the showy kinds in places immediately about the house; while those that are more hardy afford much ornament and variety in the borders, clumps, and other situations in gardens or pleasure-grounds. They should have rather open exposures, and be distributed towards the fronts, especially those of the low growing kinds.



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Engraved by F. Norton

Apocynum Androsaemifolium
1 Fly-catching Dogbane

Antirrhinum purpureum
2 Purple Toadflax

PLATE VIII.

1. APOCYNUM ANDROSÆMIFOLIUM.

FLY-CATCHING DOG'S-BANE.

THIS genus contains hardy, herbaceous, perennial and shrubby tender exotics, of the flowering kind.

It belongs to the class and order *Pentandria Digynia*, and ranks in the natural order *Contorta*.

The characters are: that the calyx is a one-leafed, five-parted, acute, short, and permanent perianthium: the corolla is monopetalous, bell-shaped, and semiquinquefid: the divisions revolute: the nectary consists of five glandular oval capsules surrounding the germ: the stamina consist of very short filaments: the antheræ oblong, erect, acute, bifid at the base, converging: the pistillum consisting of two ovate germs: the styles short: the stigmas roundish, bifid at the top, mucicate, glued to the anthers: the pericarpium consists of two long, acuminate, one-valved, one-celled follicles: containing many very small seeds, crowned with long down, the receptacle subulate, very long, rough, and free.

The species are: 1. *A. androsæmifolium*, Tutsan-leaved Dog's-bane; 2. *A. cannabinum*, Hemp Dogs-bane; 3. *A. hypericifolium*, St. John's Wort-leaved Dogs-bane; 4. *A. venetum*, Venetian Spear-leaved Dogs-bane; 5. *A. frutescens*, Shrubby Dog-bane; 6. *A. reticulatum*, Net-leaved Climbing Dogs-bane.

The first has the stems about three feet in height, and upright. The leaves are opposite; and these and the stems abound with a milky juice, which flows out when they are broken. The corollas are white, with the nectaries of a purplish cast. But, according to some, they are pale red with a tinge of purple, the flowers being



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pendulous. It is a native of Virginia, and flowers from July to September. It is perennial.

The second species has the roots perennial, and creeping. The stems are brown, and about two feet in height. The leaves are smooth, in pairs, abounding with a milky juice, like the former. Towards the upper part of the stem, the flowers come out from the wings of the leaves, in small bunches, and are of an herbaceous white colour, and small. It is admitted for the sake of variety. It flowers as above; and is a native of the same place. The stems afford a hempy substance.

In the third the root is likewise perennial, and creeping. The stems annual, upright, round, branched, a foot and half in height, and filled with a white pith. The leaves opposite, sharpish, quite entire, subsessile; the upper ones on the extreme twigs petioled, not revolute. The peduncles umbelled, and terminating. The flowers small, and inodorous. The leaflets of the calyx are oblong, concave, erect, and green. The corolla white, and longer than the calyx. Between the filaments there is a roundish, green gland. The whole plant is smooth, and abounds with a milky juice. It is a native of North America, and flowers in June and July.

The fourth species has the root perennial, and creeping. The stems about two feet high. The leaves opposite and smooth. The flowers grow erect, at the top of the stems in small umbels, and are much larger than in the former sorts. It is a native of the islands in the Adriatic sea, and flowers in July and August.

There are varieties with purple, and with white flowers.

In the fifth the stem is woody, five or six feet in height, dividing into several branches. Leaves opposite, petioled, smooth, quite entire. The peduncles from the axils, opposite; being oppositely branched. The corolla salver-shaped. The flowers are in loose bunches, small, and of a purple colour; but never succeeded by pods in this country. It is a native of the East Indies, &c.

The sixth species has a twining stem, by which it rises to a considerable height. The leaves are dark green, very shining, with a

beautiful net of milky veins. It is a native of the East Indies, &c.

Culture.—The four first species are capable of being easily propagated, by dividing their creeping roots either in the early spring months, before they protrude their stems, or in the autumn. The soil most proper for them is that of the light dry kind, as, where there is much moisture, they are apt to be destroyed in the winter season by their roots becoming rotten. In the second species the roots sometimes spread in a troublesome manner.

The fourth species requires a very dry, warm exposure; as it is less hardy than the former. It is best to remove it when necessary in the early spring, when it is about to send forth its stems.

The two last species are best propagated by layers or cuttings from their young shoots, which should be made during the summer season, being dried in the stove some days before they are planted out. They are likewise capable of being raised by seed, when it can be procured, as they seldom afford any in this climate. In either method, pots of light sandy earth should be employed. In the former, the layers or cuttings, after being planted out in them, should be placed in a mild hot-bed; and in the latter, after the seeds are sown, the pots should be plunged into a tan-bed. When the plants are up they must be watered sparingly, and kept constantly in the tan, being changed into larger pots as they advance in growth, great care being taken not to over-pot them, as they thrive best where their roots are a little confined. Under good management, they mostly flower in the second year.

The first kinds are sufficiently hardy to bear the exposure of the open air; but the latter sorts require the constant protection of the stove. The former are well adapted for producing variety in the clumps and borders of walks in pleasure-grounds; and the latter for ornament in the stove, where, from their beautiful ever-green leaves, they have a fine appearance.

2. ANTIRRHINUM PURPUREUM.

PURPLE TOADFLAX.

THIS genus includes various plants of the herbaceous flowery tribe, commonly known by the titles of *Snap-Dragon*, *Calf's-Snout*, and *Toad-Flax*, or *Frog's-Mouth*.

It belongs to the class and order *Didynamia Angiospermia*, and ranks in the natural order of *Personata*.

The characters are: that the calyx is a five-parted permanent perianthium: the divisions oblong, the two lowermost gaping: the corolla is monopetalous and ringent: the tube oblong, swelling, and opening above with a mouth having two lips, the upper one two-parted and reflex on each side, the under one trifid and obtuse: the palate convex, usually closed by a prominency between the lips, produced from the under lip, the throat being concave beneath, having a prominent nectarium at the base of the corolla, produced downwards and prominent: the stamina consist of two short and two long filaments, enclosed under the upper lip; the antheræ converging: the pistillum a roundish germ, style simple, of the length and in the situation of the stamens: the stigma obtuse: the pericarpium a roundish capsule, obtuse, two-celled, of different form and aperture in the different species: the seeds numerous: the receptacles uniform, solitary, and affixed to the partition.

The species of most importance for cultivation are: 1. *A. linaria*, Common Yellow Toad-Flax; 2. *A. cymbalaria*, Ivy-leaved Toad-Flax; 3. *A. triphyllum*, Three-leaved Toad-Flax; 4. *A. purpureum*, Purple Toad-Flax; 5. *A. monspessulanum*, Montpellier Toad-Flax; 6. *A. sparteum*, Branching Toad-Flax; 7. *A. triste*, Dark-flowered Toad-Flax; 8. *A. pelissierianum*, Violet-coloured Toad-Flax; 9. *A. multicaule*, Many-stalked Toad-Flax; 10. *A. alpinum*, Alpine Toad-Flax; 11. *A. dalmaticum*, Dalmatian Shrubby Toad-Flax; 12. *A. gc-*

nistafolium, Broom-leaved Toad-Flax; 13. *A. majus*, Great Toad-Flax, or Snap-Dragon; 14. *A. bellidifolium*, Daisy-leaved Toad-Flax, or Snap-Dragon.

The first species has a hard woody creeping perennial root: the stems several, from one to two feet in height, full of leaves, round and smooth: the leaves pointed, smooth, and of a blueish colour, growing without order: the flowers yellow with the palate orange, villose, in a thick terminal spike: the nectary long and awl-shaped: the upper segment of the calyx a little longer than the rest: the two lower ones gaping, widest: the capsule cylindric, splitting at the top into several equal divisions. It grows by road-sides, and flowers from June to August. By culture the flowers become larger and finer.

The second species has a fibrous perennial root, inserting itself so into the crevices of walls and rocks as scarcely to be eradicated: the stalks are numerous, growing in a tuft, creeping at bottom, branched, round, purplish and stringy: the leaves roundish, shining, somewhat fleshy, some opposite, others alternate, frequently purplish: lobes of the lower ones blunt, upper acute, the smallest only three-lobed: the petioles long and grooved above: the peduncles from the axils, one-flowered, round, a little longer than the petioles: the tube of the corolla short: the upper lip purple, with two deeper veins; segments of the lower whitish: the palate yellow: the mouth or entrance into the tube villous and saffron-coloured: the nectary purple and conical, the length of the calyx: the germ purple: the capsule wrinkled, opening at top into several segments: the seeds are black, roundish and wrinkled like the nut of the walnut. The whole plant is smooth, but has a disagreeable smell.

There is a variety with a white flower.

The third is an annual plant, which rises with an upright branching stalk near a foot and half high, with oval, smooth, gray leaves, placed often by threes, and sometimes by pairs, opposite at the joints; the flowers grow in short spikes at the top of the stalks; they are shaped like those of the common sort, but have not such

long tubes; they are yellow, with saffron-coloured chaps. It flowers in July and August, and the seeds ripen in autumn. It grows naturally in Sicily.

There are varieties of this with a purple standard and spur; and with purple flowers.

In the fourth species the root is perennial: the stem two feet high, round and smooth: the leaves smooth, and marked with three nerves underneath, spreading, alternate: the lower verticillate: the racemes are terminal, simple, erect, long, with pedicels longer than the flower: the calyx minute: the corolla all purple, paler without, with the palate pubescent at the edge; spur the length of the corolla, bending outwards: the capsule subglobular: the seeds three-sided-angular, or a little compressed: the angles acute, margined, smooth, and vermicularly wrinkled between them; the colour of smoke. It is a native of Italy.

The fifth has a perennial root, from which arise many branching stalks near two feet high, with very narrow leaves growing in clusters, and of a grayish colour. The flowers are produced in loose spikes at the end of the branches; they are of a pale blue, and have a sweet smell. These appear in June; and there is often a succession of flowers on the plants till winter: the bractes are lanceolate, one at the base of each peduncle: the corolla pale blue, with darker spots; spur nearly as long as the body of the corolla: the calyx very small, and the segments acute.

In the sixth species the stem is a foot high, quite smooth, panicled, erect, but not very stiff, with wand-like branches. Primordial leaves, before the stalk shoots up, ternate, oblong; the rest alternate, awl-shaped, channelled, smooth, fleshy, and straight; the flowers are racemose: the calyxes smooth, or rather somewhat villose: the corollas yellow: the palate smooth, with a tinge of red in the retuse elevation of it.

The seventh has several smooth stems, eight or nine inches long, usually decumbent: the leaves rather fleshy, convex and glaucous: the calyx and bractes only pubescent: the corolla very dark purple,

with the spur streaked: it often varies of an ash, yellow, or lighter purple. By Curtis it is said to be of a fine rich brown inclining to purple: the capsule is shaped like the human skull. It is a native of Spain, and flowers during most of the summer months.

The eighth species has an annual root: the stem six or eight inches high, erect, round, very smooth, branching a little: the leaves very remote, rather fleshy and smooth: the radical or lower ones three or four together: the flowers in a head or corymb, and small: the calyx erect, not close, but with distant divisions: the corolla purple, with a white palate marked with obscure veins, purple: the upper lip longest; spur straight, as long or longer than the corolla. It is a native of France, &c.

The ninth is an annual plant, from whose root proceed many stalks, which are lax and rushy, very slender, and about a foot in height; on the lower part they have five very narrow, linear, obtuse leaves at each joint; but upwards they are sometimes by pairs, and sometimes single: the stalks are divided into many small branches, with little yellow flowers coming out singly at a distance from each other, which appear in July, and ripen their seeds in August. It is a native of Sicily.

There are two varieties of this plant, one with a deep yellow-coloured flower, the other with a sulphur-coloured flower.

In the tenth species the root is perennial: the stems slender, branching at bottom, growing thicker towards the top, from two to seven inches long, ascending, round and smooth: the leaves quite entire, without veins, and thick; the lowest smaller, and in fours: the upper ones solitary, or two opposite, or sometimes three: the flowers in a close raceme at the ends of the stalks; they are very elegant, of a fine violet purple colour, with a rich gold colour in the middle, and are in blow most part of the summer. It is a native of the Alps.

The eleventh species rises with a strong woody stalk, three feet high, having smooth, spear-shaped leaves, placed alternately, and sitting close to the stalk. The flowers are produced at the end of the branches in short loose spikes; these are of a deep yellow co-

four, much larger than those of the common sort, and stand upon short foot-stalks. It flowers in July, but the seeds rarely ripen in this climate, which makes the plants scarce. It is a native of Crete, &c.

The twelfth is a biennial or perennial plant, which rises with an upright, branching stalk from three to four feet high, having spear-shaped, alternate leaves, ending in acute points, and of a grayish colour. The flowers are produced at the end of the branches, in loose panicles; they are of a bright yellow colour. It is a native of Siberia, &c.

In the thirteenth the root is biennial: the stem from a foot or eighteen inches to two and even three feet in height, upright, round, solid, smooth at bottom, but pubescent higher up: the leaves are lanceolate or ovate, blunt, the lower mostly opposite, the upper inclined to be alternate: the flowers in a spike, pointing one way, large and handsome, on a very short, hairy peduncle, supported by a short, concave, acuminate bracte: the nectary obtuse, scarcely prominent: the capsule obliquely opening at top, unequal at the base; vulgarly compared in shape to a calf's head: the tops of the stalks and the calyxes are usually viscid. It is a native of the south of Europe, and flowers in June and July.

There are a great many varieties, as with red, yellow, purple and white flowers, red with white or yellow mouths, white and red, yellow and red, yellow and white, purple and white, purple with yellow mouths, with scarlet dotted with gold colour, with double flowers, and variegated leaves.

The fourteenth species is a biennial, or at most a triennial plant, which frequently perishes soon after the seeds are ripened. The stem is erect, two feet high, branching, terminated with a long thin spike: the stem-leaves small and three-parted, sometimes five-parted, very different from the broad, serrate, radical ones: the bractes one-flowered, linear, long, sometimes trifid: the flowers very small, on short peduncles, in a very long raceme, containing frequently an hundred flowers: the segments of the calyx almost capillary: the corolla blue, nodding, quinquefid, two of the divisions erect, three

nodding; throat open without any palate; spur short, bent back: the anthers reflex, dark blue. It is a native of Spain, &c.

Culture.—In most of the plants of the Toad-Flax kind the propagation may be readily effected by sowing the seeds either in the autumn or the spring, in situations where they are to remain, and where the soil is light and not enriched by manure. The seeds of the third, sixth, and eleventh species are best put into the ground in the spring; and those of the fourth, fifth, eighth, and ninth in the autumn. The first species may be increased by the trailing stalks which put out roots from the joints. It will succeed in any soil or situation. The fourth and fifth species may likewise be propagated by parting the roots. The seventh and tenth may be raised by cuttings, which should be planted out in a shady situation in the summer season, and when they have taken good root they may be removed into pots of light earth of the poorer sort. The striped varieties must also be propagated by cuttings, in the same way as the above.

The plants raised by cuttings should be sheltered during the winter months, fresh air being admitted freely in mild weather. When protected under a hot-bed frame they succeed better than in the greenhouse, as in the latter situation the plants are apt to be drawn up weak.

The plants raised from seed should be removed into pots of light sandy earth, especially in the eleventh species, till they have taken fresh root, being then exposed in assemblage with other hardy exotic plants till October, when they should be placed in a hot-bed frame to be protected from frost. Some may likewise be planted out in warm situations on rubbish or poor sandy soils, where they will frequently stand in mild winters, as in such situations they resist cold the best.

In the Snap dragon kind the propagation may be accomplished either by the seed or by cuttings. When the former method is practised, the seeds in the thirteenth species should be sown in the spring, as in April or May, in the places where they are to remain, where they will produce flowers in the following spring. But in the

fourteenth species the seed should be sown in the autumn on borders or other places, where they are to remain. They must be thinned in the following spring, and they mostly flower in the second. If the former of these sorts be designed to grow on rocky barren situations, the seeds should be sown in March, where they are to remain.

Where the latter mode is employed, the cuttings should be made in the summer season, and planted out in a proper shade till they have stricken root.

These are most of them plants adapted to the purpose of ornament, either in rocky barren situations, or in the borders, clumps or other parts of gardens and pleasure-grounds. The first species is particularly suited for covering rock work, and the thirteenth also grows well in such situations, and it, as well as most of the other species, is adapted for the purpose of affording variety in the larger borders or other compartments. They last the longest in dry poor rocky situations.



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Argemone mexicana
1 Mexican Argemone

Azalea nudiflora coccinea
2 Scarlet Azalea

PLATE IX.

1. ARGEMONE MEXICANA.

MEXICAN ARGEMONE.

THIS genus comprehends a plant of the annual kind: The Prickly Poppy.

It belongs to the class and order *Polyandria Monogynia*, and ranks in the natural order of *Rhæadææ*.

The characters of which are: that the calyx is a three-leaved, roundish perianth: the leaflets roundish with a point, concave and caducous: the corolla consists of six roundish petals, from erect spreading, larger than the calyx: the stamina consist of numerous filiform filaments, the length of the calyx: the anthers are oblong and erect: the pistillum is an ovate, five-angled germ: there is no style: the stigma thickish, obtuse, reflex, quinquefid and permanent: the pericarpium is an ovate, five-angled, one-celled, half-valved capsule: the seeds numerous and very small: the receptacles linear, fastened to the angles of the pericarpium, but not gaping: the half-valved capsule distinguishes this from the *Papaver*.

There is only one species cultivated in the garden: *A. Mexicana*.

It is an annual plant, rising to the height of two or three feet, with stems armed with prickles: leaves sinuate or jagged, soft, shining, stem-clasping, the points of the jags ending in sharp yellow spines; on the upper side there are milky veins, as in Our Lady's Thistle; on the under, small prickles along the midrib and veins: the flowers are solitary at the ends of the stem and branches: the corolla is yellow, with from four to six petals: the calyx consists of two or three prickly leaves; the stigma is capitate, small, with five notches: the capsule

superior, having five or six ribs from top to bottom, and between the ribs armed with bristle-shaped spines; at the top is the flattened stigma: the seeds are very numerous, round, black, rough, with a compressed scar on one side: the valves of the capsule vary in number, as well as the petals, from four to six. It is a native of Mexico, and flowers in July and August.

Culture.—As this is an annual plant, it may be easily raised by sowing the seeds thinly in spots of light earth in the places where the plants are to remain. As the plants shed their seeds, they mostly continue for several years after they have been once introduced.

2. AZALIA NUDIFLORA COCCINEA.

SCARLET AZALIA.

THIS genus contains plants of the hardy deciduous flowering shrubby kinds. The Upright American Honeysuckle.

It belongs to the class and order *Pentandria Monogynia*, and ranks in the natural order of *Bicornes*.

The characters of which are: that the calyx is a five-parted, acute, erect, small, coloured, permanent perianthium: the corolla is monopetalous, bell-shaped, semiquinquefid; the sides of the divisions bent in: the stamina consist of five filiform filaments, inserted into the receptacle and free: the anthers are simple: the pistillum is a roundish germ: the style filiform, the length of the corolla, and permanent: the stigma is obtuse: the pericarpium is a roundish capsule, five-celled and five-valved: the seeds many and roundish.

The species chiefly cultivated are: 1. *A. nudiflora*, Naked-flowered Azalia; 2. *A. viscosa*, Viscid-flowered Azalia.

The first in its native situation often rises to the height of fifteen feet, but here is never more than half that height. It sends out several stems from the root. The leaves are oblong, smooth, alternate

and petioled. The peduncles are axillary, long and naked, supporting a cluster of red flowers, which are tubulous, swelling at their base like those of the hyacinth, and contracted at their neck; they are divided at the top into five equal segments, which spread open. The five stamens and style are much longer than the petals, and stand erect. It is a native of Virginia.

There are varieties of this plant with scarlet flowers; with pale red flowers; with curly white flowers; with red and white flowers; and with variegated flowers.

The second is a low shrub, rising with several slender stems near four feet high: the leaves come out in clusters at the ends of the shoots without order: they are spear-shaped, and narrow at their base; their edges are set with very short teeth, which are rough: the flowers come forth in clusters between the leaves at the extremities of the branches; they are white, with a mixture of dirty yellow on the outside: the tube is an inch long, and at the top they are pretty deeply cut into five segments; the two upper are reflex, the two side ones bent inward, and the lower one is turned downward: the stamens are a little longer than the petals, and support oblong saffron-coloured anthers. The style is much longer than the stamens, and is crowned by an obtuse stigma. These flowers have much the appearance of those of Honey-suckle, and are as agreeably scented; more so than the foregoing sort. They appear the middle of July, but are not succeeded by seeds in this climate. It is a native of North America.

This plant has varieties, with white striped flowers; with narrow petalled flowers; and with clustered flowers.

Culture.—These plants may be raised without much difficulty, in rather moist soils where the situation is shady. As they never produce seeds in this climate, they must be increased by layers from the young shoots, or by offsets from the roots. The best season for either of these methods is the early part of the autumn, when they should be set out where they are to grow, or be planted in rows in the nursery manner. It is useful to protect the roots during the win-

ter, by covering the ground about them with old tan, or other similar substances.

Where the seeds can be procured, plants may be raised by sowing them either in pots or on warm borders; in the former method, forcing their growth by plunging them in mild hot-beds.

These shrubby plants are suited for affording variety in shrubberies and other places, both on account of their fragrant smell and the beauty of their flowers.



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Bignonia radicans
1 Ash leaved Trumpet flower

Butomus umbellatus
2 Flowering Rush

PLATE X.

1. BIGNONIA RADICANS.

ASH-LEAVED TRUMPET FLOWER.

THIS genus comprehends several plants of the shrubby and tree exotic kinds. The Trumpet Flower, or Scarlet Jasmine.

It belongs to the class and order *Didynamia Angiospermia*, and ranks in the natural order of *Personatæ*.

The characters are: that the calyx is a one-leafed, erect, cup-form, five-cleft perianthium: the corolla monopetalous, campanulate; tube very small, the length of the calyx: throat very long, ventricose beneath, oblong-campanulate: border five-parted, the two upper divisions reflex, lower patulous: the stamina consist of four subulate filaments, shorter than the corolla; two longer than the other two: the anthers reflex, oblong, as it were double: the pistillum is an oblong germ, the style filiform, having the situation and form of the stamens: the stigma is capitate: the pericarpium is a two-celled, two-valved silique: partition membranaceous, parallel and thickened at the sutures: the seeds are very many, imbricate, compressed, and membrane-winged on both sides.

The species chiefly cultivated for ornamental purposes are: 1. *B. catalpa*, Catalpa and Tree Bignonia. 2. *B. sempervirens*, Evergreen Carolina Bignonia, or Yellow Jasmine. 3. *B. unguis*, Cut-claw Bignonia. 4. *B. radicans*, Rooting Ash-leaved Scarlet Bignonia.

The first is a deciduous tree, rising with an upright stem, covered with a smooth brown bark, to the height of thirty or forty feet in its native situation, but not nearly so high in this climate: it sends out many strong lateral branches, having very large, heart-shaped, or

ovate, leaves on them, placed opposite at every joint. The flowers are produced in large branching panicles towards the end of the branches; they are of a dirty white colour, with a few purple spots and faint stripes of yellow on their inside: the tube of the corolla is much shorter, and the upper part more spreading than in the fourth sort: the segments also are deeper cut, and waved on their edges. The flowers are succeeded by longer taper pods in its native situation; but these have not as yet been produced in this climate. It is a native of South Carolina, and flowers in August.

The second species rises with slender stalks, which twist themselves round the neighbouring plants, and mount to a considerable height: the leaves come out single and opposite to each other at every joint: they remain green through the year. The flowers come out from the wings of the leaves at every joint, sometimes but two, at other times four at each joint; these stand erect, are trumpet-shaped, yellow, and have a very sweet scent; and, in the countries where they grow naturally, are succeeded by short taper pods filled with small winged seeds. It is a native of South Carolina.

The third rises with slender stems which require support. The leaves are small, ovate, entire, and placed opposite at every joint; at the same places come out the tendrils, by which the plants fasten themselves to whatever grows near them: the flowers are axillary, and shaped like those of the Foxglove. They are not succeeded by pods in this climate. It is a native of the West-Indies.

The fourth species has rough stems, which send out many trailing branches, putting out roots at their joints, and thereby fastening themselves to the trees in their natural places of growth, and climbing to a great height: when it is planted against walls, it strikes into the mortar of the joints so strongly as to support the branches, and will rise to the height of forty or fifty feet. The leaves are opposite at every joint, composed of four pairs of leaflets, terminated by an odd one; they are serrate, and end in a long sharp point. The flowers are produced at the ends of the shoots of the same year, in large bunches; they have long swelling tubes, shaped somewhat like a

trumpet, whence the plant has the appellation of Trumpet Flower. The corolla is of an orange colour, and opens at the beginning of August. It is a native of Carolina.

There is a variety of this with small flowers.

Several other species of this genus are equally deserving of cultivation.

Culture.—These plants are capable of being raised either from seeds, layers, or cuttings of the stronger shoots, according to the species.

In the first, the best methods are those of sowing the seeds, obtained from abroad, in pots of light fresh earth, in the early spring season, plunging them immediately in a moderate hot-bed of tan or dung: when the young plants appear, they should be placed in warm sheltered exposures till the autumn, when they require the protection of frames and glasses, or of a good green-house, free air being admitted when the weather will permit. After the plants have attained sufficient growth in these situations, they may be removed from the pots, planted out in warm situations where they are to remain, or in the nursery, protection being given them in the winter season when it proves severe.

Some however prefer raising plants of this sort by setting the cuttings of the young shoots in the early spring, in pots of the same earth, plunging them in moderate hot-beds till they have stricken full root, water and shade being occasionally given them, gradually as the summer advances enuring them to the full air, in order to harden them. On the approach of autumn, they should be taken under shelter of some sort when the weather is severe. In the spring following they may, if necessary, be planted out where they are to stand, or be put in the nursery ground.

These plants succeed best in such soils as are rich, and rather inclined to moisture.

All the other species may likewise be raised from seeds, by being managed in the same manner as the preceding one; but a more ready method is by layers, made from the young shoots in the autumn or spring seasons; which may be taken off and planted out, either

where they are to remain, or in the nursery-ground, after they have had a twelvemonth's growth. They are also capable of being increased by cuttings of the more strong shoots, planted out and managed in the same way as in the first sort.

In all the kinds, the plants raised from seeds are much longer before they produce flowers, than when they are propagated by layers or cuttings of the flowering plants.

The chief culture, after the plants are fully established, is that of cutting out all the small weak shoots of the preceding year, in the winter season, and shortening the stronger ones to the length of about two feet, in order to induce flowering shoots to be sent out for the ensuing summer. These plants are all of long duration, when carefully managed.

The first species, though late in putting out its leaves and flowers, is a highly ornamental shrubby tree, that may be introduced with propriety and great effect in the back but more conspicuous parts of large borders, or the middle of large clumps and other planted parts of shrubberies and grounds. When in full foliage it has a fine appearance, affording an agreeable diversity in such situations.

It is likewise well suited for planting out singly on the more spacious lawns or other open parts, where the situations are not too much exposed, as when permitted to take its natural growth it produces a good effect.

The second species is more tender, requiring the protection of mats or other coverings in winter, in the time of frosts, and the application of tan or litter about the roots. It succeeds best, and has the finest appearance, when planted against a warm wall, where it has room to climb and spread.

The third and fourth species are much more hardy, though they should have some protection when frosts occur in the winter. They are very ornamental when planted against high walls or buildings, especially the latter, as it will fix on the crevices, and extend itself over a vast surface. If trained up against high trees, it also produces a fine appearance when in flower.

2. BUTOMUS UMBELLATUS.

FLOWERING RUSH.

THIS genus contains a plant of the flowery perennial aquatic kind. The Flowering Rush, or Water Gladiole.

It belongs to the class and order *Enneandria Hexagynia*, and ranks in the natural order of *Tripetaloideæ*.

The characters are: that the calyx is a simple, three-leaved, short involucre: the corolla consists of six petals, roundish, concave, withering; three outer alternate, smaller, more acute: the stamina consist of nine subulate filaments: the anthers are bilamellate: the pistillum has six germs, oblong, acuminate, ending in styles: the stigmas are simple: the pericarpium consists of six capsules, oblong, gradually attenuated, erect, one-valved, gaping on the inside: the seeds are very many, oblong-cylindric, obtuse at both ends, fixed to the wall of the capsules.

There is only one species: *B. umbellatus*, Umbellated Butomus, or Flowering Rush.

It has a thick, oblong, fibry, perennial root: the leaves are ensiform, long, triangular, smooth, quite entire, spongy, at bottom sheathing, at top flat and twisted: the scape upright, round, smooth, from one to three or five and six feet high: the flowers to thirty, each on a single round peduncle, from an inch to about a finger's length, forming an upright umbel, surrounded at bottom by an involucre of three withering membranous sheaths; besides a smaller stipule to each peduncle: corolla handsome, near an inch in breadth; commonly of a bright or pale flesh-colour, purple or rose-colour. It is a native of most parts of Europe, and Flowers in June and July.

There are varieties with white flowers; with red flowers; with deep purple flowers.

Culture.—The propagation in this plant is effected either by seed or the roots. In the first mode the seed may be sown thick, in any watery or boggy place, in the autumn, and left to nature. In the second method the roots should be removed any time after flowering, and such as admit of it, divided, planting them at once in the places allotted them, where they flower annually for a great length of time.

These plants are very ornamental on the sides of waters, or in soft boggy situations, in pleasure grounds.





Painted by Svd Edwards

London Published July 11805 by G.Kearsley Fleet Street

Engraved by F. Sandon

1 *Bupleurum fruticosum*
Shrubby Hares ear

2 *Bulbocodium vernum*
Spring Bulbocodium

3 *Blitum capitatum*
Berry headed Strawberry-Bble

PLATE XI.

1. BUPLEURUM FRUTICOSUM.

SHRUBBY HARE'S-EAR.

THIS genus comprises plants of the evergreen shrubby kind. Hare's Ear, or Æthiopian Hartwort.

It belongs to the class and order *Pentandria Digynia*, and ranks in the natural order of *Umbellatæ*.

The characters are: that the calyx is an universal umbel, with fewer than ten rays; partial with scarcely ten rays, erect-expanding: involucre universal many-leaved; partial five-leaved, larger: leaflets expanding, ovate, acute: the perianthium proper obscure: the corolla is universal uniform: floscules all fertile: proper, of five, involuted, entire, very short petals: the stamina consist of five simple filaments: the anthers roundish: the pistillum is an inferior germ: the styles two, reflected, and small: the stigmas very small: there is no pericarpium: fruit roundish, compressed, striated, splitting in two: the seeds two, ovate-oblong, convex and striated on one side, flat on the other.

The species for the purpose of ornamental culture are: 1. *B. fruticosum*, Shrubby Hare's Ear, or Æthiopian Hartwort; 2. *B. difforme*, Various-leaved Hare's Ear; 3. *B. frutescens*, Grass-leaved Shrubby Hare's Ear.

The first is an evergreen shrub rising to the height of five or six feet, and dividing into many branches so as to form a large regular bush. The stem is covered with a purplish bark; the branches are well furnished with oblong, smooth, shining, stiff leaves, of a sea-green colour, placed alternately, four inches long, and one broad in the middle; at the ends of these the flowers are produced in umbels:

they are yellow at first, but fade away to a brown: they come out in July and August, but seldom perfect seeds in this climate. It is a native of the South of France.

The second species rises with a shrubby stalk to the height of five or six feet, sending out some side branches, which in the spring have on their lower parts leaves composed of many small flat leaflets, finely cut like those of coriander, and of a sea-green colour; these leaves soon fall off, and the upper part of the branches is closely covered with long rush-like leaves having four angles, coming out in clusters from each joint. The flowers grow in spreading umbels at the extremities of the branches; are small, of an herbaceous colour, and succeeded by oblong channelled seeds. It is a native of the Cape, and flowers from June to August.

The third has a shrubby branching stem of moderate growth: the leaves are sharp and rather fleshy; and the flowers in small umbels at the end of the branches. It is a native of Spain, and flowers in August and September.

Culture.—These sorts of plants may be propagated either by seeds or cuttings. In the first method the seeds should be sown in autumn, soon after they are ripe, in pots of light mould, and placed in a frame, to have shelter from frost during winter, and in spring plunged in a hot-bed, especially the two green-house kinds, which soon brings up the plants. These should be inured to the full air, and, when of proper growth, transplanted into separate small pots, shade and occasional waterings being given in the summer: in autumn the plants should be placed in a green-house or frame, and in spring following those of the first sort planted out in the nursery-ground.

In the second method the cuttings should be planted out in spring, in pots of light earth, plunging them in a moderate hot-bed, where they readily take root.

The common shrubby kind may also be raised by cuttings in the common ground, by planting them in the later summer months, and sheltering them occasionally from the frost during the winter; or by planting them in pots at the same time, and placing them in a garden-frame for occasional shelter from frost. In either method

the cuttings emit roots in the spring; water being freely given in summer, and shelter again in winter. In the spring following they should be planted out in a sheltered place in the nursery, to attain proper growth for the shrubbery quarters.

The first affords an ornamental effect in the fronts of clumps and other parts of shrubberies, and the others in assemblage with other potted plants of similar growth.

2. BULBOCODIUM VERNUM.

SPRING BULBOCODIUM.

THIS genus contains a plant of the bulbous-rooted flowering perennial kind. Mountain Saffron.

It belongs to the class and order *Hexandria Monogynia*, and ranks in the natural order of *Spathaceæ*.

The characters are: that there is no calyx: the corolla hexapetalous, funnel-form: claws very long, linear: throat connecting the petals: border erect: petals lanceolate, concave: the stamina consist of six subulate filaments, inserted into the claws of the petals: the anthers are incumbent: the pistillum is an ovate subulate germ, obtusely three-cornered, and superior: the style is filiform, the length of the stamens: the stigmas three, oblong, erect and channelled: the pericarpium is a triangular, acuminate capsule, angles obscure, and three-celled: the seeds are numerous.

There is only one species cultivated for ornament, *B. vernum*, Spring-flowering Bulbocodium.

In this the bulb or root resembles that of common colchicum in shape, but is much smaller; it is covered with a dark-brown skin. In January, or before the middle of the following month, the flower springs up inclosed within three brownish-green leaves, which opening themselves as soon almost as they are out of the ground, show their buds for flowers within them very white oftentimes, before they

open far, and sometimes also purplish at first appearing. There is frequently only one flower, but never more than two flowers on a root; they never rise above the leaves, or the leaves much higher than them, whilst they last; they are smaller than those of colchicum; at first are of a pale red or deep blush colour, but afterwards change to a bright purple, and continue long in beauty, if the weather be not severe. After the flowers are past, the leaves grow to the length of four or five inches, and in the middle of them the seed-vessel rises up.

It has the habit of colchicum, but differs in having only one style: from the crocus, which it much resembles, it is also distinguished by the number of its stamens. It is a native of Spain, &c.

Culture.—This may be increased by off-sets removed at the time when the flower and leaf decay, every second or third year; also by sowing the seed in pots filled with loamy earth, in autumn, sheltering them in a frame from frost during the winter: the plants appear in spring, which, on the decay of the leaves, should be taken up for planting in the borders in the following autumn, where they flower the year following.

When the roots are not frequently taken up, they flower much stronger, and produce a greater increase than when treated in the contrary manner.

The plants should have a warm situation, and fresh soil that has not been improved by manure.

They afford an agreeable variety in beds, borders, and clumps, of pleasure and other grounds.

3. BLITUM CAPITATUM.

BERRY-HEADED STRAWBERRY-BLITE.

This genus comprises different plants of the annual herbaceous ornamental kind. The Blite, or Strawberry Spinach.

It belongs to the class and order *Monandria Digynia*, and ranks in the natural order of *Holoraceæ*.

The characters are: that the calyx is a three-parted, spreading, permanent perianthium, the divisions ovate, equal, two more gaping than the other: there is no corolla: the stamina a setaceous filament, longer than the calyx, within the middle division, and erect: the anther is twin: the pistillum is an ovate, acuminate germ: the styles are two, erect, and gaping, the length of the stamen: the stigmas are simple: the pericarpium is a very thin capsule, (rather the crust of the seed) ovate, a little compressed, contained within the calyx now become a berry: the seed single, globular and compressed, the size of the capsule.

The species mostly cultivated for ornament are: 1. *B. capitatum*, Berry-headed Strawberry Blite; 2. *B. virgatum*, Slender-branched Strawberry Blite; 3. *B. Tartaricum*, Tartarian Strawberry Blite.

The first is an annual plant, with leaves somewhat like those of Spinach. The stalk rises about two feet and a half high, when cultivated in gardens. The leaves on the lower part of it are of the same shape with the root-leaves, only smaller. The upper part of it has flowers coming out in small heads at every joint, and is terminated by a small cluster of the same. After the flowers are past, these little heads swell to the size of wood strawberries, and when ripe have the same appearance; being very succulent, and full of a purple juice, which stains the hands, and was formerly used for culinary purposes as a colouring ingredient.

There are varieties, with white and red leaves.

The second species seldom grows more than one foot high, with smaller leaves than the first, but of the same shape. The flowers are produced from the axils, almost the whole length of the stalk: they are small, and collected into little heads, shaped like those of the first, but smaller, and not so deeply coloured. It is a native of the South of France.

There are varieties, with striped leaves, and with white flowers.

The third rises near three feet high: the leaves are triangular, ending in very acute points, as also the indentures on the edges of the leaves. The flowers are axillary in small heads. The fruit is of the same shape and colour as those of the first, but smaller. This

differs from that in the shape and indentures of the leaves; and in having leaves placed between the fruits the whole length of the stalk, which is not terminated by heads as in the first, but has leaves above the heads. Martyn supposes this is probably no more than a variety of the second sort.

Culture.—These plants are raised by sowing the seeds annually, in the early spring months, in patches of three or four together, in the borders or clumps where they are to remain, the mould in the places being broken down and rendered rather fine before they are put in. They may also be sown on beds of light earth, and when they rise to a sufficient growth be transplanted to the places where they are to grow, which should be done before the flowering stems rise. The first is the best method. A few may also be raised in pots for particular purposes, which must be kept occasionally watered in dry seasons, and supported by sticks.

When planted out in the natural ground, they must be kept clear from weeds, and properly thinned, and have support when necessary, to prevent their being pressed down by the weight of the fruit. They often rise freely from self-sown seeds.

They are chiefly cultivated for the ornament which the fruit affords in the latter end of summer, which is as large as that of the common strawberry, and of a red colour. They have a good effect when set out in assemblage with other potted plants in conspicuous situations about the house.



Painted by Sd. Edwards
Calla Aethiopica
 1 *Aethiopian Calla*

London Published Feb. 1866 by G. Kearsley Fleet Street

Engraved by F. Sanson

Coronilla emeris
 2 *Scorpion Senna*

PLATE XII.

1. CALLA ÆTHIOPICA.

ÆTHIOPIAN CALLA.

THIS genus contains a plant of the herbaceous flowery perennial green-house kind. Æthiopian Arum.

It belongs to the class and order *Gynandria Polyandria*, and ranks in the natural order of *Piperitæ*.

The characters are: that the calyx is a one-leafed spathe, ovate-cordate acuminate, coloured at top, very large spreading, permanent: the spadix finger-shaped, quite single, erect, covered with fructifications: there is no corolla: the stamina consist of some filaments intermixed with the germs the length of the pistils, permanent, compressed, truncate: the anthers are simple, truncate, and sessile: the pistillum to each is a roundish obtuse germ: the style simple, very short: the stigma acute: the pericarpium contains as many berries as there are pistils, four-cornered, globular, pulpy, and one-celled (several-celled): the seeds numerous (six to twelve,) solitary, oblong, cylindric, and obtuse at both ends.

The species cultivated for ornament is *C. Æthiopica*, Æthiopian Arum, or Sweet Calla.

It has thick, fleshy, tuberous roots, which are covered with a thin brown skin, and strike down many strong fleshy fibres into the ground. The leaves arise in clusters, having foot-stalks more than a foot long, which are green and succulent: the leaves are eight or nine inches in length, and of a shining green, ending in a sharp point, which turns backward: between the leaves comes out the scape, which is thick, smooth, of the same colour as the leaves, rising above them, and terminated by a single flower shaped like those of the

arum: the hood or spathe is twisted at the bottom, but spreads open at the top, and is of a pure white colour. In the centre of this is situated the spadix or club, which is of an herbaceous yellow colour, upon which the small herbaceous flowers are closely placed; it is only about half the length of the spathe; it is succeeded by roundish red berries. It is a native of the Cape.

Culture.—This plant is readily increased by offsets from the root, which should be separated in the autumn, and planted out singly in pots of light earth, where they become full plants the following year. The plants may be kept in the full air during the summer, but during the winter should have the protection of the green-house or a garden-frame.

These plants, from the singularity of their growth, and their being constantly furnished with leaves, have an agreeable effect, and produce much variety among other potted plants.

2. CORONILLA EMERIS.

SCORPION SENNA.

THIS genus comprises plants of the evergreen and deciduous shrubby kinds.

It belongs to the class and order *Diadelphia Decandria*, and ranks in the natural order of *Papilionaceæ*.

The characters are: that the calyx is a simple umbellule: perianth one-leafed, very short, compressed, bifid, erect; the three inferior teeth smaller; the two superior conjoined; permanent: the corolla papilionaceous: standard heart-shaped, reflected on all sides, scarce longer than the wings: wings ovate, converging at top, gaping at bottom, obtuse: keel compressed, acuminate, ascending, usually shorter than the wings: the stamina consist of diadelphous filaments (single and nine-cleft), ascending at almost a right angle, the tips widish; anthers simple, small: the pistillum is a columnar, oblong

germ: style bristled, ascending: stigma small, obtuse: the pericarpium is a legume, very long, columnar, straight, contracted with an isthmus between each seed; two-valved, one-celled, parting by joints: the seeds many.

The species are: 1. *C. juncea*, Linear-leaved Coronilla; *C. Valentina*, Small Shrubby Coronilla; 3. *C. argentea*, Silvery-leaved Coronilla; 4. *C. glauca*, Great Shrubby Coronilla; 5. *C. Emerus*, Scorpion Senna.

The first rises from two to four feet high, with many slender woody branches, as in broom: the leaves are linear, spear-shaped, small, and somewhat fleshy: the flowers stand upon pretty long axillary peduncles, in small bunches, are of a bright yellow colour, and appear for six or seven months together, but have not produced seeds in this climate. It is a native of the South of France.

The second species rises three or four feet high: the leaflets nine or eleven, oblong-cordate or wedge-form retuse, with a small point or none, glaucous, somewhat fleshy, having the colour of rue in the early spring: the flowers are on long axillary peduncles in close bunches, small and deep yellow. It has a strong odour, and is a native of Spain.

The third is a very humble shrub, rarely growing more than two feet high, when planted in a good soil; but in a dry barren place, not much above one foot: the stem is hard and woody, from which the branches are produced on every side near the ground, so as to form a low bushy shrub. At the joints where the leaves are produced are two ear-shaped stipules. The flowers are on long slender axillary peduncles, yellow, and have a strong sweet scent: it produces plenty of flowers in May, making a fine appearance; the seeds ripening in August. Its silvery colour is said to be occasioned by its growing on a poor dry soil. It is a native of the island of Crete.

The fourth species seldom grows more than three or four feet high, with a woody branching stem: the leaflets five or seven,

glaucous, wedge-form, seldom obcordate, with a small reflex point: the flowers bright yellow, in a roundish bunch: they are remarkably fragrant during the day. It is a native of the South of France.

The fifth rises from two to six feet in height (eight or nine in gardens): the stem not very straight, branched and brachiate (so weak as sometimes to want support): the leaflets three or four pairs, gradually larger, almost cordate, glaucous and smooth: the peduncles umbelled, with from three to five yellow flowers. Miller kept this species under its old name of *Emerus*, dividing it into greater and less; the former being common in gardens, but the latter in very few. It is a native of France, flowering in April.

Culture.—As the first four sorts, and especially the second, are rather tender, though they will succeed in the open air in mild winters, they should in common be potted, to be moved to the shelter of a green-house, or glass frame, or some place in a sheltered situation in the full ground. The last sorts are hardy and elegant flowering-shrubs, for the clumps and other parts of extensive pleasure-grounds.

The four first kinds may be increased by seeds sown in the spring, either on a warm border, or in a slender hot-bed; but the latter is the best mode, as it produces them more forward, in pots of rich earth half an inch in depth, plunging them in a hot-bed when necessary. When the plants are two or three inches in height, they should be pricked out in separate small pots, giving shade, water, and air, hardening them gradually to the full air, about the middle of summer, in which they may remain till autumn, then removing them to the shelter of a frame during winter, covering them only in time of frost, or very severe weather.

The last sort, or Scorpion Senna, may be raised plentifully both by seeds, layers, and cuttings; the seeds being sown in March, in a bed of light earth, and covered half an inch deep, giving occasional waterings in dry weather. When the plants have had one or two years' growth, they should be removed into nursery rows, and in two

or three more they will be large enough for planting in the shrubbery, or other places. The layers of the young shoots may be laid down in autumn or winter, giving them a gentle twist. When they are perfectly rooted, they should be taken off, and planted out as above. The cuttings of the young shoots should be planted in the spring, or autumn, in shady borders, giving water the following spring and summer. When well rooted they should be removed, as in the above methods.

PLATE XIII.

1. CALYCANTHUS FLORIDUS.

CAROLINA ALLSPICE.

THIS genus comprises a plant of the aromatic shrubby deciduous kind.

It belongs to the class and order *Icosandria Polygynia*, and ranks in the natural order of the *Rosacea*.

The characters of which are: that the calyx is a one-leafed, pitcher-shaped, squarrose perianthium: leaflets coloured, lanceolate; the superior ones gradually larger, resembling petals: there is no corolla, except the calycine folioles, representing petals: the stamina consist of numerous subulate filaments, inserted into the neck of the calyx: the anthers oblong, furrowed, growing to the top of the filaments: the pistillum consists of a great many germs, ending in subulate compressed styles of the length of the stamens: the stigmas are glandulous: there is no pericarpium, the calyx being thickened, obovate, and berried: the seeds are very many and tailed.

The only species cultivated is *C. floridus*, Carolina All-spice.

It rises to the height of eight or ten feet where it grows naturally, but seldom more than four feet high in this country, dividing into many slender branches near the ground; covered with a brown aromatic bark, with two entire leaves placed opposite at every joint on short foot-stalks: the flowers grow single on short peduncles at the extremity of the branches; they have two series of narrow thick petals, which spread open, and turn inward at the top, like those of the starry anemone colour; these are of a dusky purple colour, and have a disagreeable scent. They appear in May. The strong aromatic scent has obtained it the title of All-spice.



Painted by Sid Edwards
 1 *Calycanthus floridus*
 Carolina Allspice

London Published Jan. 11800 by G. Kearsley Fleet Street
 2 *Colutea arborescens*
 Common Bladder Lenna

Engraved by T. Sauter
 3 *Ceanothus Americanus*
 New Jersey Tea Tree

There are varieties with long leaves and with round leaves.

Culture.—This is increased by laying down the young branches, or one-year's shoots, which may be taken off in a twelvemonth, and set where they are to remain, as they do not bear transplanting well afterwards. The effects of drying winds should be guarded against in the summer, and frosts in winter; the former by very moderate waterings, and the latter by coverings of bark. The best season for laying down is the autumn, and for planting out, the spring.

This shrub is capable of bearing the open air, but requires a dry soil and warm exposure.

It is very ornamental in the fore parts of clumps or borders in shrubbery and other ornamented grounds.

2. COLUTEA ARBORESCENS.

COMMON BLADDER SENNA.

THIS genus contains plants of the hardy deciduous flowering shrubby kind. Bladder Senna.

It belongs to the class and order *Diadelphica Decandria*, and ranks in the natural order of *Papilionaceæ*.

The characters are: that the calyx is a one-leafed perianthium, bell-shaped, five-cleft, erect, nearly equal, permanent: the corolla is papilionaceous; standard, wings, and keel differ in figure and various proportion; wings pressed close together, lanceolate: the stamina have diadelphous filaments, (single and nine-cleft) ascending: anthers simple: the pistillum is an oblong germ, compressed, attenuated at each end: style ascending: stigma is a bearded line extended from the middle of the style to its tip, from the upper part: the pericarpium is a legume very large, very broad, inflated, transparent and membranaceous, the upper suture erect, the lower gibbous, one-celled, gaping on the upper suture at the base: seeds several, kidney-shaped.

The species cultivated are: 1. *C. arborescens*, Common Bladder Senna; 2. *C. cruenta*, Oriental Bladder Senna; 3. *C. Pocockii*, Pocock's Bladder Senna; 4. *C. frutescens*, Scarlet Bladder Senna.

The first has several woody stems, which grow to the height of twelve or fourteen feet, sending out many woody branches, with winged leaves, composed of four or five pairs of oval lobes, placed opposite, terminated by an odd one; these are indented at the top in form of a heart, and are of a grayish colour. The flowers come out from the wings of the leaves upon slender peduncles about two inches long, each sustaining two or three yellow flowers, whose standard is reflexed and large, with a dark-coloured mark on it. Native of the South of France, &c.

The second species has a woody stem, which sends out many branches on every side, which do not rise above seven or eight feet high; these are not so strong as those of the first sort, and the leaves are composed of five or six pairs of small heart-shaped leaflets, terminated by an odd one. The flowers proceed from the side of the branches, standing upon peduncles, each sustaining two or three flowers, shaped like those of the first sort, but smaller; they are of a dark red colour, marked with yellow, appearing in June, the seeds ripening in autumn. It was found in the Levant.

The third is a shrub which seldom grows more than six or seven feet high in this country. The branches are very slender, and much more pliant than those of the common sort, and therefore it grows less erect. The leaves are composed of nine pairs of leaflets, and are much smaller. The flowers are of a brighter yellow, appear a month earlier than in the common sort, and there is a succession of them till late in the autumn, which renders it much more valuable; and the branches not shooting so luxuriantly nor so upright, it is in less danger of being broken by strong winds in summer. It is a native of the Levant.

The fourth species is a hoary shrub, with tomentose leaflets, smooth on the upper surface. It rises from two to four feet in height in favourable seasons, and in a warm situation; plants of three years standing will sometimes be six feet high. The stem is weak, the

side branches grow erect, and the leaves have ten or twelve pairs of leaflets. The flowers are sustained on axillary peduncles, three or four together, and are of a fine scarlet colour, coming out in June. It is a native of the Cape.

Culture.—All these plants are capable of being increased by sowing the seed in the early spring months, as in February for the three first sorts, and the two following months for the fourth, upon beds of common earth, covering them in to the depth of about half an inch. When the plants have attained sufficient growth, as in the following spring for the former sorts, and when they are three or four inches high in the latter, they should be removed, and the first sorts planted out in rows in the nursery, and the last in warm sheltered situations or in pots, to be protected during the winter.

This sort may likewise be rendered much forwarder, so as to flower the same year, by having recourse to a hot-bed.

The three first species are also capable of being raised by layers from the young shoots, made either in the autumn or spring seasons; but as the fourth sort does not continue long, and is more tender than the others, new plants should be raised from every seed two or three years.

They are all beautiful ornamental plants, especially the fourth, and may be introduced into the clumps, borders, and other parts of shrubberies and pleasure-grounds, where they produce a fine effect by their foliage and flowers. The last sort should, however, have a dry warm soil and sheltered sunny situation.

3. CEANOTHUS AMERICANUS.

NEW JERSEY TEA-TREE.

THIS genus comprises plants of the tree and shrubby exotic kinds.

It belongs to the class and order *Pentandria Monogynia*, and ranks in the natural order of *Dumosaæ*.

The characters are: that the calyx is a one-leafed, turbinate perianthium; border five-parted, acute, close-converging, and permanent: the corolla has five equal petals, roundish, of an arched sacular shape, compressed, very obtuse, spreading, smaller than the calyx, seated on claws the length of the petal, growing from the interstices of the calyx: the stamina consist of five subulate, erect filaments, opposite to the petals, the length of the corolla: the anthers are roundish: the pistillum is a superior, triangular germ: the style cylindric, semitrifid, the length of the stamens: the stigma obtuse the pericarpium is a berry (capsule), dry, three-grained, three-celled, obtuse, retuse, and set with tubercles: the seeds solitary and ovate.

The species commonly cultivated are: 1. *C. Americanus*, American Ceanothus, or New Jersey Tea; 2. *C. Asiaticus*, Asiatic Ceanothus; 3. *C. Africanus*, African Evergreen Ceanothus.

The first in this climate is a shrub, which seldom rises more than three or four feet high, sending out branches on every side from the ground upwards: the branches are very slender, and, as it is pretty late in the spring before they begin to shoot, keep growing very late; consequently, unless the autumn proves dry and mild, the tender shoots are often killed down very low by the early frosts; but in favourable seasons, the extreme parts of the shoots only are injured by the cold: these branches are garnished with oval-pointed leaves, placed opposite, deciduous, and of a light green colour: the flowers are produced at the extremity of each shoot in close thick spikes, and composed of five small petals, of a clear white colour, making a fine appearance, as the whole shrub is covered over with flowers.

These appear in July, and in mild seasons again in October. It is a native of North America, where the leaves are sometimes used as tea.

The second species rises with a shrubby branching stem, four feet high. The branches are alternate, flexuose, striated and smooth: the leaves are alternate, resembling those of the pear, acuminate, smooth, at the ends of the small branches, scarcely an inch in length, on petioles half the length of the leaves: the racemes from each axilla usually two, small, the length of the petioles, consisting of

many florets, on very short pedicels, caducous, one often remaining which bears fruit: hence the raceme is toothletted from the falling of the flowers, which are of a greenish colour: the berries are large. It is a native of Ceylon, &c.

The third species rises to the height of ten or twelve feet, with a woody stem, covered with a rough dark-coloured bark, and sends out many weak branches, which hang downwards: these while young are green, but afterward change to a purplish colour: they are garnished with oblong pointed leaves, of a lucid green, smooth, and slightly serrate on their edges: the flowers are small, of an herbaceous colour, coming out from the side of the branches; sometimes appearing in July, but not succeeded by seeds in this climate, nor do the plants often produce flowers; being chiefly preserved for the beauty of their shining evergreen leaves. It is a native of the Cape, and sometimes known by the title of *Alaternoides*.

Culture.—This, in the first sort, may be effected either by seeds or layers. In the first mode the seeds should be sown, as soon as procured, in pots of light earth, lightly covered in, placing them in a frame, to have occasional shelter in bad weather; and in spring plunge them in a hot-bed to bring up the plants, hardening them gradually to the full air in summer, but in autumn removing them to have shelter until the following spring, when they should be planted out in separate small pots, or in a nursery-bed in the full ground, being covered occasionally again in the following winter, as they require protection from severe frost the two or three first years of their growth.

In the latter method, some of the youngest branches should be laid down in autumn, in the usual way, which become rooted in twelve months, and in the spring after should be planted out. Some of the first young shoots may also be laid down during the summer, in order to have the greater chance of success.

In the second species the propagation may be effected by seeds, which should be sown in pots of light earth, plunging them in the bark-bed, and likewise by laying the young shoots down in the au-

tumn, plunging the pots as above: the plants afterwards should be managed as other woody exotics of the stove.

The third sort is raised expeditiously by laying down the young shoots, either in their own pots, or others placed for the purpose, in the autumn. They are also capable of being increased by young cuttings, planted in the spring in pots, plunging them in the bark, or other hot-bed about two months. They afterwards require only the ordinary culture of greenhouse plants.

The first is an elegant little flowering shrub, for the more conspicuous compartment of the shrubbery, being planted in a moderately dry soil and sheltered situation, in the fronts of the clumps or borders.

The second affords variety in the stove; and the third is worthy of a place in the greenhouse collection, for the beauty of its shining green leaves.



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Engraved by F. Sander

1 *Campanula rapunculoides*
Nettle-leaved Campanula

2 *Crepis barbata*
Yellow Hawkweed

3 *Convolvulus tricolor*
Small blue Convolvulus

PLATE XIV.

1. CAMPANULA RAPUNCULOIDES.

NETTLE-LEAVED CAMPANULA.

THIS genus comprises various plants of the annual, biennial, and perennial herbaceous flowery kind. The Bell-flower.

It belongs to the class and order *Pentandria Monogynia*, and ranks in the natural order of *Campanaceæ*.

The characters are: that the calyx is a five-parted perianthium, acute, erect-expanding, superior: the corolla is monopetalous, bell-form, impervious at the base, half-five-cleft, marcescent: divisions broad, acute, spreading: the nectary in the bottom of the corolla, composed of five valves, acute, converging, covering the receptacle: the stamina consist of five capillary filaments, very short, inserted on the tips of the valves of the nectary: the anthers are longer than the filaments, and compressed: the pistillum is an angular inferior germ: the style filiform, longer than the stamens: the stigma three-parted, oblong, thickish: divisions revolute: the pericarpium is a roundish angular capsule, three or five-celled, emitting the seeds at so many lateral openings: the seeds are numerous and small: the receptacle is columnar and adnate.

The species mostly cultivated for the purposes of ornament and use are: 1. *C. persicifolia*, Peach-leaved Bell-flower; 2. *C. pyramidalis*, Pyramidal or Steeple Bell-flower; 3. *C. carpatica*, Carpathian or Heart-leaved Bell-flower; 4. *C. latifolia*, Broad-leaved Campanula, or Giant Throat-wort; 5. *C. trachelium*, Great Throat-wort, or Nettle-leaved Campanula; 6. *C. grandiflora*, Great-flowered Bell-flower; 7. *C. medium*, Small Pyramidal Campanula, or Canterbury Bells; 8. *C. speculum*, Venus's Looking-glass; 9. *C. Americana*, American

Bell-flower; 10. *C. fruticosa*, Shrubby Cape Bell-flower; 11. *C. rapuncululus*, Esculent Rampion.

There are other species in this extensive genus deserving of attention.

The first has the root like that of Navew, and eatable: the stem is very straight, eighteen inches high and more, (in gardens two feet and a half,) unbranched, angular, smooth, as is the whole plant: the flowers are in a thin spike, one or two together, on very long peduncles, which have two stipules at the base: the corolla is large, broad bell-form, deep blue; the segments short, and moderately acuminate. It is a perennial plant, native of most parts of the continent of Europe, flowering in June and July.

There are varieties with single blue and white flowers, and with double blue and white flowers.

The second species, as it appears in the garden, has thick tuberous roots, which are milky; these send out three or four strong, smooth, upright stalks, which rise near four feet high, and are garnished with smooth oblong leaves, whose edges are a little indented: the lower leaves are much broader than those on the stalks: the flowers are produced from the side of the stalks, and are regularly set on for more than half their length, forming a sort of pyramid; these are large, open, and shaped like a bell, and mostly of a light-blue colour.

There are varieties with white flowers and with double flowers.

The third affords a milky juice when wounded: the root is whitish and perennial; the stems herbaceous, annual, weak, hardly branching, bearing one or very few flowers. In gardens it becomes branching and many-flowered. The root-leaves are kidney-form, roundish; the peduncle elongated and smooth; the corolla blue. It flowers the whole summer, and is a native of the Carpathian Alps.

According to Mr. Curtis, it is still scarce in gardens, but deserves to be more known and cultivated: its flowers are in proportion to the plant, being large and showy.

The fourth species has the stem three feet high and more, angu-

lar and smooth, but not branching: the leaves are sharply serrate, on short petioles, and hirsute: the flowers are axillary, one or two together, on peduncles shorter than the leaf: calyx smooth, with broad triangular segments: corolla very large, blue; the segments triangular, divided by a line: the fruit obliges the peduncle to bend down with its weight. It is a native of the northern parts of the island, flowering in July.

There are varieties with single and double purple, and with single and double white flowers; with single and double pale-red flowers; and with striped flowers.

The fifth species has a perennial root: the stems are from two to three feet in height, upright, stiff, hairy, angular, the angles membranaceous, putting out a few short side-branches: the leaves resembling those of the great nettle, but rather shorter and broader, alternate, ovate, cordate, pointed, hairy, deeply toothed, sometimes having two or three lobes; petioled, except the upper ones, which are sessile: the peduncles are alternate, axillary, trifid, and three-flowered. The number of flowers, however, varies from one or two to three, four, and even five; they are large and nodding. It is a native of most parts of Europe, &c. flowering in July and August.

There are varieties, with single and double blue flowers, with single and double white flowers, and with single and double pale purple flowers.

The sixth species has the whole plant very smooth; the root perennial, white, fusiform, the thickness of a finger, and branched: the stems are few, erect or ascending, simple, round, a foot high, leafy all over, annual, terminated with one handsome flower, but without scent, nodding a little, with sometimes one or two flowers more from the upper axillas: the leaves are irregularly scattered, sessile or on very short petioles, ovate or sublanceolate, short and sharply serrate: sometimes a few of the leaves, and at others all of them, are in threes: the corolla is two inches in diameter or more, very deep blue, with numerous blue veins; elegantly pear-shaped before expanding, and at first green. It flowers in June and beginning of July, and is a native of Siberia.

The seventh has a biennial root: the leaves are oblong, rough, hairy, serrate, coming out without order from the root, narrowing into a petiole. From the centre of these, the second season, arises a stiff, hairy, furrowed stalk about two feet high, sending out several lateral branches, with long, narrow, hairy, serrate, sessile leaves, placed alternately: from the setting on of these leaves come out the peduncles, those on the lower part of the stem and branches four or five inches long, diminishing gradually in length upwards, and thus forming a sort of pyramid. The flowers are very large, and make a fine appearance; they are smooth, and the segments turn back at the end; they come out the beginning of June, and, if the season be not very hot, continue a month in beauty. It grows naturally in Germany, &c.

There are varieties, with blue, purple, white, striped, and double flowers.

The eighth species is an annual plant, which rises with slender stalks a foot high: the flowers are of a beautiful purple, inclining to a violet colour, (sometimes pale purple or white,) and in the evening fold up into a pentagon figure, whence it is sometimes called *Viola pentagonia*: the calyx is composed of five narrow leaves, which spread open, turn back, and are much longer than the petals; these remain on the top of the prismatic seed-vessel, which is filled with small angular seeds: the stem is tender, quadrangular, naturally procumbent, branched from the bottom at very great angles: the leaves sessile, obovate, and waved about the edge: the flowers axillary, erect, on very long peduncles: the corolla wheel-shaped, and so deeply five-cleft that the segments, which are ovate, scarcely cohere.

It is a native of the southern countries of Europe, flowering from May to September.

There are varieties, with bright blue flowers, with white flowers, and with pale purple flowers.

The ninth species has an annual root; the stem and germs smooth; the leaves acuminate; the flowers three or more from each

axil or bracte; the corollas small; the style longer than the corolla. It is a native of Pennsylvania, flowering in July.

There are varieties, with single white, with single blue, and with double blue flowers.

The tenth is a shrubby ornamental plant, a native of the Cape of Good Hope, flowering here in August.

In the eleventh species the whole plant is full of a milky juice: the root is biennial, spindle-shaped, sometimes branching: the stem upright, angular, two feet high, hairy towards the base, smooth above: branches alternate, short, upright: the leaves towards the base of the stem hairy above or on both sides, blunt; the upper ones smooth, and becoming gradually more pointed; obscurely notched: teeth glandular, whitish, not projecting beyond the edge of the leaf: there is an awl-shaped bracte at the base of each peduncle: the segments of the calyx are awl-shaped, or setaceous, twice as long as the germ, with a small tooth on each side of the base: the flowers are upright: the corolla blueish purple, sometimes very pale purple or whitish; each segment marked with three lines: the nectary fringed. It grows wild in France, &c., flowering in June, July, and August.

The fleshy roots are eatable, and are much cultivated in France for salads.

Culture.—The plants in this extensive genus are mostly hardy, and increased with little difficulty. The six first sorts, and their varieties, are all capable of being raised by dividing the roots in the autumn or early spring, and planting them out on the beds, borders, or other parts. The former is, however, the better season for the purpose, as the roots become better established before they begin to shoot up into stem. They thrive in almost any soil or situation. As the plants of the steeple bell-flower, trained for adorning halls and chimneys, are seldom proper for the purpose the following season after being planted out, a supply of young plants should be annually raised. And though this is mostly done by offsets, as being the quickest mode, the plants raised from seed are always stronger; the

stalks rise higher, and produce a great number of flowers, especially where good seeds can be procured.

In the fifth sort, especially with the double variety, the parting their roots should be annually performed in the autumn, otherwise the plants are apt to degenerate to single, and the soil should not be too light or rich in which they are planted, as in either of these cases they degenerate. In a strong fresh loam their flowers are in the greatest perfection.

The broad-leaved sort is also easily propagated by seeds, which it furnishes in great plenty.

In all these sorts, when not sown in the places where they are to remain, the plants should be transplanted into such situations, in the beginning of the autumn, as by that means they flower much better.

The seventh and eighth kinds are increased by seeds, which should be sown in the spring, on beds of common earth, keeping them clean from weeds till the following autumn; when they may be transplanted into the borders or other parts. And as the plants in the first of these sorts perish the second year, young ones should be annually raised.

The latter of these kinds are mostly sown in patches in the borders or clumps, among other hardy annuals, at the above period; but if sown in autumn the plants grow much taller, and flower much earlier.

The ninth sort is propagated by planting the offsets from the roots in the beginning of the autumn, in beds, or other places, where they are to remain. And the tenth species may be increased by planting the cuttings of the shoots in pots of light earth, and plunging them in the hotbed of the stove.

The eleventh kind is raised from seed, which should be sown in April in a moist shady situation, the plants being thinned out to five or six inches distance. The roots are ready for use about the beginning of autumn. It requires to be sown annually.

All the hardy flowering sorts are highly ornamental in the borders of pleasure-grounds and other parts, as they continue long in flower. And the tender kinds afford variety in the greenhouse.

2. CREPIS BARBATA.

YELLOW HAWKWEED.

THIS genus comprises plants of the herbaceous ornamental annual kind. Bastard Hawk-weed.

It belongs to the class and order *Syngenesia Polygamia Æqualis*, and ranks in the natural order of *Composita Semiflosculosa*.

The characters are: that the calyx is common double: exterior, very short, spreading, deciduous: interior ovate, simple, furrowed, permanent: scales linear, converging: the corolla is compound imbricate, uniform: corollets hermaphrodite, very many, equal: proper one-petalled; ligulate, linear, truncate, five-toothed: the stamina consist of five capillary filaments, very short: anther cylindric, tubular: the pistillum a somewhat ovate germ: style filiform, length of the stamens: stigmas two, reflex: there is no pericarpium: calyx roundish: the seed solitary, oblong, fusiform, sometimes columnar: down hairy, generally stipitate: the receptacle naked, with cells or pits.

The species cultivated are: 1. *C. barbata*, Spanish bearded Crepis, or Purple-eyed Succory Hawk-weed; 2. *C. rubra*, Purple Crepis.

The first is an annual plant, putting out leaves next the root, nine inches in length, and almost two broad in the middle, of a light green colour: the stems are a foot and half high, dividing into many branches, having leaves of the same form with the others, but smaller and sessile: the flowers are produced at the ends of the branches, and of a yellow colour, with a purplish base. It flowers in June; and is a native of the South of Europe.

There are varieties, with deep yellow flowers, and with sulphur-coloured flowers inclining to white, each having a dark purple base.

The second species has also an annual root; the root-leaves many, lanceolate, and deeply jagged. From these the stalks arise, which are a foot and half high, dividing into many slender branches, each terminated by one large flower of a red colour. It is a native of Italy.

Culture.—These, like other annuals of the hardy kind, must be raised by sowing the seeds in either the autumn or spring; or at both periods, where they are required to flower for a great length of time, in patches, in the clumps, borders, or other parts, where they are to remain, six or seven in each, covering them in lightly. When the plants have attained six or seven inches in growth, they should be thinned out to three or four in each patch, and be kept free from weeds.

They succeed in most soils and situations, having a pleasing effect in their flowers, in the fronts and other parts of the borders and clumps of ornamented grounds.

3. CONVOLVULUS TRICOLOR.

SMALL BLUE CONVOLVULUS.

THIS genus contains several plants of the herbaceous trailing annual and perennial kinds.

It belongs to the class and order *Pentandria Monogynia*, and ranks in the natural order of *Campanaceæ*.

The characters are: that the calyx is a five-parted perianthium, converging, ovate, obtuse, very small, permanent: the corolla is one-petalled, bell-shaped, spreading, large, plaited, obscurely five-lobed: the stamina have five subulate filaments, shorter by half than the corolla: anthers ovate, compressed: the pistillum is a roundish superior germ: style filiform, length of the stamens: stigmas two, oblong, broadish: the pericarpium is a capsule enwrapped by the

calyx, roundish, two-celled, one, two, or three-valved (commonly three-celled, seldom two or four-celled: partition alternate with the valves): the seeds in pairs, roundish (one or two seeds in each cell, sometimes abortive, few with a twisted embryo).

The species mostly cultivated are: 1. *C. purpurea*, Purple Convolvulus, or Convolvulus Major; 2. *C. tricolor*, Three-coloured Trailing Convolvulus, or Convolvulus Minor; 3. *C. nil*, Anil, Blue or Azure Convolvulus; 4. *C. canariensis*, Canary Evergreen Convolvulus; 5. *C. cenorum*, Silver-leaved Convolvulus; 6. *C. batatas* Tuberous-rooted Convolvulus, or Spanish Potatoes.

The first is an annual plant, that rises on support to the height of ten or twelve feet. In its native situation it sends out long branches, which twist about the trees, and rise to a great height. The leaves are smooth, heart-shaped, ending in long points; the ears at the base are large and rounded, and the petioles long and slender. The peduncles are long, each sustaining three purple-coloured flowers. It flowers from the end of June till destroyed by the frost. It is a native of America.

It is usually known in garden-culture by the name of *Convolvulus Major*.

There are varieties, with deep purple flowers, with white flowers, with red flowers, and with whitish blue flowers.

The second species is an annual plant, with several thick herbaceous stalks, about two feet long, not twining, but bending towards the ground, upon which many of the lower branches lie prostrate. The leaves are likewise sessile. The peduncles come out just above the leaves at the same joint, and on the same side; they are about two inches long, each sustaining one large open bell-shaped flower, of a fine blue colour, with a white bottom, varying to pure white, and sometimes beautifully variegated with both colours. The white flowers are succeeded by white seeds; but in the blue ones they are dark-coloured. It is a native of Barbary, &c. commonly known in garden-culture under the title of *Convolvulus Minor*.

The third is also an annual plant, rising with a twining stalk eight or ten feet high. The leaves are woolly, ending in sharp points and

on long petioles. Each peduncle sustains two flowers of a very deep blue colour, whence its name of *Anil* or *Nil*.

It is a beautiful plant; and it flowers all the latter part of the summer. It is a native of America.

The fourth species has strong fibrous roots. The stems are woody, branched, growing twenty feet high, and more when supported. The flowers are axillary, several on one peduncle, for the most part of a pale blue colour, but sometimes white. It flowers in June, July, and August, and sometimes ripens seeds here. It is a native of the Canary Islands.

The fifth has upright, shrubby stems, about three feet high. The leaves are lanceolate, blunt, silky, placed closely on every side the stem; they are near two inches long, and a quarter of an inch broad. The flowers are produced in clusters at the top of the stem, sitting very close; they are of a pale rose-colour, and come out in June and July, but do not perfect seeds in this climate.

The sixth species has a round perennial stem, hispid, prostrate, creeping, putting forth scattered, oblong, acuminate tubers, purple or pale-coloured on the outside. The leaves are angular, on long petioles. The flowers are purple, lateral, large, three or thereabouts together, on upright peduncles. It is a native of both Indies, &c.

Culture.—All the annual kinds are easily raised, by sowing the seed in the early spring months in patches, in the places where they are to flower, four or five seeds in each, half an inch deep. When the plants are an inch or two high, they should be thinned out, so as to leave but two or three of the best in each patch, managing them afterwards as other plants of similar growth.

The perennial species, which are tender, are mostly increased by layers from the young shoots in the spring, which take root freely in three or four months: cuttings of the young shoots also grow freely in a shady border when lanted during the summer months. Suckers taken from the root also make good plants when planted in the same way. They should be kept in pots of rich earth, and managed in the same way as geraniums, myrtles, and other similar plants.

The Tricolor or Minor *Convolvulus* may either be suffered to trail upon the ground, according to its natural growth, or tied up to sticks: but the other annual species and varieties, being of the twining or running kind, should have tall sticks to climb upon, on which they will rise several feet in height, flowering all the way, and appearing highly ornamental.

The perennial sorts are elegant plants for the greenhouse collection, and deserve the attention of those who can preserve them during the winter season.

The last species may be raised by planting the roots, either whole or divided, in a warm border, in the early spring months, where they will send up stalks, and flower in the autumn; but to have them in greater perfection, they should be planted in a slender hot-bed, covered with a frame and glasses during bad weather, by which means they flower earlier, and often form many tubers at the joints. They are chiefly planted for the sake of variety.

PLATE XV.

1. CHELONE OBLIQUA.

RED-FLOWERED CHELONE.

THIS genus comprehends plants of the flowery herbaceous perennial kind.

It belongs to the class and order *Didynamia Angiospermia*, and ranks in the natural order of *Personatae*.

The characters are: that the calyx is a one-leafed, five-parted, very short, permanent perianthium: divisions erect and ovate: the corolla monopetalous and ringent: tube cylindric, very short: throat inflated, oblong, convex above, flat beneath: border closed, small: upper lip obtuse, emarginate; lower almost equal to the upper, very slightly trifid: the stamina consist of four filaments, hid beneath the back of the corolla; the two side ones a little longer: the anthers incumbent: the rudiment of a fifth filament, like the point of a dagger, between the upper pair of stamens: the pistillum is an ovate germ: style filiform, situation and length of the stamens: the stigma is obtuse: the pericarpium is an ovate capsule, two celled, longer than the calyx: the seeds very many, roundish, surrounded with a membranous rim.

The species cultivated for ornament are: 1. *C. glabra*, White Smooth Chelone; 2. *C. obliqua*, Red Oblique-leaved Chelone; 3. *C. hirsuta*, Hairy Chelone; 4. *C. penstemon*, Forking Chelone.

The first has a pretty thick jointed root, which creeps under ground to a considerable distance, sending up smooth channelled stalks, which rise about two feet high, with two leaves at each joint, standing opposite without foot-stalks; these are three inches and a half long, and about three quarters of an inch broad at their base,



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Chelone obliqua
1 Red flowered Chelone

Colchicum autumnale
2 Autumnal Crocus

Catananche cerulea
3 Blue Catananche

where they are broadest, diminishing gradually to a sharp point; they have small serratures on their edges, which scarcely appear. The flowers grow in a close spike at the end of the stalks; are white, and almost like those of the Foxglove. It is a native of North America.

According to some, it varies with white flowers, with rose-coloured flowers, with red flowers, and with purple flowers.

In the second species, the roots do not creep so far as those of the first: the stalks are stronger, the leaves much broader, and oblique; they are deeply sawed on their edges, and stand upon short foot-stalks; the corolla is of a bright purple colour, and consequently makes a finer appearance than the above sort. It is a native of Virginia.

The third species resembles the first; but the stalks and leaves are very hairy, and the flower is of a purer white. It is a native of New England.

Some assert this to vary with white flowers, with blue flowers, with red flowers, and with purple flowers.

The fourth has a cylindric, pubescent, upright stem, a foot and half high, putting out several side branches: the leaves are oblong-lanceolate, ending in a point: the flowers in short loose spikes from the divisions of the stalks, and of a purple colour. It is a native of North America.

They all flower in the autumn, from September to November.

Culture.—The mode of propagation in the three first species is by the roots, which multiply easily, being parted in autumn, or early in spring, and planted where they are to remain: but the fourth sort must be raised annually from seed, by sowing it in autumn as soon as perfectly ripened.

The plants rise the following spring, and may be planted out in the borders during the summer months. They are hardy plants, and succeed in most soils and situations.

All these plants have a very ornamental effect for some time in autumn, after the principal bloom of most others is over; and, from being of different colours, produce much variety when planted in the borders of pleasure-grounds.

2. COLCHICUM AUTUMNALE.

AUTUMNAL CROCUS.

THIS genus comprehends plants of the perennial flowering bulbous-rooted kind.

It belongs to the class and order *Hexandria Trigynia*, and ranks in the natural order of *Spathaceæ*.

The characters are: that there is no calyx (except scattered spathes): the corolla six-parted: tube angulated, rooted; divisions of the border lance-ovate, concave, erect: the stamina consist of six subulate filaments, shorter than the corolla: anthers oblong, four-valved, incumbent: the pistillum is a buried germ within the root: styles three, thread-form, length of the stamens: stigmas reflex, channelled: the pericarpium is a three-lobed capsule connected internally by a suture, obtuse, three-celled, sutures gaping inwardly: the seeds many, nearly globular, and wrinkled.

The species cultivated are: 1. *C. autumnale*, Common Meadow Saffron; 2. *C. montanum*, Mountain Meadow Saffron; 3. *C. variegatum*, Variegated Meadow Saffron.

The first has a bulbous root, about the size and shape of the tulip, but not so sharp-pointed at the top; the skin or cover is also of a darker colour: these bulbs are renewed every year; for those which produce the flowers decay, and new roots are formed above: the flowers come out in autumn; these arise with long slender tubes from the root, about four inches high, shaped like those of the saffron, but larger: the number of flowers is generally in proportion to the size of the roots, from two to seven or eight: in March the green leaves appear, these are commonly four to a full-grown root; they are folded over each other below, but spread open above ground, standing cross-ways: they are of a deep green, and when fully grown are five

or six inches long, and one and a half broad. The seed-vessel comes out from between the leaves in April, and the seeds ripen in May, after which the leaves soon decay. It is a native of most parts of Europe.

There are varieties, with white flowers; with striped flowers; with broad leaves; with striped leaves; with many flowers; with double purplish flowers; with double white flowers; with many white flowers. The double sorts are chiefly cultivated in the garden.

The second species has a smaller root, with a darker coat: the leaves come up soon after the flowers decay, and continue green all winter; long, narrow, and spread on the ground, decaying in June: the flowers are of a reddish purple colour, and appear from August to September. It is a native of Spain, &c.

In the third the leaves are smaller than those of the common sort, for the most part three in number, and of a paler and fresher green colour, lying close upon the ground, broad at the bottom, a little pointed at the end, waved about the edges: the root is not so large as that of the common sort: the flowers are smaller, but very beautiful, whitish, with deep blue or purple spots. It is rather tender, and blows about October or November. It is a native of the Greek islands.

Culture.—These plants are increased by dividing the bunches of their roots at the time their leaves decay, in the latter part of the summer; as from the latter end of June till the middle of the following month, planting the separated bulbs or off-sets to the depth of about three inches.

They are sometimes planted in beds, in rows at eight or ten inches asunder; but they may be dispersed in the fronts of borders and clumps with success.

It is of advantage to take up and divide the bunches of root-bulbs every two or three years.

New varieties may be raised from seed sown in boxes, or large pots, in autumn, covering it a quarter of an inch deep, and placing them in a warm situation till spring, when the plants will appear, which should have only the morning sun during summer, giving wa-

ter in dry weather; and in the second summer, when their leaves decay, planting them out to flower, either in beds, or other methods.

They are of a hardy nature, and produce a fine effect, by their curious growth, as well as flowers, in the autumn and winter seasons.

3. CATANANCHE CÆRULEA.

BLUE CATANANCHE.

THIS genus contains a plant of the herbaceous perennial flowery kind. Candia Lion's-foot.

It belongs to the class and order *Syngenesia Polygamia Æqualis*, and ranks in the natural order of *Compositæ*.

The characters are: that the calyx is common imbricate, turbinate; leaflets very many, loosely incumbent, acute, scariose; the squamule ovate-acuminate, concave, lax, glossy and permanent: the corolla is compound, generally imbricate, uniform; corollets hermaphrodite, very many; the exterior ones longer.

Proper monopetalous, ligulate, linear, truncate, five-toothed: the stamina consist of five capillary filaments, very short: the anthers are cylindric, and tubular: the pistillum is an oblong germ: the style filiform, length of the stamens: the stigma bifid and reflex: there is no pericarpium: the calyx unchanged: the seeds solitary, turbinate-ovate: down from a five-awned calycle: the receptacle is chaffy.

The species chiefly cultivated is *C. cærulea*.

It is perennial, sending out many long, narrow, hairy leaves, which are jagged on their edges. Between the leaves the flower-stalks come out, which are in number proportioned to the size of the plant; as from an old thriving root there are frequently eight or ten, and young plants seldom send out more than two or three. These stalks rise near two feet high, dividing into many small branches upward,

with leaves like those below, but smaller, and have few or no jags on their edges; each of the peduncles is terminated with single heads of flowers, of a blue colour, having a dry, silvery, scaly calyx.

It is a native of the south of Europe, flowering from July to October.

There is a variety with double flowers.

Culture.—It is increased by sowing the seeds in the early spring, on the borders where the earth is light: the plants when sufficiently strong may, some of them, be removed into pots; but they flower best when left where sown. The double sort is best increased by slipping the roots and planting them out either in the early autumn or spring seasons; but in this way the roots should not be divided into too small parts, as that prevents their sending up a sufficient number of stalks for flowering.

These are very ornamental plants for the borders or clumps, where sufficiently dry, warm, and protected, as they continue several years.

Some plants may likewise be preserved in pots, to set out in assemblage with other potted plants.

PLATE XVI.

1. CONVALLARIA MAJALIS.

LILY OF THE VALLEY.

THIS genus contains plants of the hardy herbaceous perennial flowery kind. Lily of the Valley, and Solomon's Seal.

It belongs to the class and order *Hexandria Monogynia*, and ranks in the natural order of *Sarmentaceæ*.

The characters are: that there is no calyx: the corolla is monopetalous, bell-shaped, smooth: border six-cleft, obtuse, open reflected: the stamina consist of six subulate filaments, inserted into the petal, shorter than the corolla: anthers oblong erect: the pistillum is a globose germ: style filiform, longer than the stamens: stigma obtuse, three-cornered: the pericarpium is a globose berry, three-celled, before maturity spotted: the seeds are solitary or in pairs, and roundish.

The species cultivated are: 1. *C. maialis*, Sweet-scented Lily of the Valley; 2. *C. polygonatum*, Single-flowered Solomon's Seal; 3. *C. multiflora*, Many-flowered Solomon's Seal; 4. *C. verticillata*, Narrow-leaved Solomon's Seal; 5. *C. racemosa*, Cluster-flowered Solomon's Seal.

The first has a perennial root, with numerous round fibres transversely wrinkled, creeping horizontally just below the surface to a considerable distance. The whole plant is smooth. Four or five alternate, oblong, blunt, slightly nerved, purplish scales surround and bind together the base of the leaves and stalk. There are two leaves, petioled, elliptic or lanceolate, pointed at each end, from four to five inches long, and near an inch and half broad in the middle, quite entire, upright, smooth, nerved, one usually larger, of a



Painted by Syd Edwards
Convallaria majalis
 1 Lily of the Valley.

London Published April 11 1806. by G. Kearsley Fleet Street

Engraved by F. Santon.

Cerinthe major
 2 Great Honey wort

bright green colour; petioles clasping, round, the outer dotted with red, and tubular, to receive the inner, which is solid. Scape lateral, the length of the leaves, upright, smooth, semi-cylindrical. The flowers from six to eight, in a raceme, nodding, white, and fragrant. It is a native of Europe; flowering in May. Hence it is termed May, and sometimes Conval Lily.

There are varieties with narrower leaves, with broader leaves, with double variegated flowers; with double reddish or red flowers; with double white flowers.

The second species has a twisted root, full of knot: on a transverse section of it characters appear that give it the resemblance of a seal, whence the name of Solomon's Seal. The stem is from a span to near a foot in height, of a harder texture than the third species: the leaves are simple, inclined, angular, twisted, sometimes three-edged, four inches long and one broad, oval-lanceolate, half embracing the stem, glaucous underneath, frequently bending down on one side. The flowers sweet-scented, generally solitary, but sometimes two, on long axillary peduncles, much larger than in the third sort. The berries are black. It is a native of the North of Europe.

It varies with double flowers, &c.

The third has a round stem, from eighteen inches to two or three feet high, erect and unbranched: leaves usually bent upwards, and to one side, underneath glaucous, five inches long and two broad; the lower ones oval, the upper oval-lanceolate, half embracing the stem. The flowers are several together (from two or three to seven or eight), axillary, on branched compressed peduncles. The berries round, of a blackish blue colour, purple and red.

This is a larger plant than the second sort. It is a native of the North of Europe.

There are varieties with double flowers.

The fourth sort has a perennial root, toothed: the stem is simple, angular, striated, erect, eighteen inches high. The leaves narrower than the other sorts, lanceolate, entire, smooth, three or four in a whorl, three or four inches long, and from half an inch to an inch in breadth, bright green, and glaucous beneath. The peduncles are

axillary, solitary, branched, pendulous, and from two to six-flowered. The flowers of a greenish white colour. The berries violet or deep red. It flowers in June; and is a native of the North of Europe, &c.

The fifth species has the stems two feet high, unbranched, with many oblong leaves embracing them at the base, resembling the leaves of Plantain. The flowers are small and white, and are produced in single spikes at the top, and are succeeded by small red berries, about the same size as in the first sort. It flowers the beginning of June, and is a native of Virginia, &c.

Culture.—In all these sorts of plants their culture may be effected by parting their roots, either in the autumn or spring months, but the former is the better season, planting them out where they are to remain. They afterwards only require to be kept free from weeds, and removed every three or four years, according as their roots may be increased.

As they succeed best in rather shady situations, they are well suited for affording variety and ornament in shady places, such as the borders or the sides of walks in woods and wilderness parts of pleasure-grounds, producing considerable variety by the singularity of their growth and the beauty of their foliage and flowers. They also grow well in many other situations that are more open.

2. CERINTHE MAJOR.

GREAT HONEY-WORT.

THIS genus furnishes plants of the hardy, ornamental, flowering, annual kind. The Honeywort.

It belongs to the class and order *Pentandria Monogynia*, and ranks in the natural order of *Asperifoliæ*.

The characters are: that the calyx is a five-parted perianthium; divisions oblong, equal, permanent: the corolla is monopetalous and

bell-form: tube short, thick: border tube-bellied, rather thicker than the tube: mouth five-cleft; throat naked, pervious: the stamina consist of five, subulate filaments, very short: anthers acute, erect: the pistillum is a four-parted germ: style filiform, length of the stamens: stigma obtuse: there is no pericarpium: calyx unchanged the seeds two, bony, glossy, sub-ovate, outwardly gibbous, and bilocular.

The species cultivated is *C. major*, Great Honeywort.

It rises with stems eighteen inches high and more, round, smooth, branching, and leafy: the leaves are glaucous, becoming blue by age, smooth, without prickles, but ciliated about the edge, and dotted with white: the branches are leafy and nodding; with flowers among the leaves, hanging on long peduncles: the tube of the corolla is yellow, but the border purple. It is a native of Italy, flowering in June and the two following months.

There are varieties with smooth leaves and purple flowers, and with prickly leaves and yellow flowers.

Culture.—The plants are raised by sowing the seeds annually in the autumn or early spring months in patches in the borders, clumps, or other parts. The autumn sowings should be made as early as possible. They also rise from the self-sown seeds. They should be managed as other hardy annuals. These are plants proper for being planted out about the apiary, or in the small beds or borders.

PLATE XVII.

1. CHELIDONIUM GLAUCUM.

YELLOW-HORNED POPPY.

THIS genus furnishes a plant of the hardy herbaceous flowery kind.

It belongs to the class and order *Polyandria Monogynia*, and ranks in the natural order of *Rhoeadeæ*.

The characters are: that the calyx is a two-leaved roundish perianthium: leaflets subovate, concave, obtuse, caducous: the corolla has four roundish flat petals, spreading, large, narrower at the base: the stamina consist of very many filaments (thirty), flat, broader at top, shorter than the corolla: the anthers are oblong, compressed, obtuse, erect, and twin: the pistillum is a cylindric germ, the length of the stamens: there is no style: the stigma headed and bifid: the pericarpium is a cylindric silique, sub-bivalve: the seeds very many, ovate, increased, and shining: the receptacle linear, between the valves of a kind of circumambient suture, not gaping.

The species worthy of cultivation as an ornamental plant is *C. glaucum*, Sea Celandine, or Yellow-horned Poppy.

It has a strong stem: the root-leaves are pinnatifid, waved, variously lobed, and indented; pinnas gradually larger upwards; hairy on both sides: stem-leaves embracing, deeply indented, rough above, smooth beneath: the branches are dichotomous: the flowers are of a scarlet colour, and succeeded by long horn-shaped pods. The root, according to some, is annual, but others assert it to be perennial.

Culture.—These plants are raised from seed, which should be sown either in the autumn or spring where the plants are to remain;



Painted by S. Edwards

Engraved by G. Kneller, Pall Mall

Designed by F. W. Howden

2 *Chelidonium Glaucum*
Yellow Horned Poppy

1 *Cistus Ladaniferus*
Gum Cistus

or they may be raised in a seed-bed, and be afterwards planted out where they are to flower. Some seed should be sown annually, as the plants seldom continue longer than two years. It is hardy, and succeeds in almost any soil or situation.

The plants afford ornament and variety in the borders both from their flowery nature and the peculiarity of their long-horned pods.

2. CISTUS LADANIFERUS.

GUM CISTUS.

THIS genus affords plants of the shrubby evergreen kind. Rock Rose.

It belongs to the class and order *Polyandria Monogynia*, and ranks in the natural order of *Rotaceæ*.

The characters are: that the calyx is a five-leaved permanent perianthium: leaflets roundish, concave; of which two alternate ones are lower and smaller: the corolla has five petals, roundish, flat, spreading, very large: the stamina consist of numerous capillary filaments, shorter than the corolla: anthers roundish, small: the pistillum is a roundish germ: style simple, the length of the stamens: stigma flat, orbiculate: the pericarpium is a roundish capsule, covered with the calyx: the seeds numerous, roundish, and small.

The species are: 1. *C. populifolius*, Poplar-leaved Cistus, or Rock Rose; 2. *C. laurifolius*, Bay-leaved Gum Cistus; 3. *C. ladaniferus*, Spanish Gum Cistus; 4. *C. incanus*, Hoary Rock Rose, or Rose Cistus; 5. *C. halimifolius*, Sea Purslain-leaved Cistus; 6. *C. Monspelienensis*, Montpellier Gum Cistus; 7. *C. creticus*, Cretan Ladaniferous Cistus; 8. *C. albidus*, White-leaved Cistus; 9. *C. crispus*, Curled leaved Cistus; 10. *C. salvifolius*, Sage-leaved Cistus.

In this numerous genus there are other species that may equally deserve cultivation.

The first has a stiff, slender, woody stem, six or seven feet high, sending out many branches the whole length: these and the leaves are hairy; the calyxes also very hairy: but the branches and leaves, when further advanced, become naked: the leaves are large, of a light green colour, sessile, with many nerves: the flowers are produced at the ends of the branches, on naked peduncles: the corolla is white, and soon drops off; and the petals, according to Linnæus, are tinged with purple on their edges; the stamens yellow; and the calyxes, before they unfold, three-cornered in their appearance. It is a native of Portugal, flowering in June and July.

The second species rises with a strong woody stem, to the height of five or six feet, sending out many erect hairy branches: the leaves are lanceolate, acute, thick, dark green above, and white beneath, very glutinous in warm weather; but, according to Linnæus, wrinkled, green on both sides, and scarce visibly hairy; the petioles becoming purple at the base: the flowers are produced at the ends of the branches upon long naked peduncles, branching on their sides into smaller ones, each sustaining one large white flower with a hairy calyx. It flowers in June and July, and is a native of Spain.

The third grows to the height of five or six feet, with a strong woody stem, sending out many hairy branches: the leaves are smooth on their upper side, but veined on their under, on short foot-stalks which join at their base, where they form a sort of sheath to the branch: the corolla is white, the size of the officinal Poppy: the germ has ten swellings: stigma sessile, without any style. It is a native of Spain, &c. It flowers from June till August.

Mr. Curtis objects to the propriety of the name *ladaniferus*, as it is not the plant from which *ladanum* is produced, though in a warmer climate it affords a gum of a similar kind.

There are varieties with large white flowers, and a purple spot in the middle of the petal, and with entire white flowers.

The fourth species has a shrubby stem, branching to a large bushy head, three or four feet high: the branches villose; the leaves are not at all nerved, ending in a point, a little flexuose in the disk, ending at the base in coalescent sheathing petioles, or rather obovate-

spatulate; the lower more connate, and in a manner sheathing: the calyxes hairy, with subcordate leaflets: the petals purple, emarginate or obcordate, quite entire and concave. It is a native of Spain.

The fifth species is an upright shrub, three or four feet high: the branches are round, ash-coloured, angular at top, the younger ones dotted with yellow: the leaves are petioled, opposite, lanceolate, very white, scarcely soft, without veins, obtuse, flat, about an inch in length: the peduncle terminating, compound, white; supporting three or four bright yellow flowers, which appear in June and July. It is a native of Portugal.

There are varieties with numerous leaves and sulphur-coloured flowers, and with yellow flowers with purple spots in their bases.

The sixth rises with a slender stem, from three to four feet high, sending out many hairy branches from the bottom upwards: the leaves are very dark green, in warm weather covered with a glutinous sweet-scented substance: the peduncles, which come out at the ends of the branches, are long, naked, and sustain many white flowers, rising above each other; their calyxes are bordered, and end in sharp points. It flowers from June to August, and is a native of Narbonne.

There is a variety with olive-shaped leaves and sulphur-coloured flowers.

The seventh species is branching, diffused, a foot and half high and more: the stem and branches round, and somewhat villose: the leaves from broad stem-clasping, petioled, first spatulate, then ovate or lanceolate, somewhat acute, wrinkled, sometimes waved, roughish, thickish, quite entire, viscid, closely set on both sides and round the edge with white hairs of different lengths, some simple, others branched or headed, scarcely visible to the naked eye: peduncles one-flowered, terminating the last leafy twigs, erect and villose: the flowers of a rose-purple colour: these appear in June and July, and the seeds ripen in September. It is a native of the Levant.

This is the species from which the drug called *ladanum* is procured.

The eighth has a shrubby stem, branching from bottom five or

six feet in height: much resembling the fourth, but differing in the branches being tomentose, not hairy: the leaves paler, soft, horizontal, sessile, by no means either petioled or sheathing, broad-lanceolate, mostly three-nerved: the flowers long from the branches, of a bright purple colour: it is a native of Narbonne, &c.

In the ninth, the branches are weak, slender, woody, spreading horizontally: it is seldom more than two or three feet in height: the peduncles and calyxes are covered with a thin wool: the flowers are of a purple or white colour, appearing in June and the following month. It is a native of Portugal.

The tenth has a slender, smooth stem, covered with a brown bark, never rising more than three feet high, and sending out many weak branches, spreading horizontally. The leaves are obtuse, without veins, not so soft as in many other species: the peduncles lateral, solitary, one-flowered, longer than the leaves: the corolla is white, and somewhat smaller than that of the other rock-roses. It flowers from June to August, and is a native of Italy, &c.

Culture.—All these sorts are capable of being either raised by seeds or cuttings in common earth, or on hot-beds; but the seed method produces the best plants. The seeds should be sown in the early spring, in a warm border near half an inch deep, and the plants will come up in six weeks; or, to render them more forward, in pots, and plunged in a moderate hot-bed. When the plants are of some growth, they should have the full air in mild weather, and frequent waterings, as well as occasional shade from the sun, while young; and when an inch or two high, some may be planted out separately in small pots, others in rich borders, occasional shade and water being given during summer. In autumn the potted plants should be removed to a frame, to have shelter from frost. Those in the full ground should also be shielded in frosty weather with mats. In spring, those remaining in the seed-bed should be planted out, and those in pots shifted into larger ones; to be continued another winter, and in the spring following be planted where they are to remain.

In the latter method, cuttings, five or six inches long, should be planted in beds of rich earth, occasional shade and water being

given. When well rooted, they should be removed into separate pots: but by being planted in pots in spring, and plunged in a hot-bed, they are rendered much forwarder. In other respects they require the same management as the seedlings.

These are beautiful evergreen shrubs, effecting a fine variety at all seasons, both from their leaves being of different figures, sizes, and shades of green and white, and their being very profuse in most elegant flowers, which though of short duration, there is a daily succession of new ones for a month or six weeks on the same plant; and when these different species are employed, they exhibit a constant bloom for near three months.

They are mostly hardy enough to prosper in the open ground in any dry soil; and if they have a sheltered situation it will be an advantage, as in open exposures they are rather subject to injury from very severe frost; for which reason a plant or two of each sort should be potted, to have shelter in winter in the green-house.

The second and fifth are the most tender sorts.

In shrubbery borders and clumps they should be placed towards the fronts, in assemblage with other choice shrubs of similar growth. All the sorts should be suffered to assume their own natural growth; the straggling branches being only cut in with a knife.

PLATE XVIII.

1. CRASSULA COCCINEA.

SCARLET-FLOWERED CRASSULA.

THIS genus contains plants of the succulent kind for the greenhouse and stove. Lesser Orpine, or Live-Ever.

It belongs to the class and order *Pentandria Pentagynia*, and ranks in the natural order of *Succulentæ*.

The characters are: that the calyx is a one-leafed perianth, five-cleft; divisions lanceolate, channelled-concave, erect, acute, converging into a tube, permanent: the corolla has five petals, claws long, linear, straight, converging, connected at the base with the ovate bractes at the border, reflex-expanding: nectaries five; each with a very small emarginate scale, annexed outwardly to the base of the germ: the stamina consist of five subulate filaments, length of the tube, inserted in the claws of the corolla: anthers simple: the pistillum has five germs, oblong, acuminate, ending in subulate styles the length of the stamens: stigmas obtuse: the pericarpium consists of five capsules, oblong, acuminate, straight, compressed, gaping inwards lengthwise: the seeds many and small.

The species are: 1. *C. coccinea*, Scarlet-flowered Crassula; 2. *C. perfoliata*, Perfoliate Shrubby Crassula; 3. *C. cultrata*, Sharp-leaved Crassula; 4. *C. punctata*, Dotted-leaved Crassula; 5. *C. nudicaulis*, Naked-stalked Crassula; 6. *C. orbicularis*, Starry Crassula.

There are several other species that may be cultivated.

The first has a reddish jointed stem, about three feet high, dividing at top into many irregular branches: the leaves so closely opposite, as to appear to be in four rows: the flowers at the ends of the



Painted by Svd. Edwards

Crasula coccinea
1 Scarlet flowered *Crasula*

London. Published June 1. 1806. by G. Kearsley Fleet Street.

Cytisus Laburnum
2 *Laburnum*

Engraved by E. Sangster

branches in close umbels, of a fine scarlet colour. It flowers in July and the following month.

The second species rises with an upright stem ten or twelve feet high, if it be not broken or injured, but requires support; the stems being slender, and the leaves very weighty: the latter are about three inches long, thick, succulent, pale green, acute, hollowed above, and having a convex ridge beneath: the flowers terminating in large clusters, of a whitish herbaceous colour, with short tubes, and the brim cut into five parts. The flower-stalk is thick and succulent, generally turning first downwards, then upwards again, somewhat in the form of a syphon. It flowers in July, but does not produce seeds in this climate.

The third has a weak succulent stalk, about two feet high, sending out many irregular branches: the leaves thick, plain above, convex beneath, deep green, the borders set with a few silvery hairs: the stalk which supports the flowers rises from the top of the branches, and is from four to six inches long, putting out several side branches, which grow erect; these are terminated by large clusters of small greenish flowers, which appear in June and the following month, but the flower never fully expands.

In the fourth species, the stems are very slender, full of joints, and trailing: the leaves thick, succulent, heart-shaped, connate, grayish, in a double row, hollow dotted: the stems are divided, grow about eight or nine inches long, and are terminated by clusters of small white flowers, sitting very close to the top: these appear in spring, and again in the latter part of summer.

The fifth never rises with a stalk, but the leaves come out close to the ground, forming a sort of head; they are smooth, somewhat hairy, set with excavated dots, succulent, taper, ending in points, and frequently put out roots. Out of the centre of these arises the flower-stalk, branching into two or three shoots at top, each terminated by clusters of greenish flowers, which do not open. It flowers in May, and sometimes again towards the latter part of summer.

The sixth species is a low perennial plant, having open spreading heads, very like those of some sorts of Houseleek, growing on the

ends of very slender trailing stalks, produced in plenty on every side the parent plant, as on the Childing Marigold. The flower-stalks arise from the centre of these heads; are naked, about four inches long, and terminated by close clusters of herbaceous flowers: the leaves are radical, forming roses, ovate, fleshy, gibbous, even, sharpish, ciliate backwards, with cartilaginous, very slender hairs: the root puts forth lateral threads, which are filiform and decumbent, forming runners at the end. It flowers sometimes in May, but usually in July and August.

Culture.—The first three sorts may be easily increased, by planting the cuttings of the stems and branches in the later spring and summer months, after having been exposed in a dry situation for a few days, to heal over the cut parts, in pots filled with sandy earth, plunging them in the bark-bed of the stove, or in a frame shaded from the sun. When well rooted, they should be removed into separate pots, and replaced in the same situations till fully established, when they may be removed into the greenhouse, where they should have a sunny situation in winter, and but little water.

The other species may be increased by planting the off-sets from the roots in the same manner as above.

As these are plants of a succulent nature, both in their stems, branches, and leaves, as well as of curious growth, they afford variety among collections of other plants of similar kinds. They are capable of bearing the open air in summer, in dry warm situations.

2. CYTISUS LABURNUM.

LABURNUM.

THIS genus contains plants of the hardy evergreen and deciduous flowering shrubby kinds.

It belongs to the class and order *Diadelphia Decandria*, and ranks in the natural order of *Papilionacea*.

The characters are: that the calyx is a one-leafed perianthium, bell-form, short, obtuse at the base: mouth two-lipped; upper-lip two-cleft, acuminate; lower three-toothed: the corolla is papilionaceous: standard ovate, rising upwards, sides reflex: wings the length of the standard, straight, obtuse: the keel somewhat belled, acuminate: the stamina consist of diadelphous filaments, (single and nine-cleft) rising upwards: anthers simple: the pistillum is an oblong germ: style simple, rising upwards: stigma obtuse: the pericarpium is an oblong legume, obtuse, attenuated at the base, stiff: the seeds few, kidney-form, compressed.

The species are: 1. *C. Laburnum*, Laburnum; 2. *C. sessilifolium*, Common Cytisus; 3. *C. hirsutus*, Hairy or Evergreen Cytisus.

The first has a large upright tree-stem, branching into a full-spreading head, from ten to twenty feet high, having smooth greenish branches, trifoliolate, oblong-oval entire leaves, on long slender foot-stalks; and from the sides of all the branches numerous yellow flowers collected in long spikes, hanging loosely downward; appearing in May. It is a native of Switzerland.

The varieties are: the Common broad-leaved; the Narrow-leaved; Long-spiked, having very long pendulous spikes of flowers; the Short-spiked, having short, roundish, thick spikes of flowers; and the Variegated-leaved Laburnum.

The second species rises with a woody stalk, putting out many branches, covered with a brownish bark: the leaflets are obovate, ternate, on very short petioles: the flowers in close short terminating racemes, of a bright yellow colour: it rises to the height of seven or eight feet, and becomes very bushy. It is a native of the South of Europe.

The third has a soft shrubby stalk, dividing into many branches, which grow erect, and frequently rise to the height of eight or ten feet: the stalks, branches, and leaves are very hairy; the leaves are ternate, ovate, and placed closely on the branches: the flowers come out from the side of the stalk in short racemes, and are of a pale yellow, appearing in June. It is a native of the South of Europe.

Culture.—These plants are all capable of being increased by seeds, and many of them by cuttings and layers.

In the first mode the seed should be sown, either on beds or where the plants are to remain, in the spring, as about March, being in the first mode, when of sufficient growth, transplanted into nursery rows, to remain till of a proper size for being planted in the situations where they are to grow. When sown where they are to remain, they only require to be kept perfectly free from weeds, and trimmed to one good plant in a place, giving the tender sorts the protection of mats during the severity of the winter season.

The trees of most of the sorts afford seeds in abundance in the autumn.

The cuttings should be made from the young shoots ten or twelve inches in length, and planted out in a rather moist, shaded situation, either in the early autumn or spring months, in rows twelve or eighteen inches apart, and eight or ten in the rows. They mostly become well rooted in the course of twelve months; and should then be kept perfectly clear of weeds.

Layers may be laid down either in the summer, autumn, or spring seasons; and when the plants are well rooted they should be taken off and planted out in nursery-rows, as described above.

In the nursery they only require to be preserved from the injury of weeds, and to have the land dug well between the rows annually in the autumn, till they are removed; being suffered to take their natural growth in a great measure.

Most of the sorts are hardy, and succeed well in almost any soil or situation. The third sort should have a dry soil and sheltered situation, as it is liable to be injured by frost. It may also be planted in pots, and placed in the green-house during the winter.

They are all very ornamental plants for the borders, clumps, and other parts of ornamented grounds, affording much variety by their numerous beautiful bunches of flowers. The large sorts should be placed towards the back parts, and those of less growth towards the fronts and more conspicuous parts.



Painted by S. Edwards

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Engraved by F. Sawlin

Cyclamen persicum
Persian Cyclamen

Crocus Vernus
Spring Crocus

PLATE XIX.

1. CYCLAMEN PERSICUM.

PERSIAN CYCLAMEN.

THIS genus contains plants of the low, herbaceous, flowery, perennial tuberous-rooted kind. Snow-Bread.

It belongs to the class and order *Pentandria Monogynia*, and ranks in the natural order of *Preciæ*.

The characters are: that the calyx is a half-five-cleft perianthium, roundish, permanent: divisions ovate: the corolla one-petalled: tube somewhat globose, twice as large as the calyx, small, nodding: border bent upwards, five-parted, very large: divisions lanceolate: neck prominent: the stamina consist of five very small filaments in the tube of the corolla: anthers straight, sharp, in the neck of the corolla, converging: the pistillum is a roundish germ: style filiform, straight, longer than the stamens: stigma sharp: the pericarpium is a globose berry, one-celled, gaping five ways at the top, covered with a capsular shell: the seeds very many, somewhat ovate, cornered: the receptacle ovate and free.

The species cultivated are: 1. *C. Europæum*, Common Cyclamen; 2. *C. Coum*, Round-leaved Cyclamen; 3. *C. Persicum*, Persian Cyclamen; 4. *C. hederæfolium*, Ivy-leaved Cyclamen.

The first has a tuberous root, oblatly spheroidal, white within, brown without; from which proceeds, within the ground, a very short stem, and from that the leaves and one-flowered peduncles or scapes: the leaves are kidney-form, roundish, very blunt, slightly crenulate, deep green, and spotted above; beneath commonly red purple, smooth, on very long round red petioles: the flowers drooping, sweet-scented, and purple. It is a native of Austria.

The second species has a round, solid, tuberous root, and low naked stem, furnished with plain orbicular leaves, and short weak petioles; the under side of the leaves very red in the beginning of winter, but that colour goes off in the spring; the upper side smooth, of a lucid green, spreading flat open: the flowers are very bright purple, appearing in the middle of winter. It is a native of the South of Europe.

There are varieties with purplish flowers, and with flesh-coloured flowers.

In the third, the leaves are stiff, on strong fleshy petioles, near six inches long, of a purple colour, as are also the veins of the leaves underneath; but the upper side is veined and marbled with white: the corolla is pure white, with a bright purple bottom. It flowers in March and April, and the seeds ripen in August.

There are varieties with entire white sweet-scented flowers, and with veined and marbled leaves, with pale purple flowers, and bright red or purpled bottoms.

The fourth has a large, orbicular, compressed root: the leaves are numerous on petioles six or seven inches long, marked with black in the middle: the flowers appear before them on long fleshy scapes about August; soon after which the leaves come out, continue growing all the winter and spring till May, when they begin to decay. After the flowers are fallen, the peduncles twist up like a screw, inclosing the germ in the centre, and lie close to the ground among the leaves, which serve as a protection to the seed, which ripens in June. It is a native of Italy.

There are varieties with white and with purplish flowers.

Culture.—These plants are all capable of being increased by sowing the seeds in large wide pots, tubs, or boxes, filled with good light mould, mixed with a little sand, in the latter end of summer or beginning of autumn, covering them to the depth of about half an inch, exposing them at first in situations that have only the morning sun, but afterwards removing them into more warm and sunny exposures; and as the winter approaches, placing them under the protection of frames and glasses, or some other contrivance, fresh air

being freely admitted when the weather is mild and suitable. In this way some plants of the hardy sorts will appear about the beginning of the following year, and of all the kinds in the spring. During the beginning of summer, when the weather is hot and dry, slight waterings should be given occasionally; but when their leaves begin to decline in the latter end, they should be removed to an eastern aspect, with only the morning sun, and, as their roots are then in an inactive state, have little or no water. They should be kept free from weeds in the autumn, and have some fresh mould applied over the surfaces of the pots or tubs in which they grow, protecting them again in the winter as before, continuing the same management as in the preceding year, till the decline of the leaves in the latter part of the summer, when they should be carefully taken up, and the more hardy sorts planted out in the situations where they are to remain, as those of a warm, dry border; and the tender kinds removed into pots, to have protection from frosts in winter.

As the Persian sort is the most impatient of cold and moisture, it should constantly be kept in pots filled with light sandy earth, or a compost of loam and lime-rubbish, and be placed in such situations in the frame or green-house as to have as much free air as possible in mild weather in winter. Some of the sorts will generally begin to flower in the course of one or two years after being thus planted out; the first kind often about Christmas, which is succeeded by those of the Persian sort.

The plants in the borders should have the protection of mats or other contrivances, in severe winters, as by such means they produce a greater abundance of flowers, and these more fair and beautiful.

The varieties of the different sorts are best preserved and continued by planting pieces of the divided roots, immediately after they have been separated in the summer season, in pots, tubs, or other places, as above: but in this mode they do not increase in an expeditious manner.

These plants are very ornamental, though of small growth, in their variegated large foliage, as well as their elegant flowers, which in some of the sorts are fragrant, as those of the spring kinds.

The hardy sorts produce a fine effect in the fronts of borders or clumps in pleasure-grounds, and those of the tender kinds among other potted plants in the green-house.

The proper period of removing these plants for any purpose is about the beginning of June, when the leaves decline; but they should not be often removed, as the roots do not lose their fibres as in some others of the tuberous and bulbous rooted kinds.

2. CROCUS VERNUS.

SPRING CROCUS.

THIS genus comprehends plants of the low-flowering ornamental bulbous-rooted perennial kind.

It belongs to the class and order *Triandria Monogynia*, and ranks in the natural order of *Ensatae*.

The characters are: that the calyx is a one-leafed spathe: the corolla a simple, long tube: border six-parted, erect: divisions ovate-oblong, equal: the stamina consist of three subulate filaments, shorter than the corolla: anthers sagittate: the pistillum is an inferior, roundish germ: style filiform, length of the stamens: stigmas three, convolute, serrate: the pericarpium is a roundish capsule, three-lobed, three-celled, three-valved: the seeds several, and round: the corollets six-parted, equal: stigmas convolute.

The species are: 1. *C. officinalis*, Autumnal or Common Official Crocus; 2. *C. vernus*, Spring Crocus.

The first has a roundish bulbous root, as large as a small Nutmeg, a little compressed at the bottom, and covered with a coarse, brown, netted skin; from the bottom of the bulb many long fibres are sent out, which strike pretty deep into the ground; the flowers come out at the upper part of the root, which, with the young leaves, whose tops just appear, are closely wrapped about by a thin spatha or sheath, which parts within the ground, and opens on one side: the

tube of the flower is very long, arising immediately from the bulb, without any foot-stalk, and at the top is divided into six ovate obtuse segments, which are equal, and of a purple blue colour. In the bottom of the tube is situated a roundish germ, supporting a slender style, which is not more than half the length of the petal, crowned with three oblong golden stigmas, spreading asunder each way, which is the Saffron. It flowers in October, and the leaves continue growing all winter; but it never produces seeds in this climate. It is supposed by Martyn to be a native of Asia.

The chief varieties are: the Sweet-smelling with a smaller, and more compressed root, having a deep blue colour, but varying to a sky-blue: the Mountain, which has a flower of a paler blue colour; the Many-flowering blueish, with numerous sky-blue flowers; and the Small-flowering, having a small deep blue flower.

The second species has a pretty large compressed bulb, covered with a light brown, netted skin, from which arise four or five leaves of a purplish colour on their lower parts: from among these come out one or two flowers, sitting close between the young leaves, never rising above two inches high, and having an agreeable odour. From the centre of the tube a slender style proceeds, which is crowned by a broad flat stigma of a golden colour. After the flower is past, the germ pushes out of the ground. In the wild state, it is most commonly white, with a purple base. It is a native of Italy, &c.

The chief varieties are: the broad-leaved purple variegated, which has a flower of a deep blue colour, and striped; the broad-leaved plain purple; the broad-leaved violet-coloured, or large deep blue; the white with a purple bottom; the broad-leaved white variegated; the broad-leaved with many violet-purple flowers striped with white; the broad-leaved ash-coloured; the broad-leaved large yellow; the broad-leaved small pale yellow; the broad-leaved small yellow striped with black; the narrow-leaved small brimstone; and the narrow-leaved small white.

In modern catalogues, many other varieties of different colours

are introduced' as blue and purple, yellow and white, or striped. New ones are also continually imported from Holland. The usual varieties at present in gardens are: the beautifully striped Scotch; the blue; the blue striped; the white; the yellow of several shades, larger and smaller; the yellow striped with black; the cloth of gold, &c.

Culture.—The culture in both these sorts is easily effected, by planting the bulbs or off-sets taken from the roots; the first sort in July, or the beginning of the following month, and the latter any time when the weather is open, from September to the beginning of April in the following year; but the more early it is performed, the stronger they flower; by means of a dibble or trowel, to the depth of about two inches, the ground being previously well dug over, and left some time to settle. They may be set either in beds by themselves in rows, at the distance of eight or nine inches, and six or eight inches apart, or in patches of five or six roots in each, on the fronts of the clumps, borders, or other parts of gardens and pleasure grounds, putting them in a varied manner, both in respect to the sorts, and the order in which they are planted.

Where the soils are tolerably dry, they may remain two or three years without being disturbed, but should then be taken up at the time the leaves decay, in order to separate the new bulbs or off-sets for further increase, as well as to new dig the ground. The larger bulbs should be separated from the small ones, and put up, each by themselves, in order to be planted at the proper season; the former in the above manner, and the latter in beds in rows six inches distant, to remain till they are of a proper size.

As the bulbs increase fast, a large stock may with care soon be provided. But when this is not practised, bulbs of the different species and varieties may easily be procured from the nursery and seeds-men.

In the culture of these plants, great injury is frequently done by trimming off the green leaves at the time the flowers decline, in

order to prevent litter; as by such means the future blow is rendered more weak and less beautiful.

Where new varieties are wanted, recourse must be had to the seed, which must be sown in the spring season, either where the plants are to remain, in a bed of light mellow earth, or in pots filled with the same sort of earth.

The first species is the plant which is cultivated in fields, and from the stigma of which the preparation known under the title of English Saffron is made.

PLATE XIX.*

1. DAHLIA PINNATA.

PURPLE DAHLIA.

2. DAHLIA CROCATA.

YELLOW DAHLIA.

THIS genus was established by the late Cavanilles, in honour of Dr. Andrew Dahl, a Swedish botanist, and the friend of Baron Alstræmer.

It belongs to the class and order *Syngenesia Polygamia Frustranea*, at least in this cold climate.

The stems die every winter, but the root is perennial and tuberos, not very dissimilar to that of the Artichoke.

Four species have been described.

1. *Pinnata*, pinnated as it is called, and figured by Cavanilles in his *Ic. Pl. v. 1. tab. 80*. It is also figured under this name in the 4th vol. of Andrews's *Bot. Repository*. In the *Annales du Mus. National Hist. Nat. v. 3*. M. Thouin calls this species *Purpurea*, but its colour varies from the common *Pinnata*, being very deep; and Mr. R. A. Salisbury suspects that this *Purpurea* of Thouin is the true *Rosea* of Cavanilles. A paler coloured variety of the *Pinnata*, the seeds of which were sent to Holland-House with the name of *Rosea* by Cavanilles, has been lately figured by Mr. Hooker in the *Paradisus Londinensis*, and described by the above-mentioned botanist, under the name of *Sambucifolia*: that it is not the true *Rosea* of Cavanilles, *Ic.* is unquestionable; for the leaves were simply pinnate, not bipinnate.

2. *Rosea*, Rose-coloured. It is so called and figured by Cava-



Painted by Syd. Edwards

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Engraved by F. Santon

1 *Dahlia pinnata*
Purple Dahlia.

2 *Dahlia crocata*
Yellow Dahlia

nilles in his *Icones*; but the plant called *Rosea* by Mr. Thouin in the *Annales*, is most probably the very variety of the first species figured by the name of *Sambucifolia* in the *Paradisus Londinensis*.

3. *Coccinea*, Scarlet. This is figured in Curtis's publication; but we entertain a doubt if it is the same with Cavanilles's plant, if the colour is well copied. The plant, we understand, is dead.

4. *Crocata*, Saffron-coloured. This plant is not mentioned in any work previous to the *Paradisus Londinensis*, where it is figured and described by the name of *Bidentifolia*. Though the parcels of seeds which came from Cavanilles himself had the title of *Crocata*, the flowers turned out yellow.

It is not intended here to describe minutely these plants; it is sufficient to say, that they elevate themselves majestically like the Holy-hock, and bear both axillary and terminal showy flowers late in the autumn.

Culture.—The first Dahlias introduced into England were lost by taking too much care of them. As they are natives of the hilly parts of Mexico, they will thrive in the open ground very well, and accustom themselves in a very few generations to ripen seeds here annually. By giving the history of those plants which have grown in the gardens of Holland-House, Kensington, it is only meant to offer hints for their culture, leaving the rest to future experience and observation.

On the 20th of May, 1804, the Right Honourable Lady Holland sent home from Spain a parcel of seeds. Though so late in the season, part of them were sown in pots in a hot-bed, and among these was the *Dahlia Pinnata*, with a wrong name on the parcel. When the plant was about fourteen inches high, it was planted in the open ground and grew luxuriantly, pushing up several stems to the height of seven and eight feet. The *Coccinea* and *Crocata*, the seeds of which also came up, but did not grow so full. In the middle of September the first flowers appeared, by which the plant was known to be the *Pinnata* of Cavanilles, and it was figured by Mr. Andrews the same year. The seeds did not ripen, and the roots were taken

up on the approach of a sharp frost, and placed in the green-house in a pot for the winter.

In the spring of 1805 all the parcels of seed sent from abroad were sown, and many Dahlias came up among them, which at the time of flowering showed four distinct species or varieties. It seems that Cavanilles, and the French botanists after him, mean to make as many species as there are different coloured Dahlias; but the learned Mr. Salisbury, one of the Vice Presidents last year of the Linnean Society, considers them all simply as varieties of only two distinct species, and has in the *Paradisus Londinensis* named them, not according to their colour, but after the differences of their leaves, being inclined to believe that they will in time vary like the China Aster and Marygold.

And, in fact, with regard to the *Dahlia Pinnata*, now commonly called *Purpurea*, we have great reason to confirm that botanist's suspicion, having seen nine different varieties of it, either in the colour or multiplication of the petals. The flower, in its natural state, has only eight *ligulated* petals: a few had twelve. There was also one plant with archdouble flowers, exceedingly pale: another with archdouble flowers, exceeding deep purple, exactly like that figured in the *Annales du Mus.* but the flowers were so complicated together, and the autumn of 1805 so cold, they never expanded. We must observe, that the leaves of this plant were bipinnated, but whether it is a real distinct species is not yet positively ascertained.

The *Dahlia Rosea* was in the year 1805 the most handsome, and ripened plenty of seeds. The *Purpurea* ripened fewer and weaker seeds, though they now (10th May, 1806) come up freely; the plants, however, look weak. Of the seeds of *Coccinea* and *Crocata*, no plants have yet appeared, though to the eye they seemed as perfect as those imported from Spain.

All the plants of 1805, except one, were taken up before Christmas, and planted in pots or large pans; but though kept in a very cold green-house, they began to push new shoots in the middle of April, and will be planted in the open ground without the help of

any artificial heat. Some rich mould round the roots is the only culture they require. The plant left all the winter out of doors was situated close to a south wall; and though it had no covering of any kind, it is now pushing up new shoots. It is necessary to add, that several plants of Dahlias have been raised by cuttings, which are now in good health, and which will probably flower and produce seeds next autumn.

10th July, 1806. Above a hundred plants of Dahlias are now growing in various parts of the gardens at Holland-House in the highest luxuriance: among them are several of the yellow-flowered *Bidentifolia*, raised from seeds saved there last year, though the autumn proved so unfavourable. One plant of the *Purpurea* of Andrews's Bot. Repository is already showing flowers.

The true *Rosea* of Cavanilles, with doubly pinnated leaves, is also growing most vigorously, and one of its stems has been pinched to produce lateral shoots for cuttings. A plant left in the middle of one of the borders of the French garden at Holland-House by mistake, and exposed to the severity of the winter, without any shelter, is as strong and vigorous as any of the other two-year old plants; so that there is not a doubt that this magnificent genus will soon be a common ornament of the gardens in this island.

In plate 19* is a representation of a plant of the *Dahlia Pinnata*, or *Purpurea*.

PLATE XX.

1. DAPHNE CNEORUM.

TRAILING DAPHNE.

THIS genus comprises plants of the low shrubby ornamental, evergreen, and deciduous kinds.

It belongs to the class and order *Octandria Monogynia*, and ranks in the natural order of *Vepriculæ*.

The characters are: that there is no calyx: the corolla one-petalled, funnel-form, withering, including the stamens: tube cylindric, imperforate, longer than the border: border four-cleft; divisions ovate, acute, flat, spreading: the stamina have eight, short filaments, inserted into the tube; the alternate ones lower: anthers roundish, erect, two-celled: the pistillum is an ovate germ: style very short: stigma headed, depressed-flat: the pericarpium a roundish one-celled berry: (drupe berried superior;) the seed single, roundish, fleshy.

The species are: 1. *D. Mezereum*, Mezereon; 2. *D. Laureolá*, Wood or Spurge Laurel; 3. *D. tartouraira*, Silvery-leaved Daphne, or Tartouraira; 4. *D. cneorum*, Trailing Daphne; 5. *D. odora*, Sweet-smelling Daphne.

The first is a shrub, growing to the height of from three or four to five or six feet, with a strong woody stalk, putting out many woody branches on every side, so as to form a regular head. The leaves are smooth, about two inches long, and three quarters of an inch broad in the middle, placed without order. The flowers come out very early in the spring, before the leaves, in clusters all round the shoots of the former year. The fruit is a superior berried drupe, first green, then red, of an ovate-globular form; with a thin succu-



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Engraved by F. Sanford

1 *Daphne Genkwa*.
Trailing Daphne.

2 *Dracocephalum virginianum*.
Virginian Dragon's head

lent pulp, and a crustaceous, thin, brittle, black shining shell. It is a native of Lapland, &c. flowering in January, in mild seasons.

Martyn remarks, that there are two principal varieties; one with a white flower, succeeded by yellow berries; the other with peach-coloured flowers and red fruit: the latter has sometimes flowers of a much deeper red: and that there is also a variety with variegated leaves.

The second species is a low evergreen shrub, rising with several stalks to the height of two or three feet, dividing at top into several branches. The leaves come out irregularly on every side, sit pretty close to the branches, are thick, smooth, and of a lueid green. Among these, towards the upper part of the stalks, come out the flowers in small elusters; they are of a yellowish green colour, and appear soon after Christmas if the season be not very severe. They are succeeded by oval berries, which are green till June, when they ripen and turn black, soon after which they fall off. It is a native of Britain, &c.

The third species is a low shrubby plant, which sends out several weak stalks from the root, about a foot long, and spreading about irregularly; these seldom become woody in England, but are tough and stringy, covered with a light bark: the leaves are small, very soft, white and shining like satin, and sit pretty close to the stalks between these, white flowers come out in thick clusters, commonly two or three together, very seldom solitary, bell-shaped, silky on the outside, but yellowish within, imbricated at the base with four or more ovate keeled scales. It is a native of the South of France.

The fourth species is a very humble shrub, seldom more than one foot high: the stems are branched; the leaves narrow lanceolate, placed without order: the branches terminated by small clusters of purple flowers, which stand erect: the flowers emit a pleasant odour, and appear early in the spring. It is a native of France, &c.

It varies with white flowers.

The fifth has the stem becoming shrubby, dichotomous, smooth, naked, erect; the branches, like the stem, from divaricate erect: the leaves at the top of the last branchlets, approximating, sessile, acute,

quite entire, spreading, bent back at the tip; deep green on the upper surface, with a groove along the middle, paler underneath; unequal, thick, evergreen, an inch in length: the flowers about eleven in number, of a purple colour. It is a native of Japan, flowering here from December to March.

Culture.—These plants are capable of being raised in different methods according to the kinds.

The first sort and varieties are best propagated by sowing the seeds or berries, as soon as they have become perfectly ripe, as about August, on beds of light sandy earth, covering them in to the depth of half an inch. When possible, a south-easterly aspect should be chosen. And to preserve the seeds in a perfect state, the shrubs should be netted in the latter end of the summer, to prevent the attacks of the birds.

The young plants generally appear in the following spring, when they should be kept clear from weeds, and the largest ones removed when too close together: they may remain in these beds till the beginning of the second autumn, when they should be removed, and set out in nursery-rows, at the distance of a foot and half, and ten or twelve inches in the rows, great care being taken not to break or injure their roots. After they have had two years growth in these situations, they are in a proper condition for being planted out where they are to remain: and as the plants flower very early in the spring, the best time for removing them is in the early part of the autumn.

The plants grow to the greatest size, and flower in the most full and perfect manner, when the soils are of a dry quality: as in moist, adhesive soils they are apt to become mossy.

The second species may be increased by sowing the seeds in the same manner as the above; and also by cuttings and layers of the young shoots: these should be planted out or laid down in the beginning of the autumn, and in the following autumn they will be well rooted: the layers may be then taken off, and planted where they are to remain, or put into nursery-rows as above. The cuttings may likewise be treated in the same way.

The third and fourth sorts succeed best when raised from seed

procured from abroad, and sown on a warm dry situation, in the early autumn, in the places where the plants are to remain, as they do not bear transplanting well. The ground should be as little as possible stirred about the plants. The former should have a dry warm aspect where the land is poor, but the latter succeeds in such as are more cool: these plants are sufficiently hardy to succeed in the open air, when the winters are not very severe.

The last sort is raised by sowing the seeds procured from its native situation, on a gentle hot-bed in the autumn or spring, and when the plants are of sufficient growth removing them into separate pots, to be placed under the protection of the greenhouse. It is much more tender than the other sorts.

The first and second kinds are highly ornamental plants in the clumps, borders, and other conspicuous parts near the house, the former flowering early, and where many are together affording a fine fragrance.

The other sorts, though more tender, are curious, and afford an agreeable variety in assemblage with others of similar growth, either in the borders or among potted plants.

2. DRACOCEPHALUM VIRGINIANUM.

VIRGINIAN DRAGON'S HEAD.

THIS genus comprehends plants of the herbaceous, annual, and perennial kind.

It belongs to the class and order *Didynamia Gymnospermia*, and ranks in the natural order of *Verticillatae*.

The characters are: that the calyx is a one-leafed perianthium, tubular, permanent, very short: the corolla one-petalled, ringent: tube length of the calyx: throat very large, oblong, inflated, gaping, a little compressed on the back: lip superior straight, arched, com-

plicated, obtuse: lip inferior three-cleft; lateral divisions upright, as it were the segments of the throat; the intermediate one hanging down, small, prominent forwards at the base, roundish, emarginate: the stamina consist of four subulate filaments, hid beneath the upper lip of the corolla, of which two are a little shorter: anthers somewhat cordate: the pistillum is a four-parted germ: style filiform, in the situation of the stamens: stigma two-cleft, sharp, slender, reflex: there is no pericarpium: calyx cherishing the seeds in its bottom: the seeds four, ovate-oblong, three-sided.

The species chiefly cultivated are: 1. *D. Virginianum*, Virginian Dragon's Head; 2. *D. Canariense*, Canary Dragon's Head, or Balm of Gilead; 3. *D. Austriacum*, Austrian Dragon's Head; 4. *D. Ruyschiana*, Hyssop-leaved Dragon's Head; 5. *D. Moldavica*, Moldavian Dragon's Head, or Balm.

There are other species that deserve cultivation.

The first is a perennial plant. It rises with an upright stalk, near three feet high. The leaves are about three inches long, and half an inch broad, sessile; usually in pairs at each joint, but sometimes there are three together. The flowers are purple, in terminating spikes. It is a native of North America, flowering from July to September.

The second species is also a perennial plant, rising with several stalks to the height of three feet or more, becoming woody at the lower part; the leaves at each joint having three or five oblong, pointed, serrate leaflets.—The flowers come out in short thick spikes on the top of the stalks; they are of a pale blue colour. It is a native of the Canary Islands, flowering at the same time as the first.

The third has likewise a perennial root. The stalks are hairy, a foot and half high, sending out several side-branches. The leaves are hairy, linear, cut into three parts. The flowers terminating in short whorled spikes, with some very narrow leaves (bractes) under each whorl. It is a beautiful plant, growing naturally in Austria, &c.

In the fourth the root is perennial. The stems about two feet high, with two smooth linear leaves at each joint, about an inch

long, and one-eighth of an inch broad, with a deep furrow along the middle: at each joint, at the other sides of the stem, come out two or three very narrow small leaves of the same shape. The flowers are in spikes, of a fine blue colour. It is a native of Norway, flowering in June.

The fifth is an annual plant, rising with branching stalks a foot and half high, with oblong leaves, deeply serrate on their edges. The flowers come out in whorls round the stalks at every joint; are blue, and appear in July, continuing to the middle of August. It has a strong balsamic odour, which to some is very agreeable. It is a native of Moldavia.

Culture.—These plants are raised in different methods, according to the kinds.

The first sort is best propagated by parting the roots and planting them out in moist, sheltered, shady situations, either in the autumn or spring.

In the second kind the plants are best raised by sowing the seeds in pots of good mould in the autumn, protecting them by means of a frame and glasses during the winter. When the plants have some growth they may be removed into separate pots, and placed in the open air during the summer, but brought under the shelter of a green-house or garden-frame in the winter; the latter is probably the better practice.

They may likewise be increased by planting cuttings of the young shoots in a warm shady spot during the summer. These, when they have formed good roots, should be removed into pots, to be protected under glasses during the winter.

They require a pretty full exposure to the air when the weather is suitable, being sufficiently hardy to stand the open air in mild winters.

The third and fourth species may be raised by sowing the seeds in the early spring months, in a bed of earth in an open exposure, or in pots. When the plants have attained sufficient growth they should be removed into a spot of fresh light earth, and planted out six inches apart, proper shade and water being given, till they be-

come rooted, or into separate pots. If the pots be plunged in a moderate hot-bed it will greatly forward them.

They must be kept free from weeds till the autumn, in the first situation, when they should be taken up with good balls to their roots, and be planted out in the borders or other parts, where they are to remain. They may also be increased by planting cuttings of the branches in summer, in a shady spot, or in large pots, giving them shade and water, and afterwards removing them into other pots.

The fifth species must be raised annually by sowing the seeds in patches, in the places where the plants are to remain, in the spring. When the plants appear, they should be properly thinned, and kept perfectly free from weeds.

All the sorts, except the second, may be employed for ornament in the beds or borders of gardens and pleasure-grounds; some of them affording a fine smell, as well as pretty effect in their flowers. They should be raised almost annually, in order to keep good plants.

The second kind is chiefly introduced among green-house collections, both for variety and the fragrant balsamic smell which it affords.



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1 *Delphinium elatum*
Larkspur

2 *Dianthus barbatus*
Sweet William

PLATE XXI.

1. DELPHINIUM ELATUM.

LARKSPUR.

THIS genus comprises plants of the herbaceous flowery hardy annual and perennial kinds. Dolphin Flower.

It belongs to the class and order *Polyandria Trigynia*, and ranks in the natural order of *Multisiliquæ*.

The characters are: that there is no calyx: the corolla has five petals, unequal, disposed in a circle; of which the uppermost in some is more obtuse than the rest in front, and is extended behind into a tubular, straight, long, obtuse horn: the rest ovate-lanceolate, spreading, nearly equal: nectary two-cleft, seated in front within the circle of petals on the upper part, behind stretched out, involved within the tube of the petal: the stamina have very many filaments (fifteen or thirty,) subulate, wider at the base, very small, inclined towards the petal: anthers erect, small: the pistillum consists of three or one germ; ovate, ending in styles the length of the stamens: stigmas simple, reflex: the pericarpium has as many capsules, ovate-subulate, straight, one-valved, gaping inwards: the seeds very many, and cornered.

The species mostly cultivated are: 1. *D. adjacis*, Upright Larkspur; 2. *D. grandiflorum*, Great-flowered Bee Larkspur; 3. *D. elatum*, Tall Bee Larkspur.

There are other species that may be cultivated.

The first is annual, and has the stalks eighteen inches and more in height, seldom branched: the leaves are finely divided, commonly by threes, on broad petioles: the segments are linear, quite entire,

and channelled above; the spike of flowers erect, dense, and of different colours.

There are varieties with single and double blue flowers; with single and double purple flowers; with single and double silver-coloured flowers; with single and double violet-coloured flowers; with single and double ash-coloured flowers; with single and double striped flowers; Large Rocket Larkspur, and Dwarf or Rocket Larkspur.

The second species has a perennial root, which puts out two or three branching stalks every spring, rising about a foot and a half high: the leaves are smooth and of a light green colour above, and hoary beneath, composed of many narrow segments, which terminate in several acute points: the flowers come out towards the upper part of the stalks singly, each on a long naked peduncle; they are large, and of a fine azure colour. They appear in June and July, and the seeds ripen in autumn. It is a native of Siberia.

The third rises to the height of a man: the root is perennial: the leaves slightly villose, becoming smooth by age, half-five-lobed, petioled; lobes acute, often half-three-lobed, sharply serrate. The spikes of flowers very long and handsome, of a deep blue colour, with a wrinkled spur. It is a native of Switzerland, &c. flowering from June to September.

Culture.—These plants, in all the sorts and varieties, are propagated by sowing the seeds in the early spring, as in February, March, or the following month, or in the autumn immediately after the seeds become ripe, in the clumps, borders, or other places where the plants are to remain, as they do not succeed so perfectly by transplanting, in patches of eight or ten in a place, covering the seed in to the depth of nearly half an inch, the mould being previously rendered fine.

Where the annual sort and varieties are cultivated for a large show, the seed may be sown thinly in drills on beds four feet broad, at a foot distance, covering it in to the above depth. They are sometimes sown in other forms for the purpose of appearance.

The autumn sowings of these seeds should be marked by placing

small sticks in the places, to prevent their being disturbed by the spring digging of the ground.

The only culture the plants in general require after they appear, is that of thinning them in a proper manner, according to circumstances, and keeping them free from weeds. And in the perennial sorts removing the stems in the autumn.

These plants afford much ornament and variety in the different compartments of pleasure-grounds, and they succeed in most soils and situations, being of hardy growth.

2. DIANTHUS BARBATUS.

SWEET WILLIAM.

THIS genus furnishes plants of the herbaceous flowery ornamental kind.

It belongs to the class and order *Decandria Digynia*, and ranks in the natural order of *Caryophyllei*.

The characters are: that the calyx is a cylindrical perianthium, tubular, striated, permanent, five-toothed at the mouth, surrounded at the base with four scales, of which the two opposite are lower: the corolla has five petals, claws length of the calyx, narrow, inserted into the receptacle: border flat; the plaits outwardly wider, obtuse, crenate: the stamens consist of ten subulate filaments, length of the calyx, with spreading tips: anthers oval-oblong, compressed, incumbent: the pistillum is an oval germ: styles two, subulate, longer than the stamens: stigmas bent back, acuminate: the pericarpium is a cylindrical capsule, covered, one-celled, gaping open at top four ways: the seeds a great many, compressed, roundish: receptacle free, four-cornered, shorter by half than the pericarpium.

The species chiefly cultivated in the garden are: 1. *D. barbatus*, Sweet William, or Bearded Pink; 2. *D. caryophyllus*, Clove Pink, or Clove Gilliflower; 3. *D. deltoides*, Common or Maddar Pink; 4. *D.*

plumarius, Feathered Pink; 5. *D. caesius*, Gray-leaved or Mountain Pink; 6. *D. Chinensis*, China Pink; 7. *D. superbus*, Superb Pink.

The first has a perennial fusiform root: the stems are upright, jointed, smooth, a foot and half high, branched: the leaves, soft, veined, connate, from half an inch to almost an inch broad in the widest part, bright green; the bundles of flowers compact, umbelled, and sessile. These are of different colours, in different varieties. It is a native of Germany.

The principal varieties are: the Broad-leaved, or Sweet-Williams: the Narrow-leaved, or Sweet-Johns; with single and double flowers in each.

The chief of the sub-varieties in the first or *broad-leaved* kind are, with broad leaves and tall deep red flowers, with tall flesh-coloured flowers, with pure white flowers, with white dotted flowers, with striped leaves and red flowers, large double rose-coloured with sweet-scented flowers, large double with deep purple burster flowers, and with double variegated flowers.

In the second, or *narrow-leaved* sort, with narrow leaves and deep red flowers, with pale red flowers, with pale red and flesh-coloured flowers, with purplish white-eyed flowers, with snow-white flowers, with white and flesh-coloured flowers, with white and purple flowers, with white spotted flowers, and with red flowers and white borders, or Painted Lady Sweet-Williams.

It is observed by Martyn, that the broad-leaved sort, with very double flowers of a deep purple, inclining to blue, bursting the calyx, is not so much esteemed; but that the double Rose Sweet-William, with flowers of a fine deep rose-colour, and smelling sweet, is much valued, as it does not burst. The Mule, or Fairchild's Sweet-William, which is one of the narrow-leaved double sorts, supposed to have been produced from seeds of a Carnation impregnated by a Sweet-William; the flowers are of a brighter red than in either of the former; their bunches not quite so large, but the flowers have an agreeable smell. The narrow-leaved kind are in general the most productive of double flowers.

The second sort, in its natural state, has the root large, woody,

and branched: the stems a foot or eighteen inches high, decumbent at bottom, jointed and branched: the leaves are glaucous, smooth, linear, a line in breadth: every branch is terminated by one, two, or three flowers. These flowers, in the improved garden plant, have a spicy odour.

There are both single and double varieties, with reddish flowers, with variegated red and white flowers, with variegated red, white, and purple flowers, with variegated red, scarlet, purple, and white flowers, and with variegated red or purple above and white underneath.

The Carnations are distinguished by modern florists, from the difference of variegation, into four classes:—as *Flakes*, having two colours only, and their stripes large, going quite through the leaves. *Bizarres*, with flowers striped or variegated with three or four different colours, in irregular spots and stripes. *Piquettes*, having a white ground, spotted or pounced with scarlet, red, purple, or other colours. *Painted Ladies*, with the petals of a red or purple colour on the upper side, and entirely white underneath.

Each of these classes have numerous sub-varieties, especially the third, which was formerly in most esteem with florists; but of late years the *Flakes* have been in greater request. It is useless however to enumerate their sub-varieties, as they are not by any means permanent.

The properties of a good Carnation are thus stated by florists:—The stem of the flower should be straight, strong, and able to support the weight of the flower without hanging down: the flower at least not less than from thirty to forty-five inches high: the petals well formed, long, broad, stiff, and pretty easy to expand, or, as the florists term it, make free flowers, being neither too close nor too thin; the middle of the flower not advanced too high above the other parts; the colours bright, and equally marked all over the flower: the flower very full of petals, so as to render it, when blown, very thick in the middle, with the outside perfectly round. And Martyn adds, “ that the lower or outer circle of petals, commonly called the guard leaves, should be particularly substantial; should rise perpendicularly about

half an inch above the calyx, and then turn off gracefully in a horizontal direction, supporting the interior petals, which should decrease gradually in size as they approach the centre, which should be well filled with them. All the petals should be regularly disposed, and lie over each other in such a manner as that their respective and united beauties may meet the eye all together; they should be nearly flat, or at most have a small degree of inflection at the broad end; their edges perfectly entire, without notch, fringe, or indenture. The calyx should be at least an inch in length, sufficiently strong at top to keep the bases of the petals in a close and circular body: the colours distinct, and the stripes regular, narrowing gradually to the claw of the petal, and there ending in a fine point. Almost one half of each petal should be of a clear white, free from spots."

These properties are, however, chiefly expected in the fine potted varieties, which on coming into blow are usually placed together upon a stand or stage considerably raised and covered, in order to produce the fullest effect, and by protecting them to continue longer in beauty.

The double varieties, as being more large and beautiful in their colours, should be principally cultivated. Some of them, especially the *Bursters*, are extremely large, as three or four inches in diameter over the crown.

Whole Blowers and *Bursters* are common to most of the varieties, especially the *Flakes* and *Bizarres*; the former are those in which the calyx or outer cup is long and of equal growth, opening regularly each way only at top, to admit a free and equal expansion of the petals all round: the flowers in these, though somewhat smaller, are more equally expanded, and require less trouble in the management of their bloom than in the *Bursters*. The latter are those in which the cup is large, and as it were swollen, being liable to burst on one side, and permit the petal to break out and produce irregular flowers, if care be not taken to prevent it by tying, and opening the calyx a little on the opposite side. The *Whole Blowers* are on this account the more convenient for culture, where much time cannot be spared in attending to the flowers.

The third species has numerous barren stems, reclining and putting forth roots, the flowering stems from six to eight inches high, columnar below, square at top, slender, weak, but usually erect, sometimes simple, sometimes branched or dichotomous, swollen at the joints, slightly pubescent: the leaves are in pairs at each joint, linear or subulate, nearly the length of the internode, converging to the stalk, and embracing it at the base, slightly pubescent; those of the barren branches narrower: the peduncles are round, downy, from the ends of the stem and branches, single, or two from the same joint, each bearing one flower: the petals are toothed at the edge, bright red above, pale beneath; but according to Ray reddish, with a ring of deeper-coloured dots surrounding the eye; with dark purplish teeth near the throat, and beset with white silvery points, with hairs proceeding from them: the petals vary much in colour, being sometimes of a very pale flesh colour, sometimes deep red, but always marked with a ring of deeper red dots near the centre of the flower. It is a native of Sweden, &c.

There is a cultivated variety in gardens with white flowers, with a beautiful purple ring, and leaves rather more glaucous than in the common sort.

The fourth species has the stems ascending, a foot or eighteen inches in height, and branched: the leaves of a grayish or glaucous hue, a line and half wide, very sharp at the end: the flowers one, two, seldom three, at the ends of the branches, and sweet-scented: the calyx is of a glaucous-green, longer than in the other species: the petals large, light red or bright purple, sometimes white, with a circle of red; deeply jagged, having a red down at the base of the lamina or border. It is a native of Europe; flowering from June to August, and is perennial.

The fifth, according to Dr. Smith, has a woody root: the stalks several, a span high, erect, simple, smooth, quadrangular, having two or three pair of leaves on them, one-flowered, scarcely ever two-flowered: the leaves are linear-lanceolate, bluntish, glaucous: the scales of the calyx only one third of the length of the tube, ovate-roundish, bluntly mucronate and striated: the petals are flesh-coloured,

with a double row of blunt notches, marked with lines, and bearded at the base. It is a native of Switzerland.

In the sixth, the flower-stems are from six to eight or nine inches high, branching out on every side; the branches grow erect, and are terminated each by one flower: the flowers have no scent, but, having a great variety of colours, they are a considerable ornament to the flower-garden from July until the autumn: they have been greatly improved by culture; some flowers being as full of petals as the best double Pinks, and display the most glowing and vivid red colours. It is a native of China.

Martyn observes, that the roots often last two years in a dry soil; but they are generally raised from seeds annually. In the nursery-grounds it is generally known by the name of Indian Pink. Dr. Smith mentions having had a plant from Mr. Sikes's, which seemed to be a mule between this and the first species.

There are varieties with red flowers, with purple flowers, with white flowers, with variegated flowers, each single and double, and imperial large-flowered.

The seventh species has the stem a foot or eighteen inches in height, procumbent at the base, and then erect, round, somewhat two-edged on the upper part, smooth, branching only at top: the leaves are like those of narrow-leaved Sweet-William, connate, lanceolate-linear or linear subulate, acute, quite entire, bright green, smooth, marked with lines and a rising nerve, rough on the edge, green not glaucous: the flowers are erect, usually two terminating each branch, on short peduncles; sometimes there are more, and sometimes only one: petals pale red, sometimes white, sprinkled with bloody spots: they smell very sweet, especially in the evening. It is supposed by some perennial, but by others biennial, or annual. It succeeds best in a calcareous soil. It is a native of Denmark, &c. flowering in July and the following month.

The varieties of pinks principally cultivated in the garden are as below, flowering in the following order.

The *Damask Pink*, which is the first of the double sorts in flower; it has but a short stalk; the flower is not very large, nor so double

as in many others; the colour is of a pale purple, inclining to red. It is very sweet in its smell.

The *White Shock*, which is thus denominated from the whiteness of its flowers, and the borders of the petals being much jagged and fringed: the flower-stalks are eight or ten inches in height. Its scent is not so agreeable as in some other sorts.

The *Pheasant's Eye*, of which there are different varieties, and frequently new ones introduced, some of which have very large double flowers; those which burst their pods are the least esteemed. They have firm flower-stems, eight or ten inches high: the flowers large, whitish, or blush-coloured, with dark purple spots in the middle. That sort of Pheasant's Eye called *Bat's Pink* often flowers again in autumn.

The *Cob Pink*, the stalks of which are much taller than in those of the former sorts; twelve or fifteen inches high; the flowers very double, and of a bright red colour; it has the most agreeable odour of all the sorts; flowering from the latter end of May to the middle of July.

The *Old Man's Head Pink*, and the *Painted Lady*, flower in July, at the same time with the Carnation, to which they are more nearly allied than to the Pink. The first, when in its proper colours, is purple and white striped and spotted, but it is frequently of one plain colour, as purple: it continues flowering till the frost in autumn puts a stop to it, and the flower having an agreeable scent renders it valuable. The latter is chiefly admired for the liveliness of its colour; as it is not so sweet, or of so long continuance, as the other.

The *Clove Pink* has a large deep red flower, affording a strong scent of the Clove.

Martyn thinks it probable that the Red Pinks take their rise from the Carnation, whilst the Pheasant's Eye Pinks seem to derive their origin from the fourth. Some give them all as variations of the third; which is not, he conceives, likely.

There are single and double flowers of each of these sorts.

Culture.—Though the culture in these ornamental plants is effected without much difficulty, considerable attention is necessary in the

management of some of the sorts, to have them flower in the utmost perfection and beauty.

Culture in the Sweet-William Kind.—The single sorts of these plants are readily increased by sowing seed which has been carefully collected in a bed of light earth, that has not been much enriched by manure, in the latter end of March or beginning of the following month, either over the surface or in slight drills, covering it in well: when the plants have attained a proper growth, as about the latter end of June, they should be removed and set out on other small beds prepared for them, planting them out six or eight inches distant each way, watering them and keeping them perfectly free from weeds till the following autumn or spring, when they must be taken up with good balls of earth about their roots, and set out where they are to flower. It is by this method that new varieties are produced. Although these plants are perennial, they should be raised every year from seed, to have them blow strong and in perfection.

These and the double sorts may be continued by slips or layers. In the former mode the slips should be planted out either in the early autumn or spring months where they are to remain, giving them a little water at the time, when the weather is dry. When the slips are taken from the young plants, they should be made quite down to the roots, so as to have fibres to them. In this way the plants are often good and flower well. Cuttings or pipings managed in the same way also succeed well.

In the latter method the more tender branches should be laid down in the summer months, water being frequently given when the weather is hot and dry. After they have taken root perfectly they should be separated or taken off, and planted out where they are to remain, or in beds of light earth, to be afterwards removed, a little water being given at the time. A few of the best should be potted in the beginning of autumn, in order to be more conveniently removed under shelter during the severity of winter.

These plants should neither be kept too moist or dry, as in both situations they are liable to sustain much injury by the canker.

The seed for the culture of these plants should be collected, when perfectly ripened, from the best and most perfect flowers which have grown at a distance from any bad or inferior plants, and be kept in a dry situation.

Culture in the Gilliflower or Carnation Kind.—These plants may be raised with facility in the beds or borders of pleasure-grounds or gardens where the soil is moderately light and dry; but in order to have them in the greatest superiority and perfection, it is the practice of florists to employ a compost prepared by mixing the surface vegetable mould of old pastures with well rotted stable-dung from old hot-beds, or neat's dung in the same state and sea-sand, in the proportion of a third of the former and a fourth of the latter. These materials should be well blended, and lie for a considerable length of time, being frequently turned before they are made use of. This mould may be employed both for filling the pots with and for forming the beds; and in preparing it for these purposes it should not be sifted fine, but merely well broken down and reduced by the spade.

These flowers may be increased and new ones produced by seeds, which should be sown on beds formed of the above compost, or on the common borders of light fine mould, from about the middle of March to the same period in the following month, raking it in evenly to the depth of a quarter of an inch, giving slight waterings when necessary, to promote their vegetation. The fine sorts are likewise often sown in pots or boxes, in order that they may be readily placed so as to have only the morning sun when the season is hot and dry.

After the plants are come up they should be kept clear from weeds, and be watered occasionally, and about July, when the weather is moist, be taken up and pricked out in nursery-rows on beds three feet in width, setting them six inches distant, and watering them well at the time and afterwards till they have taken fresh root.

At the beginning of autumn, as about September, they will have

attained a large growth, and require to be removed into other beds or situations for flowering, in which they should be set out in rows eight or nine inches distant each way. Some place them in the quincunx manner, as producing a better effect. In this situation they should be protected in severe weather during the winter by the application of mats upon hoops placed over the beds. The culture they require in these beds is merely that of keeping them free from weeds, occasionally stirring the earth between them by a hoe, and as their flower-stalks advance giving them the support of handsome sticks. They should remain in these situations till they flower, after which the singles should be taken out and made use of as there may be occasion, in order to afford full room for the double sorts, the finest and most perfect of which being made stage or principal flowers, and the others set out in the borders; the whole being increased as there may be necessity by layering both the first and succeeding years.

The layer method is that which is principally employed in increasing and continuing particular varieties, as being the most certain. For this purpose the radical leafy shoots proceeding from the crowns of the plants, when of six or eight inches growth, are the most proper. These should be laid down into the earth about the latter end of June or beginning of the following month. The work is performed by stripping off the leaves from the lower part of the shoot, cutting off a little of the top, and then fixing upon a strong joint about the middle, to slit it with a sharp knife nearly half way through in a slanting manner, so as nearly to reach the joint above, forming a sort of tongue on the under side of the shoot, removing the bark from the enlarged part or joint to promote the striking root. The mould about the root of the plant should then be stirred, and fresh added where it is wanting, forming a slight drill or opening for the branch to be gently laid down into in a horizontal manner with the cut part in the earth, the top being left out and raised a little to keep the slit open, pegging the main part of the branch down by short hooked sticks, drawing the earth over the cut part. When this

method has been practised on all the branches, a good watering should be given to settle the mould about them, and frequently repeated when the season is dry.

When the layers thus formed have stricken good roots, which is mostly the case in six or eight weeks, they should be taken off with the root-fibres as entire as possible, and after having the sticky parts about the bottom and the top leaves trimmed off, be planted out either in pots or beds, in the latter method at six or eight inches distance, with a dibble, a good watering being immediately given, and repeated every two days for ten days or a fortnight till the plants become well rooted. They should be removed from these beds with balls of earth about their roots in the beginning of the autumn into small pots, to have shelter during the winter, and in the early spring be placed in large ones for flowering; but when there is room, it is a better practice to plant them at once in the pots, as frequent transplanting injures their growth. Some florists, however, think it beneficial.

The less fine sorts may at the above season be planted out in the clumps, borders, or other parts, or be left in the beds for flowering.

These flowers may likewise be increased by cuttings or pipings in the manner directed below in raising pinks.

In the winter management of the plants, the fine potted sorts should about November be removed under the protection of a deep frame covered with glasses, and plunged closely together in a slight bed of old tan, dry sand, or earth. In this situation they should have a free admission of air when the weather is mild, but be covered in frost, and care should be taken that there be no stagnation of moisture, by the holes in the bottoms of the pots being obstructed.

The flowers in the beds should be covered by mats or other contrivances when the weather is severe at the same season.

In the spring their culture should be continued by removing those fine varieties planted out in small pots in the autumn into large ones for flowering, and such as have remained in the nursery-beds into the borders or large pots nine or ten inches over at top, to afford flowers, in each of which the business should be done by preserving

balls of earth about their roots, about the beginning of March or the following month. The work is performed by closing the holes in the bottoms of the pots with pieces of oyster shells or tiles, then filling them half way up with the earth prepared as above, placing the plants with their balls of earth in them, and filling up the vacancies on the sides with more fresh mould, closing it well up about the bodies of the plants so as they may stand nearly as high as the tops of the pots, giving a good watering at the time.

When the plants have been thus potted they should be placed in a sheltered sunny situation in the open air, being frequently refreshed with water in hot dry weather.

It is the practice with some florists to plant two flowers in a large pot ; but it is better as well as more convenient for layering only to have one, the plants flowering stronger and making more free shoots.

In the summer treatment of the flowers the care of frequent watering should be continued when the weather is hot and droughty, and the surface mould be occasionally stirred to promote the growth and preserve neatness; and when the flower-stalks are a little advanced, handsome painted sticks should be placed for their support, both in the pots and other situations, to which they should be neatly tied as they proceed in their growth. When they approach the period of flowering, the curious sorts should be removed to a stage constructed for the purpose, and provided with an awning to protect them from being injured by the scorching heat of the sun in the middle of the day, and the effects of too much wet, by which they are continued much longer in beauty.

Stages of this nature are formed in different methods, according to the fancy of the persons who make use of them. The following is a neat mode of constructing such apparatus: a platform is erected at the height of eighteen inches or two feet, constituted of two ranges of planks, in order to contain two rows of pots, sustained by posts in one or two rows underneath with an open-work roof five or six feet in height, covered by means of painted canvass, or some other suitable material, the whole being supported by upright posts, according to the taste of the proprietor.

The body of the stage should be neatly painted, for the purpose of effect as well as preservation.

Instead of these stages some make use of a sort of caps or umbrellas formed of tin or other materials, supported on stems or sticks, one for each plant; but these are neither so convenient nor afford so good an effect as the former in displaying the beauties of the flowers.

But whatever contrivances are made use of for the protection and display of these curious flowers, the tying of the plants to the support-sticks should be continued as the stems advance; and some curious florists contrive to keep them erect at the tops by the use of fine wire or other similar means. And in order to procure the flowers as large and fine as possible, they trim off all the side-shoots from the stems, leaving only one or two of the top flower-buds to expand. When the flowers begin to open, care should be taken to prevent their bursting and expanding in an irregular manner, especially in the *burstlers*, by making a little opening or two in the indentings at the top at equal distances in other places, by means of fine small pointed scissors. The regular expansion of the flowers may likewise be much assisted, especially where one side is more expanded than the other, and they are in pots, by turning the pots, that the contrary sides may have the full influence of the sun.

Some florists likewise, to blow the curious sorts as broad and fine as possible, make use of a kind of spreading, stiff, white paper collar, cut open on one side and placed round the bottoms of the flowers to expand the petals upon to the utmost extent; but the practice is not in general advisable.

As these plants flower less perfectly as they increase in age, it is proper to provide fresh supplies of new varieties of them annually by sowing seed obtained from the best sorts in the spring season, as directed above, and likewise to continue the most valuable double varieties by means of layering in the summer months every year, or the planting of cuttings or pipings, but the first is by much the best mode.

In order to have good seed, some plants of the best and most

curious sorts should be preserved distinct, and suffered to flower and ripen their seed in a perfect manner, which should then be taken off in the pods when the weather is dry, and, after being hardened a little, rubbed out and put up in a bag to be placed in a dry situation.

Culture in the Pink Kind.—All the species and varieties of these plants may be increased from seeds, and the perennial sorts likewise by layers, slips, cuttings, and pipings.

Where the best sorts only are grown, great care should be taken, in providing the seed, that it be always had from the best and most perfect kinds.

It should be sown in the manner directed for Carnations, in the beginning of March or the following month, and the plants be managed in a similar manner, only, as being more hardy in their nature, with less tenderness.

The sixth species is best increased by sowing the seed on a very gentle hot-bed the beginning of April, as the vegetation is thereby much forwarded. When the plants appear air should be admitted freely, to prevent their drawing up weak, and when of a little growth they may be pricked out with good roots, if the weather be suitable, on a bed of light earth, at about three inches distance, proper shade and water being given. When they are of considerable growth, as about the latter end of May, they should be removed with good balls of earth about their roots, and planted where they are to remain for flowering.

The layers should be laid down in the latter end of July or beginning of the following month, in exactly the same manner as has been directed for Carnations, giving them the same culture in every respect.

Where there are large plants that spread considerably in a lateral manner, their shoots may be covered with earth in the spring to the depth of an inch or two; they will thus often take root, form good plants, and be in a state to be planted out in the beginning of the autumn.

The slips of the young shoots either made from the sides of the

principal ones or from the roots, so as to have fibres to them, and planted out in February or the two following months in beds of good mould to a good depth, readily take root and become good plants before the end of the summer; at which time, or in the following spring, they may be removed with good balls of earth about their roots, to the places where they are to flower.

Cuttings made from the firm shoots of the same year at the joints, to the length of three or four inches, when planted pretty deeply in a bed of very fine mould, or in large pots at the distance of an inch or two, and well watered at the time, readily grow and become plants after being transplanted into separate pots, or the borders where they are to flower.

Pipings made by drawing out or breaking off the top parts of the young shoots at the joints and trimming them, by which a sort of pipe is formed, on being planted and managed in the same manner, take root and afford plants.

In both these last methods the rooting of the shoots is greatly promoted by their being closely covered by bell, hand, or other sorts of glasses, and having frequent slight waterings given round the sides of them.

The seed of the different best sorts should be collected in the pods in August or the following month when perfectly ripened, choosing a dry season for the purpose, spreading them out to harden and become dry on paper or in some other manner, after which it should be rubbed out and kept in some dry situation till it is wanted.

All the different species and varieties of these plants are highly ornamental, and many of them curious, affording an extremely fragrant smell.

The first sort in all the varieties may be made use of in the borders, clumps, and other places, where they produce a fine effect by the variety of their flowers in assemblage with others of similar growth.

A few of the double more curious kinds may also be cultivated in pots for adorning the more conspicuous places about the house.

The second species and all the different varieties of the Carnation

kind are proper ornamental plants for the fronts of clumps, borders, and other principal parts of gardens or ornamented grounds, where they have a very agreeable effect from the beauty and elegance of their flowers, as well as the fragrance which they afford.

The curious double sorts are mostly cultivated in pots for the convenience of protection, and being exhibited on stages or in particular situations during the time of their blowing, as well as for the ease and facility of removal when necessary.

The third sort and the different varieties of the common pink are well adapted for producing ornament in the fore parts of beds, borders, and other compartments of pleasure-grounds and gardens, both from the multiplicity of their flowers and their beauty, as well as fragrant smell. These are sometimes used for edgings, but from their spreading growth they require frequent cutting in.

The fourth and fifth sorts may likewise be employed for the purpose of affording a greater variety.

The sixth species is very ornamental from the fineness of the colour of the flowers, and the great length of time which they continue in bloom.

It is observed by Martyn that the seventh species, from the elegance and delicious fragrance of its flowers, is deserving of being employed in all curious gardens.

In the planting out the various sorts, the annual kinds are mostly disposed in patches of three or four plants in each; but the perennial kinds singly, as being more bushy and spreading in their growth.

All the several species and varieties of these flowery plants may be brought to blow much more early by being cultivated in frames or the hot-house.



Painted by Syd Edwards

London Published May 1806 by G. Kearsley Fleet Street

Engraved by F. Saufon

1 *Dodecotheon Meada*
Meads *Dodecotheon*

2 *Dictamnus albus*
White *Travinella*

PLATE XXII.

1. DODECATHEON MEADIA.

MEAD'S DODECOTHEAN.

THIS genus furnishes a plant of the low flowering perennial kind.

It belongs to the class and order *Pentandria Monogynia*, and ranks in the natural order of *Preciæ*.

The characters are: that the calyx is a many-leaved, many-flowered involucre, very small: perianthium one-leaved, half five-cleft, permanent: divisions reflex, finally longer, permanent: the corolla one-petalled, five-parted: tube shorter than the calyx: (naked at the throat) border reflex: divisions very long, lanceolate: the stamina consists of five filaments, very short, obtuse, seated on the tube: anthers sagittate, converging into a beak: the pistillum is a conic germ: style filiform, longer than the stamens: stigma obtuse: the pericarpium is an oblong, one-celled capsule, gaping at the tip: (subcylindric, opening into five parts): the seeds very many, and small: receptacle free, small.

The only species is *D. Meadea*, Virginian Cowslip, or Meadea.

It has a yellow perennial root, from which come out in the spring several long smooth leaves, near six inches long, and two and a half broad; at first standing erect, but afterwards spreading on the ground, especially when much exposed to the sun: from among these leaves arise two, three, or four flower-stalks, in proportion to the strength of the roots, which rise eight or nine inches high, smooth, naked, and terminated by an umbel of flowers, which are purple, inclining to a peach blossom colour. It is native of Virginia, flowering about the end of April or beginning of the following month.

Culture.—The methods of propagation in this plant are either by seeds, or off-sets from the roots; but the last is the best.

after they become ripe, or in the spring; but the former is the best season, as the plants rise stronger and with more certainty. The plants should afterwards be kept perfectly clear from weeds, and have their stems cut down and cleared away every year in the autumn, as well as the earth dug round them in the early spring. Some, however, advise the roots of the plants in the first autumn to be taken up and planted out in small beds at six or eight inches distance each way, to stand two or three years till they are strong enough to flower, when they are to be carefully taken up in the autumn, and placed where they are to remain. They continue for a great length of time, and require little culture except that of being kept free from weeds, and trimmed as above in the autumn.

They are plants well suited to the middle parts of beds, borders, clumps, and other parts of ornamented grounds.





Painted by Syd Edwards

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Engraved by F. Sartori

1 *Echinops sphaerocephalus*
Great Globe Thistle

2 *Eryngium alpinum*
Alpine Eryngo

PLATE XXIII.

1. ECHINOPS SPHÆROCEPHALUS.

GREAT GLOBE THISTLE.

THIS genus contains plants of the hardy, herbaceous, perennial and annual kinds.

It belongs to the class and order *Syngenesia Polygamia Segregata*, and ranks in the natural order of *Compositæ Capitatae*.

The characters are: that the calyx is common, many-leaved, with scales subulate, totally reflected, containing many flowers: perianthium partial one-flowered, oblong, imbricate, cornered: leaflets subulate, loose above, upright, permanent: the corolla one-petalled, length of the calyx, tubular; border five-cleft, reflex, spreading: the stamina consist of five capillary filaments, very short: anthers cylindrical, tubular, five-toothed: the pistillum is an oblong germ: style filiform, length of the corolla: stigma double, somewhat depressed, rolled back: there is no pericarpium: calyx unchanged, larger: the seed single, ovate-oblong, narrower at the base, with obtuse tip: the down obscure; the receptacle common globose and bristly.

The species cultivated are: 1. *E. sphærocephalus*, Great Globe Thistle; 2. *E. ritro*, Small Globe Thistle; 3. *E. strigosus*, Annual Globe Thistle.

The first has a perennial root. The stalks many, four or five feet high. The leaves long and jagged, divided into many segments almost to the midrib, the jags ending in spines; they are of a dark-green on their upper side, but woolly on their under. There are several globular heads of flowers on each stalk. The florets are commonly blue, but sometimes white. These come out in July, and the seeds ripen in August. It is a native of France, &c.

It varies with white flowers.

The second species has a perennial creeping root, sending up several strong stalks two feet high, and branching. The leaves cut into many fine segments to the midrib. Each branch is terminated by a globular head of flowers, smaller than those of the first, and of a deeper blue, but sometimes white: they come out in July. It is a native of the South of France.

It also varies with white flowers.

The third is an annual plant, with a stiff white stalk two feet high. The leaves divided, ending in many points, which have spines; their upper side green, covered with brown hairs, their under side white and woolly: the stalk is terminated by one large head of pale blue flowers, appearing in July. It is a native of France, &c.

Culture.—These plants are readily increased by sowing the seeds in the autumn in the places where the plants are to grow. When they are come up in the spring, they should be properly thinned and kept free from weeds. Some of the strongest plants may likewise be removed to other situations. In the third sort the seeds are better sown in the early spring.

They are well suited to afford variety in the large borders of gardens or pleasure-grounds, as they succeed in almost any soil.

2. ERYNGIUM ALPINUM.

ALPINE ERYNGO.

THIS genus contains plants of the hardy flowering biennial and perennial kind.

It belongs to the class and order *Pentandria Digynia*, and ranks in the natural order of *Umbellata*.

The characters are: that the calyx is a common conic receptacle, chaffs separating the sessile floscules: involucre of the receptacle many-leaved, flat, exceeding the floscules: perianthium proper five-leaved, upright, sharp, exceeding the corolla, seated on the germ:

the corolla universal, uniform, roundish: floscules all fertile: proper five-petalled: petals oblong, the tips bent inwards to the base, straightened longitudinally by a line: the stamina consist of five capillary filaments, straight, exceeding the floscules: anthers oblong: the pistillum is a hispid inferior germ: styles two, filiform, straight, length of the stamens: stigmas simple: the pericarpium is an ovate fruit, divisible in two directions: the seeds oblong, and columnar.

The species cultivated are: 1. *E. fœtidum*, Stinking Eryngo; 2. *E. planum*, Flat-leaved Eryngo; 3. *E. maritimum*, Sea Eryngo, or Sea-Holly; 4. *E. amethystinum*, Amethystine Eryngo; 5. *E. alpinum*, Alpine Eryngo.

The first has an annual or biennial root. The root-leaves bluntish; the serratures terminating in harmless spines. The stem a foot high or more, green, somewhat angular, dichotomous, spreading; with the extreme branches flexuose. The leaves on the branches opposite, stem-clasping, wedge-shaped, subconnate, with the edge toothed and semitrifid; the divisions lanceolate, all the angles terminating in a purplish spine. The peduncle springs from the angles of the stem; it is straight, shorter than the internode, triangular, streaked on the sides. The involucre is composed of six leaflets or thereabouts; are horizontal, and longer than the flower; the leaflets are lanceolate, nerved, and have a spine at the tip and at one or two of the serratures. The common receptacle is cylindric, whence the flower is cylindric. It is of a dull white colour, appearing at the divisions and extremities of the branches. The whole plant has a very penetrating, strong, but not unsavoury smell. It is a native of Virginia, flowering in June and July.

The second species has a perennial root. The stem upright, round, furrowed or streaked, whitish, about a foot and half in height, blueish at top, where it divides into three parts, each of which is terminated by a peduncled axillary flower. Lower leaves cordate ovate, obtuse, on long petioles, with unequal, mucronate notches about the edge; stem-leaves sessile; the uppermost lobed, gashed, smaller serrate, the notches spinulose. The flowers in terminating heads, fenced with a

six-leaved involucre, spreading and reflex. It is a native of Austria, &c. flowering in July.

There is a variety with white stalks and flowers.

The third has a creeping root, running deep into the ground. The leaves roundish, stiff, gray, set with sharp spines on the edges. The stems a foot high, branched, smooth, having at each joint leaves of the same form with the lower ones, but smaller. The flowers come out at the ends of the branches in roundish prickly heads, and are of a whitish blue colour; under each head is a range of narrow, stiff, prickly leaves, spreading like the rays of a star. The flowers appear in July. It is a native of Britain, &c. The young flowering-shoots when eaten as asparagus are very grateful, and of a nourishing quality.

The fourth species has the lower leaves divided like the fingers of a hand, into five or six segments, which are very much cut at their extremities into many parts, and have small spines. The stem is about two feet high, with smaller and more divided leaves. The upper part of the stem, and also the heads of flowers, are of the finest amethystine colour, making a fine appearance. It is a native of Styria, flowering in July.

The fifth species has a perennial root. The leaves are cordate and toothed, the lower on long petioles, the upper stem-clasping. The lower leaves resemble those of *Cacalia*, but are more acute, and the teeth end in a soft spine. Amethystine leaves surround the oblong head of flowers; some of them bristle-form and reflex, others pinnatifid and lanceolate. It is curious, according to Villars, on account of the beauty of the involucre, which are of a vinous azure blue, mixed with green and white. It is a native of Switzerland, &c.

Culture.—Some of these plants may be increased by seed, and the others by planting their creeping roots.

The first, second, fifth, and sixth sorts are raised by sowing the seeds, in the first on a hot-bed or in pots plunged into it, but in the others in the autumn, in the places where the plants are to grow.

When the plants have attained some growth, in the first kind, they should be removed into separate small pots, filled with light, fresh, fine mould, and replunged into the bark hot-bed, being afterwards managed as other exotic plants of the tender kind. The plants usually flower the second year, and then die. In the other species all the culture that is required after the plants appear is that of thinning them properly, keeping them free from weeds, and digging the ground about them in the early spring season.

The third species must be increased by planting portions of the creeping roots of the young plants in a dry gravelly soil in the autumn, as soon as the stems decay. They grow the largest and most fleshy in the root in such situations as are occasionally overflowed by the sea-water.

They afterwards only require the culture of being kept free from weeds.

They are all proper for being introduced in the borders or other parts of pleasure-grounds for variety, except the first, which requires the protection of the stove.

PLATE XXIV.

I. ERICA GRANDIFLORA.

GREAT-FLOWERED HEATH.

THIS genus comprehends plants of the evergreen, flowery, shrubby kind; mostly exotics.

It belongs to the class and order *Octandria Monogynia*, and ranks in the natural order of *Bicornes*.

The characters are: that the calyx is a four-leaved perianthium: leaflets ovate-oblong, permanent: the corolla one-petalled, bell-form, four-cleft, often bellied: the stamina consist of eight filaments, capillary, inserted into the receptacle: anthers two-cleft at the tip: the pistillum is a roundish, superior germ: style filiform, upright, longer than the stamens: stigma crowned, four-cornered, four-cleft: the pericarpium is a roundish capsule, smaller than the calyx, covered, four-celled, four-valved; partitions meeting with the sutures (opposite to the sutures): the seeds numerous and very small.

The species most in cultivation, according to Martyn, are: 1. *E. Tetralix*, Cross-leaved Heath; 2. *E. cinerea*, Fine-leaved Heath; 3. *E. didyma*, Double-anthered Heath; 4. *E. arborea*, Tree Heath; 5. *E. Australis*, Spanish Heath; 6. *E. multiflora*, Many-flowered Heath; 7. *E. Mediterranea*, Mediterranean Heath; 8. *E. lutea*, Yellow Heath; 9. *E. halicacaba*, Purple-stalked Heath; 10. *E. monsoniana*, Bladder-flowered Heath; 11. *E. mucosa*, Mucous Heath; 12. *E. urceolaris*, Hairy-flowered Heath; 13. *E. marifolia*, Marum-leaved Heath; 14. *E. cruenta*, Bloody-flowered Heath; 15. *E. ramentacea*, Slender-branched Heath; 16. *E. persoluta*, Blush-flowered Heath; 17. *E. triflora*, Three-flowered Heath; 18. *E. baccans*, Arbutus-flowered Heath; 19. *E. corifolia*, Slender-twigged Heath;



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Engraved by F. Santon

1 *Erica grandiflora*
Great flower'd Heath

2 *Epilobium angustifolium*
Rose bay Willow herb

20. *E. empetrifolia*, Crow Berry-leaved Heath; 21. *E. capitata*, Woolly Heath; 22. *E. tubiflora*, Tube-flowered Heath; 23. *E. conspicua*, Long-tubed Yellow Heath; 24. *E. cerinthiodes*, Honeywort-flowered Heath; 25. *E. comosa*, Tufted-flowered Heath; 26. *E. massoni*, Tall Downy Heath; 27. *E. Plukenetii*, Smooth-twigged Pencil-flowered Heath; 28. *E. Petiveri*, Downy-twigged Pencil-flowered Heath; 29. *E. herbacea*, Early-flowered Dwarf Heath; 30. *E. grandiflora*, Great-flowered Heath.

There are many other species equally deserving of cultivation.

The first has shrubby stems, from nine to twelve inches high, branched, brown, somewhat rugged from the remains of the leaves which have fallen off: branches a little woolly: the leaves are commonly in fours, but sometimes in fives, ovate-linear, spreading, near the flowers pressed close to the stem, the edges turned in and ciliated, each hair terminating in a small round gland; the upper surface is flat, the lower concave and white: flowers hanging down one over another all one way. It is a native of the northern parts of Europe, flowering in July and August; but according to Linnæus, twice in the year.

It is not inferior to many of the foreign heaths in the beauty and delicacy of its flowers. This is distinguished from the other British heaths, not only by the flowers growing in a kind of pendulous cluster on the tops of the stalks, but by the leaves growing in fours, and forming a sort of cross.

The second species has a perennial woody root: the stems shrubby, about a foot high, with opposite branches: the bark ash-coloured: the leaves are linear, fleshy, spreading; above smooth and shining, transversely wrinkled; towards the end beset with a few scattered hair-like points; beneath having a longitudinal furrow, which is white from a woolliness apparent to the magnifier; the edge somewhat membranaceous, and when viewed with the microscope appearing serrulate: the leaves, when young, have three flat sides, but when full grown are nearly flat: the flowers are in long clustered whorls terminating in spikes, of a deep purple colour, sonorous when struck; they come out from the sides of the young shoots; those

from the end-shoots being near each other, but scattered and bare; those from the small lateral branches generally in pairs. It is a native of the middle parts of Europe, flowering from June to August.

The third has twisted, trailing stems: the branches between scored and singular, light reddish brown; the more slender shoots ash-coloured, all lateral, to seven or more rising from the same point in the manner of an umbel; when beginning to flower, gradually tapering towards the end: the leaves are linear, somewhat like those of fir, bowed sideways, smooth, but not glossy, somewhat pointed, when magnified appearing to have distant serratures on the edge, which is bent in; upper surface green, slightly elevated in the middle; under whitish, convex, with a smooth furrow running along it, longer, and sometimes thrice as long as the corolla, and crowded so close as to conceal the younger shoots: the flowers roundish, on long slender peduncles, from the sides of the branches, beginning from below the middle, and extending to the ends, continuing on, in the cultivated plants, till the next season. It is a native of Britain.

The fourth species is an upright shrub, growing to the height of six feet, with upright branches covered with a white nap: the leaves are very abundant, upright, smooth, almost awl-shaped, covering the branches, wrinkled when dry: the flowers very numerous, on the middle of the branches, so that the later leaves are above them; they are on branching peduncles, forming a panicle. It is a native of the South of Europe, flowering from February to May.

The fifth is an upright rigid shrub, with an ash-coloured bark: the leaves are in threes or fours, linear, obtuse, somewhat rugged on the edge: the flowers terminating, two or three, subsessile. It is a native of Spain, flowering in April and May.

The sixth species has the stem the height of a man: the leaves are in fours or fives, spreading, obtuse, gibbous at the base: the flowers purplish. It is a native of the South of Europe, flowering from June to November.

The seventh has the branches whitish, and angular: the leaves are in fours, seldom in fives, and even: the flowers lateral, and of a

purple colour, simple, coloured, lanceolate, acute, shorter by half than the corolla: style twice as long as the corolla: stigma entirely simple: it resembles the *multiflora*, but the corolla is absolutely ovate; the branches angular and white. It is a native of the South of Europe, flowering from March to May.

In the eighth species the stem is subdivided into narrow branches: the leaves pressed close, almost imbricate, opposite, blunt, grooved underneath, a line in length: the flowers are on the extreme branchlets, one, two, or three together, and upright, of a yellow colour. The whole plant being covered with shining golden or silvery flowers is very beautiful and ornamental. It is a native of the Cape of Good Hope. It varies with yellow or white flowers.

The ninth is a lofty shrub with purplish branches: the branchlets subtomentose and white: the leaves crowded very much, even, rugged about the edge.

But, according to Thunberg, the stem is smooth, rugged, brown, flexuose, decumbent, strict, a span high: the branches alternate, divaricate, like the stem: the leaves in threes, lanceolate, acute, smooth, flat above, convex beneath, with a slender groove, spreading. It is a native of the Cape of Good Hope, flowering in May and June. It is distinguished from the other sorts by the size of the flowers.

In the tenth the stem is erect, pubescent leafless, two feet high: the branches scattered, frequent, spreading, covered with leaves, very short, simple: the leaves in threes, ovate, obtuse, convex beneath, with a longitudinal groove, flat above, entire, imbricate, smooth, scarcely a line in length: the flowers solitary, nodding, on pubescent reflex peduncles large and white. It is a native of Africa. This is one of the most beautiful plants of this beautiful genus.

The eleventh species has a frutescent stem, determinately branched, with white, awl-shaped, decurrent lines under the scars of the leaves; which are linear, even, pressed close, scarcely longer than the interstices: the flowers terminating, subumbelled, on peduncles the length of the flowers. It is a native of the Cape of Good Hope.

In the twelfth the stem is fluxuose-erect, ash-coloured, two feet high: the branches opposite, or in threes, cinereous-villose, wand-like: branchlets filiform, scattered, frequent, wand-like: the leaves are in threes, linear-lanceolate; beneath grooved from the revolute margins, tomentose-whitish, from erect spreading, curved a little: the flowers flesh-coloured. It is a native of the Cape of Good Hope, flowering in May and June.

It varies with flowers very hirsute and hairy, red, and whitish flesh-coloured.

The thirteenth species has the leaves three-fold oval, downy-white underneath: the flowers ovate, conic. It is a native of the Cape of Good Hope.

In the fourteenth the branches are round and smooth; branchlets pubescent: the leaves linear-awl-shaped, grooved, spreading, half an inch long, on appressed petioles scarcely half a line in length: the flowers axillary, and of a deep red colour. It is a native of the Cape, flowering at various seasons.

The fifteenth species has the branches filiform, ramentaceous, long, ferruginous: the leaves very narrow, upright, pressed close: the flowers umbelled, of a purple colour. It is a native of the Cape of Good Hope, flowering in July.

The sixteenth has the stem shrubby, smoothish, with pubescent branches: the leaves linear, obtuse, erect, channelled underneath, the length of the joints, hispid or subscabrous: the flowers are umbelled, dispersed on the upper twigs, and of a flesh colour. It is a native of the Cape, flowering from February to May.

The seventeenth has a brown stem, smooth below, hispid at top, erect, a foot high: the branches dichotomous, brown at bottom, and smooth, above ash-coloured, hirsute, erect, fastigiate: branchlets scattered all over the branches, filiform, frequent, hairy-rough, wand-like: the leaves are linear-subulate, entire, smooth, flat above, convex beneath, with a very slender groove, incurved, from erect spreading: the flowers solitary, or two or three together, on very short drooping peduncles, ash-coloured, tomentose. It is a native of the Cape.

The eighteenth species has an erect stem, branched: the leaves

linear, bluntish, rugged on the edge, longer than the internodes, on white petioles: the flowers terminating, in threes, or thereabouts, nodding, the size of a pea, on purple peduncles, with alternate, remote, flesh-coloured bractes. It is a native of the Cape, flowering in April and May.

The nineteenth has a shrubby, compound stem: the leaves linear, smooth: the flowers terminating, sessile, of a purple colour. It is a native of the Cape, flowering in August.

The twentieth species has a brown, rugged stem, a foot high: the branches in whorls, like the stem, flexuose-erect; branchlets trichotomous and dichotomous, like the branches: the leaves in sixes, oblong, obtuse, incurved, above three-cornered, flat, beneath grooved, rugged, especially underneath, very finely ciliate, imbricate, a line in length: the flowers aggregate, in whorls, in the middle and at the ends of the branchlets of a blood-red colour. It flowers in April and May.

The twenty-first species has the stem seldom erect, commonly decumbent, smooth, flexuose, filiform: the branches filiform, flexuose, villose: branchlets capillary, frequent, tomentose: the leaves ovate, spreading, rough, with long hairs: the flowers at the ends of the extreme branchlets, peduncled, one, two, or three together, the whole calyxes covered close with a white wool.

The twenty-second has the leaves linear, even the upper ones, ciliate: the flowers terminating, solitary, sessile, of a purple colour.

The twenty-third species has the leaves four-fold, smooth, and long yellow flowers. It flowers from May to August.

The twenty-fourth has the branches compound: the leaves oblong, convex, even, grooved underneath, ciliate, with spinules: the flowers large, heaped on the side into a sort of head, sessile, pubescent: calyx rough, with white hairs, as it were doubled: the corolla bright blood red, rough with white hairs, having the mouth obscurely four-cleft. It is a native of the Cape, flowering most part of the year.

The twenty-fifth species has the branches heaped above the flowers: the leaves linear, bluntish, erect: the flowers heaped, lateral, below the top of the stalk. It is a native of the Cape.

The twenty-sixth species has shrubby filiform stems, covered all round with leaves: the leaves in fours, imbricate in eight rows, very short, elliptic, crowded, obtuse, ciliate, so that they appear villose: the flowers red, in a terminating sessile head. It is a native of the Cape.

The twenty-seventh has the leaves linear and crowded: the flowers peduncled, and nodding. It is a native of the Cape.

The twenty-eighth species is a brown shrub: the branches covered with branchlets in threes, crowded, very short, pubescent, clothed with squarrose leaves; which are also crowded, alw-shaped, sub-trigonal, somewhat rugged at the edge, patulous, or standing out at the tip; the flowers solitary, at the ends of the branchlets, drooping, on a short, pubescent peduncle, of a red colour. It is a native of the Cape, flowering from January to March.

The twenty-ninth species is a small shrub, from a foot to eighteen inches in height, decumbent at bottom, then upright, branched, flexible: the leaves are almost covering the whole stem, deciduous, resembling those of the fir, thickish, having a prominent nerve, narrow, very sharp, smooth: the flowers at the tops of the branchlets, on short peduncles, alternate, among the leaves: they come out in autumn, continue closed during winter, and are then green; in May the year following the flowers are unfolded; the anthers which were inclosed are protruded, the calyx and corolla, opening, are both changed into a pale purple or flesh-colour. It is a native of Austria.

The thirtieth species has the leaves linear, four-folded: the flowers large and yellow. It is a native of the Cape, flowering from May to July.

Culture.—These elegant plants must be treated in different methods, according to their nature.

The first three British sorts are capable of being propagated by sowing the seeds, either in the places where they are to remain, or in pots filled with peaty earth in either the autumn or spring seasons, but this is a tedious practice. The best method is, to take them up from the places where they grow naturally in the early autumn, with good balls of earth about their roots, planting them again immediately where they are to grow.

They succeed best where the soil is of the peaty or moory kind, and where it has not been enriched by manure; and as they protrude their roots chiefly near the surface, it should be as little dug about them as possible.

The four following sorts may be increased in the same manner as the former; but the best practice is by layers, cuttings, or slips, which should be laid down or planted out in pots filled with boggy earth, either in the early spring or the latter end of summer, plunging them in a moderate hot-bed, giving them proper shade and water. When they have taken full root, they should be removed with balls of earth about them into separate pots, being replaced in the hot-bed till they become well established, when they will be capable of bearing the open air in mild weather.

All the other species may be increased either by cuttings or layers, but most of them by the former. The cuttings should be made from the best young shoots, and be planted in the spring season in pots filled with a composition of light boggy and loamy earth, being placed in the hot-bed, and covered with bell-glasses, and duely shaded from the sun, slight waterings being given when necessary; the layers are best made in the autumn, being managed in the same way.

When the plants are perfectly rooted, they may be removed into separate pots filled with the same sort of earth, and placed in the dry, stove or green-house, where many of the plants must constantly be kept.

The ninth, twentieth, and twenty-sixth species must, however, be raised by layers, as they have not yet been increased by planting their cuttings.

When seeds are made use of in producing these plants, they should be sown in pots filled with the above sort of earth, in the early spring, and plunged in the hot-bed of the stove. When the plants have acquired a few inches growth, they should be removed into single pots with a little earth about their roots, and be replunged in the hot-bed in the stove, being preserved in it, or the warmest part of the green-house, during the winter.

The first three sorts afford an agreeable variety in the borders and clumps, as they continue long in flower. The four following kinds are likewise hardy, and afford variety among other potted plants in the open air during the summer.

The other species are more tender, but produce an agreeable effect among the stove and green-house collections, from the great beauty and continuance of the flowers in many of the sorts.

2. EPILOBIUM ANGUSTIFOLIUM.

ROSE-BAY WILLOW-HERB.

THIS genus contains a plant of the herbaceous, flowery, perennial kind.

It belongs to the class and order *Octandria Monogynia*, and ranks in the natural order of *Calycanthemæ*.

The characters are: that the calyx is a one-leafed perianthium, four-parted, superior; divisions oblong, acuminate, coloured, deciduous: the corolla has four roundish petals, outwardly wider, emarginate, expanding, inserted into the divisions of the calyx: the stamina consist of eight subulate filaments; the alternate ones shorter: anthers oval, compressed, obtuse: the pistillum is a cylindric germ, extremely long, inferior: style filiform: stigma four-cleft, thick, obtuse, rolled back: the pericarpium is an extremely long capsule, cylindric, streaked, four-celled, four-valved: the seeds numerous oblong, crowned with down: receptacle extremely long, four-cornered, free, flexile, and coloured.

The species cultivated is *E. angustifolium*, Narrow-leaved or Rose-bay Willow-herb.

It has a creeping root. The stem is upright, from three to six feet high, branched at top, round, and pubescent; the branches alternate. The leaves alternate, running slightly down the stem, smooth,

the edge minutely and rarely indented, the midrib whitish: the lateral nerves are nearly at right angles with this; and the leaves at their first appearance are rolled in at the edge. The flowers are purple, showy, growing in a kind of long spike, on purple peduncles, the length of the germ, bending down before the flowers open, but afterwards erect; seldom more than four or five blow together on the same spike. From the great similitude of the leaves to those of willow, it has obtained the name of Willow-herb, or French Willow.

There is a variety with white flowers.

Culture.—It is readily increased by dividing its creeping roots, and planting portions of them out in moist shady situations where they are to remain, in either the autumn or early spring. The plants may also be raised by sowing the seeds in the same situations. The plants afterwards require only to be kept within proper limits.

They are well suited to shady situations, and for covering rock-work.

PLATE XXV.

1. FRITILLARIA IMPERIALIS.

CROWN IMPERIAL.

THIS genus comprises plants of the bulbous-rooted perennial flowery kind.

It belongs to the class and order *Hexandria Monogynia*, and ranks in the natural order of *Coronariæ*.

The characters are: that there is no calyx; the corolla is six-petalled, bell-shaped, spreading at the base: petals oblong, parallel: nectary an excavation or pit in the base of each petal: the stamina have six subulate filaments, approximating to the style, the length of the corolla: anthers quadrangular, oblong, erect: the pistillum is an oblong germ, three-cornered, obtuse: style simple, longer than the stamens: stigma triple, spreading, blunt: (style trifid, with three stigmas:) the pericarpium is an oblong capsule, obtuse, three-lobed, three-celled, three-valved (superior): the seeds very many, flat, semi-orbicular on the outside, in a double row.

The species are: 1. *F. meleagris*, Common Fritillary, or Chequered Lily; 2. *F. pyrenaica*, Black Fritillary; 3. *F. imperialis*, Imperial Fritillary, or Crown Imperial; 4. *F. Persica*, Persian Fritillary, or Persian Lily.

In the first the root is a solid bulb or tuber, about the size of a hazel nut, white or yellowish white, roundish, compressed, divisible into several, enclosed by the withered wrinkled bulb of the preceding year as in a case. The stem from six to twelve, fifteen, and even eighteen inches in height, advancing considerably in length after flowering; it comes out from the side of the root, is simple, upright, round, smooth, glaucous, and not unfrequently purplish: the leaves



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Engraved by F. Sanford

1 *Eritillaria imperialis*
Crown imperial.

2 *Fumaria varia*
Hollow rooted Fumitory.

three or four, sometimes five or six, grass-like, distantly alternate, half embracing, round on the under, and hollow on the upper side, somewhat twisted and glaucous: the flower usually single, sometimes two, or even three, on the top of the stem, large, pendulous, at first somewhat pyramidal, but afterwards bell-shaped, chequered with purple and white, or purple and greenish yellow. It is a native of the southern countries of Europe, flowering in April and May.

There are numerous varieties; the chief are, the Common Purple, the Blood Red, the Great Purple or Red, the White, the Double Blush, the Pure Yellow, the Chequered Yellow, the Great Yellow Italian, the Small Italian, the Small Portugal Yellow, the Black, and the Spanish Black.

The second species has a double fleshy bulbous root: the leaves are broader, and of a deeper green than in the first; the lower leaves are opposite, but those above alternate: the stem a foot and half high, terminated by two flowers of an obscure yellow colour, and spreading more at the brim than those of the first sort, but turned downwards in the same manner. It flowers three weeks after it; and is a native of France.

The third has a large round scaly root of a yellow colour, and a strong foxy odour: the stalk rises to the height of four feet or upwards: it is strong, succulent, and garnished two-thirds of the length on every side with long narrow leaves ending in points, which are smooth and entire: the upper part of the stalk is naked, a foot in length: the flowers come out all round the stalk upon short foot-stalks, which turn downward, each sustaining one large flower. Above these rises a spreading tuft of green leaves, which are erect, and called the Coma. It flowers the beginning of April, and the seeds ripen in July.

The chief varieties are; those with yellow flowers, with large flowers; and with double flowers; but that which has two or three whorls of flowers above each other makes the finest appearance, though it seldom produces its flowers after this manner the first year after removing.

The fourth species has a large round root: the stem three feet

high, the lower part closely garnished on every side with leaves, which are three inches long and half an inch broad, of a gray colour, and twisted obliquely: the flowers are in a loose spike at the top, forming a pyramid; shorter than the other sorts, spreading wider at the brim, and not bent down; of a dark purple colour; appearing in May. They seldom produce seeds in this climate.

There is a variety which has a much shorter stem and smaller leaves; the stem branches out at the top into several small peduncles, each sustaining one dark-coloured flower. It is termed Dwarf Persian Lily.

Culture.—The common mode of propagation in all these plants is by off-sets from the sides of their roots, separated every second or third year; the proper time for which is when their flower-stalks decay, taking the whole root up entirely, and separating them into distinct roots, then planting the smaller off-sets by themselves in nursery-beds, to remain a year or two, to acquire a flowering state; and the larger roots, where they are to remain for flowering.

They are likewise capable of being propagated by seed; but this is principally practised for new varieties; and the process is tedious; the Fritillary and Persian Lily being three years, and the Crown Imperial sometimes six or seven, before they flower in perfection. The seeds may be sown in the beginning of autumn, in large wide pots, or in boxes of similar width, filled with light mellow earth, each sort separate, covering them evenly with fine earth half an inch deep, placing the pots, &c. to have only the morning sun all summer, or during hot dry weather, and in the full sun in winter and spring: the plants will appear in the spring, which, after the first or second year's growth, when the leaves decay in summer, may be taken up, and the whole planted immediately in nursery-beds, in shallow drills four inches asunder, to remain till they flower.

They are all hardy, and highly ornamental plants for the borders, clumps, and other parts; the fourth sort being set backwards, the third in the middle, and the others forwards.

2. FUMARIA CAVA.

HOLLOW-ROOTED FUMITORY.

THIS genus contains plants of the tuberous-rooted low flowery perennial kind.

It belongs to the class and order *Diadelphia Hexandria*, and ranks in the natural order of *Corydales*.

The characters are: that the calyx is a two-leaved perianthium: leaflets opposite, equal, lateral, erect, acute, small, deciduous: the corolla oblong, tubular, ringent, palate prominent, closing the throat: upper lip flat, obtuse, emarginate, reflex: the nectary the base of the upper lip prominent backward, obtuse: the lower lip entirely similar to the upper, keeled towards the base: nectary the keeled base, but in this less prominent: the throat four-cornered, obtuse, perpendicularly bifid: the stamina consist of two equal filaments, broad, one within each lip, enclosed, acuminate: anthers three at the end of each filament: the pistillum is an oblong, compressed germ, acuminate: style short: stigma orbiculate, erect, compressed: the pericarpium is a one-celled silicle: the seeds are roundish.

The species are: *F. cucullaria*, Naked-stalked Fumitory; 2. *F. sempervirens*, Glaucous Fumitory; 3. *F. lutea*, Yellow Fumitory; 4. *F. capnoides*, White-flowered Fumitory.

The first has a scaly root, the size of a large hazel-nut: the flower-stalk is eight or nine inches high: the root-leaves are in pairs, triter-nate, gashed, smooth, slender; with red petioles: the scape simple, round, length of the leaf, rufous: the raceme terminating, simple; the flowers (four or five) pendulous; of a dull white colour. It is a native of Virginia. Perennial, flowering in June and July.

The second species is annual: the stem upright, a foot and half high, round, and very smooth, sending out several branches at top: the leaves smooth, branching, pale, divided like the common sort,

but the leaflets larger and more obtuse: the flowers in loose panicles from the sides of the stem and at the extremities of the branches, of a pale purple colour, with yellow chaps or lips: the pods are taper, narrow, an inch and half long, containing many small black shining seeds. It flowers during summer, and is a native of North America.

In the third, the root strikes deep into the ground: the stems are many, succulent, diffused, about six inches high: the leaves on long branching petioles, composed of many irregular leaflets, trifid at the top: peduncles axillary, naked, longer than the leaves, supporting eight or nine flowers, of a bright yellow colour, in a loose spike: the leaves continue green all the year, and the flowers in succession from April to October. It is very like the fourth species, but is perennial; and according to Miller, the stalks have blunt angles, are of a purplish colour; and the flowers grow in a looser panicle, on longer pedicles. It is a native of Barbary.

The fourth is annual: the stem four-cornered at the base: the leaves superdecompound, the terminating leaflets larger, and semi-trifid; the middle segment lobed; petioles three-cornered: the racemes naked: pedicles shorter by half than the corollas, blackish at the tip. There is a succession of the flowers from May to October. It is a native of the South of Europe.

Culture.—The first sort of these plants may be readily increased, by planting off-sets from the roots in a light soil, in a shady situation, in the beginning of autumn, as soon as the stems begin to decay.

The other sorts may be raised by sowing the seeds where the plants are to grow, as soon as they become perfectly ripened.

The only culture they demand afterwards is, that of keeping them free from weeds.

They are all very ornamental in the fore parts of clumps, borders, and other parts of pleasure-grounds.



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Engraved by Evans

Gentiana acaulis
1 Large flowered Gentian

Glycyne rubicunda
2 Dungy-flowered Glycyne

PLATE XXVI.

1. GENTIANA ACAULIS.

LARGE-FLOWERED GENTIAN.

THIS genus of plants is of the hardy herbaceous perennial flowery kind.

It belongs to the class and order *Pentandria Digynia*, and ranks in the natural order of *Rotaceæ*.

The characters are: that the calyx is a five-parted perianthium, sharp: divisions oblong, permanent: the corolla has one petal, tubular at bottom, imperforate, at top five-cleft; flat, withering, various in form: the stamina have five filaments, subulate, shorter than the corolla: anther simple: the pistillum is an oblong germ, cylindric, length of the stamens: styles none: stigmas two, ovate: (germ superior; style simple, or two sessile stigmas:) the pericarpium is an oblong capsule, columnar, acuminate, slightly bifid at the tip, one-celled; two-valved: the seeds numerous, small, fixed all round to the walls of the capsule: receptacles two, each fastened longitudinally to a valve.

The species cultivated are: 1. *G. lutea*, Yellow Gentian; 2. *G. punctata*, Spotted-flowered Gentian; 3. *G. asclepiadea*, Swallow-wort-leaved Gentian; 4. *G. acaulis*, Dwarf Gentian, or Gentianella.

The first has a thick root, of a yellowish brown colour, and very bitter taste: the lower leaves are petioled, oblong-ovate, a little pointed, stiff, yellowish green, having five large veins on the back, and plaited: the stem three or four feet high or more, with a pair of leaves at each joint, sessile or almost embracing, of the same form with the lower ones, but diminishing gradually to the top: the flowers are in whorls at the upper joints. It is a native of Switzerland; flowering in June and July.

The second species has the leaves ovate, elongated, and strict: the calyxes shallow, and in form of a basin, the calycine teeth narrow, sharp, and not very leafy: the corolla is of a papery substance, extremely thin, of a dull and very pale greenish straw-colour, with very minute dots thickly and irregularly scattered over it: the segments of the border commonly seven, sometimes eight, but very seldom six, always shorter, narrower, contiguous, rounded, blunt, without any auricles at the base; and finally the bellying of the corolla is blunter and almost the same over the whole bell. It is a native of Austria.

The third has the stem upright near a foot high: the leaves smooth, about two inches long, and three quarters of an inch broad at the base, embracing there, and ending in an acute point; they are of a fine green, have five longitudinal veins, joining at both ends, but diverging in the middle, and diminish in size as they are nearer the top: the flowers are in pairs opposite, on short peduncles; pretty large, bell shaped, and of a fine blue colour. It is a native of Switzerland, flowering in July and August.

The fourth species has a large woody branched root: a set of ovate-lanceolate leaves spreads on the surface: the stem from one to three inches in height, with one or two pairs of leaves on it, and terminated by one very large, upright, handsome flower (in the garden, when the plants are strong, there are sometimes more,) which is of a deep azure blue, dotted on the inside. It is a native of Austria.

Culture.—The three first sorts are easily raised, by sowing the seed in pots soon after it is ripe, as when kept till the spring it will not succeed: the pots should be placed in a shady situation, and kept clean from weeds. Some advise their being sown where they are to remain, but the first is probably the best method. In the spring the plants appear, when they must be duly watered in dry weather, and kept clean from weeds till the following autumn; then be carefully shaken out of the pots, so as not to break or injure their roots; and a shady border of loamy earth should be well dug and

prepared to receive them, into which they should be put at about six inches distance each way, the tops of the roots being kept a little below the surface of the ground, and the earth pressed close to the roots. If the following spring prove dry, they should be duly watered, to forward their growth. The plants may remain here two years, by which time they will be fit to transplant where they are designed to grow, removing them in the autumn, as soon as their leaves decay, great care being taken in digging them up, not to cut or break their roots, as that greatly weakens them. They require afterwards no other culture, but to dig the ground about them early in the spring before they begin to shoot, and in the summer to keep them clean from weeds. The roots continue many years, but the stalks decay every autumn; the same roots not flowering two years together, or seldom oftener than every third. When they flower strong, they have, however, a fine appearance.

The first is mostly propagated by off-sets or parting the roots, and planting them where they are to remain in the early autumn; but in order to have the plants flower well, they must not be often transplanted or parted.

They are also capable of being raised from seeds managed as the first sorts.

They all succeed the most perfectly in moist loamy soils, where there is a degree of shade.

All the sorts are useful as ornamental plants, for the various clumps, borders, and quarters of pleasure-grounds; those of low growth being planted towards the fronts, and the latter kinds more backward.

2. GLYCINE RUBICUNDA.

DINGY-FLOWERED GLYCINE.

THIS genus contains plants of the shrubby climbing kind.

It belongs to the class and order *Diadelphia Decandria*, and ranks in the natural order of *Papilionaceæ*.

The characters are: that the calyx is a one-leafed, compressed perianthium: mouth two-lipped: upper lip emarginate, obtuse: lower longer, trifid, acute: the middle tooth more produced: the corolla is papilionaceous: banner obcordate, the sides bent down, the back gibbous, the tip emarginate, straight, repelled from the keel: wings oblong, towards the tip ovate, small, bent downwards: keel linear, sickle-shaped, bent upwards, at the tip pressing the banner upwards, obtuse, towards the tip broader: the stamina have diadelphous filaments (simple and nine-cleft), only a little divided at the tip, rolled back: anthers simple: the pistillum is an oblong germ: style cylindric, rolled back in a spiral: stigma obtuse: pericarpium an oblong legume: the seeds kidney-form.

The species are: 1. *G. frutescens*, Shrubby Glycine, or Carolina Kidney-bean Tree; 2. *G. bimaculata*, Two-spotted Glycine; 3. *G. rubicunda*, Reddish-flowered Glycine; 4. *G. coccinea*, Scarlet Glycine.

The first has woody stalks, which twist themselves together, and also twine round any trees that grow near, and will rise to the height of fifteen feet or more. The leaves are in shape somewhat like those of the ash-tree, but have a greater number of leaflets. The flowers are produced in clusters from the axils, and are of a purple colour. They are succeeded by long cylindrical legumes, shaped like those of the Scarlet Kidney-bean, containing several seeds, which are never perfected in this climate. It flowers from June to September.

The second species rises with a twining shrubby stalk to the height of six or eight feet and more; multiplying greatly by age, becoming loaded with a profusion of purple flowers growing in racemes; the richness of the corolla is enlivened by two green spots at the base of the banner. For the most part the flowers go off in this climate without producing any seed-vessels. It begins to flower in February, and continues during the summer. It is a native of Botany Bay.

The third has a shrubby, slender, twining stem, five or six feet high and more, red, branched, leafy. The leaves ternate, on petioles from an inch to two inches in length, channelled above, round underneath: leaflets ovate or elliptic, quite entire, the two side-ones on very short petioles, the end one on a petiole half an inch in length, bending and swelling immediately under the leaflet, and having there a pair of deciduous stipules. Almost the whole plant is covered with hairs pressed close.

The flowers are of a purplish-scarlet colour. It is a native of New South Wales, flowering from April to June.

The fourth is a shrubby climbing plant, growing to the height of many feet, if supported, and producing a great number of flowers on its pendent branches. The leaflets nearly round, and in the older ones especially curled at the edges. The flowers for the most part in pairs, of a glowing scarlet colour, at the base of the keel somewhat inclined to purple; the bottom of the banner is decorated with a large yellow spot, verging to green. It flowers from April to June, and is a native of New South Wales.

Culture.—The first sort is increased by laying down the young branches in the early autumn. When well rooted in the following autumn, they may be taken off and planted where they are to remain, or in nursery-rows, being watered when the weather is hot, and the roots protected in the winter by some sort of strawy material.

They succeed best in dry warm light soils.

The other sorts may be raised by sowing the seeds, when they can be obtained from abroad or produced here, in pots of light

earth, in the early spring, being afterwards removed into other pots, and placed in the green-house or Cape stove. Mr. Curtis, however, suggests that the two last may succeed in the open air, when planted out in warm sheltered situations, and protected in the winter season.

They are all ornamental in their flowery climbing nature; the first in the open ground, and the latter in the green-house and stove collections.





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Engraved by F. Sanjón

1 *Helleborus viridis*
Green Hellebore

2 *Hypericum hircinum*
Fetid St. John's-Wort

PLATE XXVII.

1. HELLEBORUS VIRIDIS.

GREEN HELLEBORE.

THIS genus contains plants of the herbaceous perennial kind.

It belongs to the class and order *Polyandria Polygynia*, and ranks in the natural order of *Multisiliquæ*.

The characters are: that there is no calyx, unless the corolla, which in some species is permanent, be considered as such: the corolla has five petals, roundish, blunt, large: nectaries several, very short, placed in a ring, one-leafed, tubular, narrower at bottom: mouth two-lipped, upright, emarginate, the inner lip shortest: the stamina consist of numerous subulate filaments: anthers compressed, narrower at bottom, upright: the pistillum consists of about six germs, compressed: styles subulate: stigmas thickish: (five or more:) the pericarpium consists of capsules (leguminous, beaked) compressed, two-keeled: the lower keel shorter; the upper convex, gaping: the seeds several, round, and fixed to the suture.

The species cultivated are: 1. *H. hyemalis*, Winter Hellebore, or Yellow Winter Aconite; 2. *H. niger*, Black Hellebore, or Christmas Rose; 3. *H. viridis*, Green Hellebore; 4. *H. fatidus*, Stinking Hellebore, or Bear's-foot; 5. *H. lividus*, Livid Purple, or Great Three-flowered Black Hellebore.

The first has a tuberous transverse root, with many dependent fibres, putting up several naked stems or scapes, simple, smooth, round, from an inch or two to four inches in height, terminated by a single leaf, spreading out horizontally in a circle, divided into five parts almost to the base, and the parts simple, or divided into two, three, or four lobes. In the bosom of this sits one large, upright,

yellow flower. It is native of Lombardy, and flowers with us from January to March.

The second has transverse roots, externally rough and knotted, with many dependent fibres, and some large roots striking down; the scapes from six inches to near a foot in length, round, upright, variegated with red, rising from a sheath, and terminated usually with one flower, sometimes two, and very rarely three: corolla very large, generally white at first, but frequently with a tint of red, growing deeper with age, but finally becoming green. It is a native of Italy, &c. flowering from December to March. Martyn observes, that "it has the name of *Black Hellebore* from the colour of the root; and of *Christmas Rose*, from the time of flowering and the colour of the corolla."

The third has a round stem, a little branched at top, but not near so much as in the next sort; leafy, reddish at the base, upright, smooth, a foot or eighteen inches in height: the leaves not of a stiff leathery consistence, as in the next species, but soft and of a lighter green; those from the bottom are on long petioles, but those on the stem sit close to their sheaths: the leaflets (seven to ten) lanceolate, acuminate, sharply serrate, smooth, gashed, usually trifid, the divisions sometimes deeply lobed; and at the base of each peduncle is a similar leaf, only smaller: the peduncles axillary, an inch long, round; supporting two (sometimes only one) nodding, green flowers. It is a native of France, &c. flowering in March and April.

The fourth has a small but bent root, with a prodigious number of slender dark-coloured fibres: the stem is from eighteen inches to near a yard in height, towards the bottom round, strong, naked, marked with alternate scars, the vestiges of former leaves; dividing and subdividing at top into many branches, producing great abundance of flowers pendent, of a pale yellowish colour: the leaves composed of eight or nine long narrow lobes, joined at their base, commonly four on each side, united at the bottom, and one in the middle of the foot-stalk, serrate, and ending in acute points; those on the lower part much larger than those on the upper, of a deep

green colour. It is a native of Italy, &c. flowering from November or December to April.

The fifth species resembles the third, but differs in having trifoliolate leaves, broader and entire, their surface being smoother, and the stalks rise higher than either of the common sorts. It flowers from January to May.

Culture.—The first sort is increased by planting the off-sets from the roots after the leaves are decayed, in the latter end of the summer season, in the places where they are to flower, in patches of several roots together. They have the best effect when intermixed with the Snow-drop, as being of similar growth, and flowering about the same time. The off-sets may be separated from the old plants every three or four years.

The second sort is increased by parting the roots in the autumn, and planting them out in moist warm sheltered situations, in the borders or other parts where the soil is fresh and unmanured. And to have it flower well, it should be protected by glasses in the winter. Some plants may be potted in this intention.

The third and fourth sorts are raised by sowing the seeds in the autumn or early spring, either in the places where they are to grow, or in beds for the purpose, afterwards thinning them out to a few plants, or transplanting them into other beds, at the distance of a foot in the rows.

They rise well from self-sown seed, and succeed in shady situations very well.

The last sort is increased by seeds and parting the roots.

The well ripened seeds should be sown, or the roots planted out, in the autumn, either in pots of light fresh earth, or in warm protected situations in the borders. The plants should afterwards be protected in the green-house, or by hand-glasses in the winter. But they do not increase fast in either of these ways.

These are all ornamental plants; the first sort in the fronts of beds, borders, and clumps; and the third and fourth in the large borders and wilderness parts of pleasure-grounds. The second and last sorts produce a fine effect among collections of potted plants.

2. HYPERICUM HIRCINUM.

FETID ST. JOHN'S WORT.

THIS genus furnishes plants of the shrubby and under-shrubby, hardy and tender kinds.

It belongs to the class and order *Polyadelphia Polyandria*, and ranks in the natural order of *Rotaceæ*.

The characters are: that the calyx is a five-parted perianthium: segments subovate, concave, permanent: the corolla has five petals, oblong-ovate, obtuse, spreading, wheel-shaped, according to the sun's apparent motion: the stamina have numerous capillary filaments, united at the base in five or three bodies: anthers small: the pistillum is a roundish germ: styles three (sometimes one, two, or five), simple, distant, the length of the stamens: stigmas simple: the pericarpium is a roundish capsule, with the same number of cells as there are styles: the seeds very many and oblong.

The species cultivated are: 1. *H. balearicum*, Warted St. John's-wort; 2. *H. Ascyron*, Great flowered St. Peter's-wort; 3. *H. Androsæmun*, Common Tutsan; 4. *H. Canariense*, Canary St. John's-wort; 5. *H. hircinum*, Stinking Shrubby St. John's-wort; 6. *H. monogynum*, Chinese St. John's-wort.

The first rises with a slender shrubby stalk in this country, about two feet high; but in its native soil it acquires the height of seven or eight feet, sending out several weak branches of a reddish colour, and marked with scars where the leaves have fallen off: the leaves are small, oval, waved on their edges, and having several small protuberances on their under side: they sit close to the branches, half embracing them at the base: the flowers are terminating, large, bright, yellow. It is a native of Majorca.

The second species has a stem a cubit and half high, round,

smooth, rufescent: the leaves are pale green, paler underneath, an inch long and half an inch wide, roundish, opposite: the flowers terminating: calyx green: corolla pale yellow, five times as large as in the common sort. It is a native of the Pyrennees.

The third has a perennial, thick, woody root, of a reddish colour, sending out very long fibres: the stems suffruticose or under-shrubby, ancipital two-edged or slightly winged on opposite sides, two feet high and more, branched towards the top, of a reddish colour, and smooth: branches brachiate or decussated, spreading: the leaves opposite, sessile, ovate, entire, smooth, dark green, glaucous on the under side, netted with numerous projecting veins and nerves, which become through age ferruginous: on the stem they are two inches long, and an inch and half broad at the base; those on the branches are smaller, of different sizes, and some of them approaching to lanceolate: the flowers small for the size of the plant, disposed in a cyme: the peduncles round, smooth, usually two or three-flowered, but sometimes one-flowered: the fruit an ovate capsule, assuming the appearance of a berry; at first yellowish green, then red or brownish purple, and lastly almost black when ripe. It is a native of the south of Europe.

The fourth species rises with a shrubby stalk six or seven feet high, dividing into branches at top: the leaves are oblong, set by pairs close to the branches, having a strong odour, but less than those of the fifth: the flowers terminating in clusters, very like those of the fifth. It is a native of the Canary islands, flowering from July to September.

The fifth rises with shrubby stalks three feet high, sending out small opposite branches at each joint: the leaves are oblong, ovate, placed by pairs, sessile, and having a rank smell: the flowers are in terminating bunches. It is a native of the south of Europe, flowering from July to September.

There are varieties; one larger, which is the common one: the other smaller.

The sixth has a root composed of many woody fibres, striking deep into the ground: the stems several, shrubby, near two feet high,

covered with a purplish bark: the leaves stiff, smooth, about two inches long, and a quarter of an inch broad, opposite, sessile, of a lucid green on their upper surface, and gray underneath, having many transverse veins running from the midrib to the border: the flowers terminating in small clusters, each on a short peduncle. It is a native of China, flowering from March to September.

Culture.—The first and last sorts are more tender than the others, requiring the protection of the green-house in winter. They are capable of being increased by layers or cuttings. The former are made in the spring on the young shoots, which, when well rooted in the end of summer, may be taken off and planted out in separate pots. The cuttings of the young shoots may be planted in pots in the summer, and plunged in a hot-bed, and when well rooted, removed into separate pots.

The last species may likewise be increased by planting slips of the roots in the spring, in the same manner.

They may also be raised by sowing the seed in pots, in the spring, and plunging them in a hot-bed just to bring up the plants.

The second and third sorts are readily increased by sowing the seeds in the autumn, in a bed of common earth, or where they are to remain.

They are, however, best raised by slipping the roots, and planting them, at the same time, where the plants are to grow.

The fourth and fifth sorts are easily increased by planting slips from the old roots in the autumn or spring, taken with root fibres to them; or by dividing the roots, and planting them where they are to grow, or in nursery rows.

They may likewise be increased by seeds, sown as in the two former species, removing them in the spring following to where they are to remain.

The two tender sorts afford variety in green-house collections, and the other sorts in the borders, clumps, and other parts of pleasure grounds.



Painted by Syd Edwards

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Engraved by F.Sanyon

Hemerocallis fulva
1 *Town Lily*

Hibiscus syriacus
2 *Althæa Frutes*

PLATE XXVIII.

1. HEMEROCALLIS FULVA.

TOWN LILY.

THIS genus contains plants of the herbaceous flowery perennial kinds.

It belongs to the class and order *Hexandria Monogynia*, and ranks in the natural order of *Liliaceæ*.

The characters are: that there is no calyx: the corolla is six-parted, bell-funnel-form: tube short: border equal, spreading, more reflex at top: the stamina have six subulate filaments, the length of the corolla, declining; upper ones shorter: anthers oblong, incumbent, rising: the pistillum is a roundish germ, furrowed, superior: style filiform, the length and situation of the stamens: stigma obtusely-three-cornered, rising: the pericarpium is an ovate-three-lobed capsule, three-cornered, three-celled, three-valved: the seeds very many, and roundish.

The species are: 1. *H. flava*, Yellow Day-Lily; 2. *H. fulva*, Copper-coloured Day-Lily.

The first has strong fibrous roots, to which hang knobs, or tubers, like those of the Asphodel, from which come out leaves, two feet long, with a rigid midrib, the two sides drawing inward, so as to form a sort of gutter on the upper side: the flower-stalks rise two feet and a half high, having two or three longitudinal furrows; these are naked, and at the top divide into three or four short peduncles, each sustaining one pretty large yellow flower shaped like a Lily, having but one petal, with a short tube, spreading open at the brim, where it is divided into six parts; these have an agreeable scent, from which some have given them the title of Yellow Tuberose. It is a native of Siberia, &c. flowering in June.

There is a variety with smaller roots; the leaves are not near so long, have not more than half the breadth, and are of a dark green colour: the flower-stalk is a foot and half high, naked and compressed, without furrows; at the top are two or three yellow flowers, which are nearer the bell-shape than the others, and stand on shorter peduncles.

The second species is a much larger plant than the first, and the roots spread and increase much more; the roots have very strong fleshy fibres, to which hang large oblong tubers: the leaves are near three feet long, hollowed like those of the former, turning back toward the top: the flower-stalks are as thick as a man's finger, and rise near four feet high; they are naked, without joints, and branching at the top, where are several large copper-coloured flowers, shaped like those of the Red Lily, and as large. These flowers never continue longer than one, but there is a succession of flowers on the same plants for a fortnight or three weeks. It flowers in July and August.

Culture.—These plants are easily increased by planting the offsets taken from the roots in autumn in any situation, as they are extremely hardy. They afterwards require no other culture, but to keep them clean from weeds, and to allow them room, that their roots may spread.

The first sort may also be increased by seeds, which should be sown in autumn. The plants come up in the following spring, and these will flower in two years.

A moist soil and shady situation are the best suited to their growth; their size, and the great increase of their roots, especially in the second sort, render them most proper for large gardens and plantations, where they produce much variety and effect.

2. HIBISCUS SYRIACUS.

ALTHEA FRUTEX.

THIS genus furnishes plants of the shrubby and flowery exotic kinds.

It belongs to the class and order *Monadelphia Polyandria*, and ranks in the natural order of *Columniferæ*.

The characters are: that the calyx is a double perianthium: outer many-leaved, permanent: leaflets linear: more rarely one-leaved, many-cleft: inner one-leaved, cup-shaped, half five-cleft, permanent: or five-toothed, deciduous: the corolla has five petals, roundish-oblong, narrower at the base, spreading, fastened at bottom to the tube of the stamens: the stamina have very many filaments, united at bottom into a tube, at top (in the apex and surface of this) divided and loose: anthers kidney-form: the pistillum is a roundish germ: style filiform, longer than the stamens, five-cleft at top: stigmas headed: the pericarpium is a five-celled capsule, five-valved: partitions contrary, doubled: the seeds solitary or several, ovate-kidney-form.

The species cultivated are: 1. *H. Syriacus*, Syrian Shrubby Hibiscus, or *Althæa Frutex*; 2. *H. Trionum*, Bladder Hibiscus, Bladder Ketmia, or Flower of an Hour; 3. *H. Rosa Sinensis*, China Rose Hibiscus; 4. *H. mutabilis*, Changeable Rose Hibiscus, or Martinico Rose.

The first rises with a shrubby stalk to the height of six or seven feet, sending out many woody branches, covered with a smooth gray bark: the leaves have the upper part frequently divided into three lobes, placed alternately on the branches, and stand on short footstalks: the flowers come out from the wings of the stalk at every joint of the same year's shoot; they are large, and shaped like those

of the mallow, having five large roundish petals, which join at their base, spreading open at the top in the shape of an open bell: these appear in August, and if the season is not too warm, there is a succession of flowers part of September. The early flowers are succeeded by short capsules; but unless the season proves warm, they do not ripen in this climate. It is usually termed *Althæa frutex* by the nursery gardeners. It is a native of Syria.

There are varieties with pale purple flowers, with dark bottoms; with bright purple flowers, with black bottoms; with white flowers, with purple bottoms; with variegated flowers, with dark bottoms, called *Painted Lady Althæa frutex*; with pale yellow flowers, with dark bottoms; with variegated leaves, and with double flowers.

The second species rises with a branching stalk a foot and a half high, having many short spines which are soft: usually the leaves are divided into three lobes, which are deeply jagged almost to the midrib; these jags are opposite, and the segments are obtuse: the flowers come out at the joints of the stalks upon pretty long peduncles; the outer calyx is composed of ten long narrow leaves, which join at their base; the inner is of one thin leaf, swollen like a bladder, cut into five acute segments at the top, having several longitudinal purple ribs, and is hairy; both these are permanent, and enclose the capsule after the flower is past: the flower is composed of five obtuse petals, which spread open at the top, and form an open bell-shaped flower; these have dark purple bottoms, but are of a pale sulphur colour above, tinged sometimes partially with pale purple on the outside, where they are also ribbed: the capsule is ovate, the consistence of paper, pustuled with protuberances occasioned by the seeds, villose and black. It is annual, growing naturally in Italy, &c. The flowers are of short duration, in hot weather continuing only a few hours open; but there is a succession of them daily for a considerable time, in June, July, and August. It has been long known by the title of Venice Mallow.

There are varieties with erect purplish stems, and the flowers larger, and their colour deeper; and with large paler-coloured flowers.

The third, in its native situation, grows to the size of an ordinary tree; but here it is shrubby, the stem round, erect, with alternate, spreading branches, that are wand-like, leafy, brownish-green, and nearly smooth: the leaves alternate, spreading, unequally and coarsely serrate, entire at the base, five-nerved, bright green, very smooth, except the young ones, which are slightly downy; their petioles are round, downy on the upper side: the stipules in pairs, opposite, at the base of the petioles, linear, acute, deciduous: the flowers axillary, solitary, peduncled, large, of a deep scarlet colour, resembling a double rose. It is common in China and the East Indies. It is rare with single flowers.

The fourth species has a pale stem, single, smooth, spreading out wide into leafy branches at top; the wood resembling that of the fig: the leaves are the same size with those of the vine, having the roughness of fig leaves, and the form of both, or rather of the angular leaves of ivy; whitish underneath: the petioles rough, thick, three or four inches in length: the peduncles thicker towards the top, sometimes tinged with red, sustaining large handsome flowers, which alter in their colour, as at their first opening they are white, then they change to a blush rose-colour, and as they decay they turn to a purple. Martyn remarks, that in the West Indies all their alterations happen the same day; but that in England, where the flowers last near a week in beauty, the changes are not so sudden. It is a native of the East Indies, &c. The period of its blowing in the stoves of this climate is November and December.

It varies with double flowers, from which the single is frequently produced; but the seeds of the single seldom vary to the double kind.

Culture.—The first sort is increased by seeds, layers, and cuttings.

The seeds should be procured from abroad, and sown in pots filled with light earth in the early spring months, plunging them in a gentle hot-bed to bring them forward, or on a border in a warm exposure. They should be watered during the summer, and be protected from frost in the winter. When they have had two years

growth, they may be set out in nursery rows, or be planted where they are to remain.

The layers should be laid down in the autumn, the shoots being cut on the backs at one or two joints, and well laid into the ground. They are generally well rooted in twelve months, when they may be taken off and removed to where they are to remain.

The cuttings of the young shoots should be planted in pots of light earth in the early spring, plunging them in a mild hot-bed; or they may be planted in a shady border in the summer season. When well rooted, they should be carefully taken up and planted where they are to remain, either in the autumn or spring.

The second sort is increased by sowing the seed either in the autumn or spring, in the places where the plants are to flower, in patches of several seeds together. When they come up, they should be thinned out to two or three plants in each patch.

The two last sorts may be increased by sowing the seeds in the early spring months, in pots filled with rich light mould, plunging them in a moderate hot-bed under glasses, or, what is better, in the bark-bed of the stove. When the plants are up, and have attained two or three inches in growth, they should be removed into separate small pots, watering them well, and replunging them in the hot-bed, where they must be kept.

They may likewise sometimes be raised by planting cuttings of the young shoots in pots of the same sort of earth, in the spring or summer, giving them water, and plunging them in the bark hot-bed. They should afterwards be managed as the others.

The two first hardy sorts are highly ornamental in the borders and clumps, among other flowery plants; and the two last tender sorts produce much variety by their beautiful flowers in the stove and conservatory collections.



Drawn by Syd Edwards

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Engraved by F. Santen

Ixia Chinensis
1 Chinese Ixia

Iberis Gibraltarica
2 Gibraltar Candy Tuft

PLATE XXIX.

1. IXIA CHINENSIS.

CHINESE IXIA.

THIS genus contains plants of the herbaceous, bulbous, and tuberous root perennial kind.

It belongs to the class and order *Triandria Monogynia*, and ranks in the natural order of *Ensatae*.

The characters are: that the calyx is a spathe, bivalve, inferior, shorter than the corolla: valves oblong, permanent, the exterior wider, sheathing the interior: the corolla one-petalled, regular, superior: tube filiform, gradually enlarged, straight: border regular, bell-shaped, six-parted: divisions oblong, obtuse, equal, spreading: the stamina have three filaments, thread-subulate, inserted into the tube near the orifice, shorter than the corolla: anthers oblong, furrowed: the pistillum is an inferior, triangular germ: style simple, filiform, upright: stigmas three, filiform: the pericarpium is an ovate capsule, three-sided, obtuse, three-celled, three-valved: the seeds several, roundish, smooth.

The species cultivated are: 1. *I. Bulbocodium*, Crocus-leaved Ixia; 2. *I. Chinensis*, Chinese Ixia; 3. *I. rosea*, Rose-coloured Ixia; 4. *I. bulbifera*, Bulb-bearing Ixia; 5. *I. aristata*, Bearded Ixia; 6. *I. flexuosa*, Bending-stalked Ixia; 7. *I. polystachia*, Many-spiked Ixia; 8. *I. maculata*, Spotted Ixia; 9. *I. crocata*, Crocus-flowered Ixia.

The first has a roundish bulb, placed on the withered bulb, double the size of a pea, white, covered with a bay-coloured skin: the leaves three or four, in the flowering plant radical, in the fruiting cauline, spreading horizontally, half a foot or thereabouts in length, smooth, sharpish: the stem solitary, upright, two inches high, above the up-

permost leaf, convex on one side, flat on the other; in the fruiting plant a little higher, in the cultivated one sometimes half a foot in height: the spathe terminating, two-valved: leaflets narrow-lanceolate, acute, concave, opposite; one upright, green, almost the length of the corolla; the other a little shorter, green on the back, but otherwise membranaceous and pellucid, patulous, whence the flower becomes as it were lateral. It is inodorous, and a native of Italy, flowering about the middle of April.

It varies with white and yellow flowers, with purplish and yellow flowers, with blue and white flowers, with white flowers, and with variegated flowers.

The second species has the scape round, fistulous, jointed, upright, simple at bottom, paniced-dichotomous or trichotomous at top, smooth, almost the thickness of a finger, two feet high: the leaves alternate, embracing, equitant, acute, entire, striated, smooth, the lower a little longer, about half the length of the stem, a span long and more: the flowers from the tips of the branches of the panicle, in umbels, from three to seven, peduncled: peduncles striated, one-flowered, an inch long: the spathe under the divisions and the umbel, withered. In India, the stalks rise to the height of five or six feet, but in this climate they are seldom more than half that height. The flowers are of a yellow colour within, and variegated with dark red spots; the outside is of an orange colour: these appear in July and August, and in warm seasons are succeeded by seeds. It is a native of the East Indies, &c.

The third has an ovate bulb, smooth, subtruncated: the scape three (or four) cornered, sheathed at bottom, branched, few-flowered, smooth, from a hand to a span in height: the leaves acute, grooved, smooth, the lowest, which is the longest, frequently double the length of the scape, or more, is lax and reflex; the two or three others are about the length of the scape, and upright: the flowers at the ends of the branches rather large, coming out one after the other: the outer spathe ovate, green; inner lanceolate, acute, membranaceous, sheathing the capsule.

It varies with the three inner segments of the corolla yellow, and

the three outer green; with the three inner white-yellow, the three outer greenish; with the three inner blue-white, the three outer greenish; with the three inner white, the three outer green; with corollas wholly yellow; or wholly blue, or rose-coloured with a yellow base; also in the size of the flowers.

The fourth species has the scape simple or branched, somewhat compressed, striated, smooth, sheathed at bottom with leaves, from a hand to a foot in height: the leaves nerved and striated, distich, upright, smooth, a span long: the flowers three or more, large, with the rachis between the flowers flexuose: the spathe nerved and netted, gray, with a dusky tip: tube of the corolla only a line in length: border divided beyond the middle, but not to the tube: segments large, ovate-oblong, very blunt, spreading.

It varies with the corolla purple, red and white, yellow; with the scape very short and simple, higher and branched, and bulbiferous.

The fifth has a netted bulb, the size of a hazel nut: the scape simple, round, upright, smooth, from a hand to a foot in height and more: the leaves four or five, linear, five-nerved, the middle nerve and edges thicker, acute, upright, shorter by half than the scape: the flowers pointing one way (very seldom one only) on two branches, often from five to nine on a scarcely flexuose rachis: the spathes submembranaceous, awn-toothed: the corollas white flesh-coloured.

It varies with the segments of the borders of the corolla of a deep and elegant purple-violet colour within, three of them of the same colour on the outside, but the three others alternately of a pale dirty violet; one of these with two on the side of it has a double band in the throat meeting at one end; and, according to Mr. Salisbury, with whitish corollas, having a purple star, violet-coloured and yellow. In Miller's figures, with the corolla of a beautiful purple on the outside, but white within, and the stem terminated by two or three flowers; with the stalk terminated by two large flowers; the outside of a violet colour, edged with white, and the inside pale blue; and with one flower, and the corolla of a most beautiful purple colour both within and without.

The sixth species has a very small round bulb: the leaves three or four, long, slender, grass-like, dark green: the stem very slender, round, a foot and half high: at the top the flowers are collected in a spike sitting close to the stalk, each having a thin, dry spathe, which covers the capsule after the flower is fallen. The corolla is pure white, and small.

The seventh species has a bulb the size of a hazel nut: the leaves three or four, many-nerved, upright, smooth, half the length of the scape: the scape round, smooth, upright, many-spiked, from a foot to two feet in height: the branches alternate, capillary, upright, a finger's length: the flowers on the scape and branches in spikes, on a flexuose rachis of a finger's length: the spathes submembranaceous and awned. The flowers appear in May.

It varies with the corollas yellow and violet, of one colour.

The eighth species has the bulb double the size of a hazel nut: the leaves three, four, or five, many-nerved, half the length of the scape: the scape usually simple, seldom many-spiked, round, upright, from a span to a foot high and more: branches filiform, upright, or spreading very much: flowers in terminating spikes, on a flexuose rachis: spathes membranaceous, gray at the base, brown at the tip, somewhat jagged: the corolla, above the mouth of the tube, has a dusky spot at the base of the border.

According to Miller, the stalk is slender, stiff, a foot and half long, naked to the top, where it is terminated by a round bunch of flowers, each enclosed in an oblong spathe, which is permanent, and splits open on one side: the flowers are on short peduncles, deep yellow with a dark-purple bottom. It flowers in May and June.

The ninth has the bulb a little larger than a hazel nut: the leaves about five, reflex-subfalcate, many-nerved, from an inch to a finger's length, half or one-third of the length of the scape: the scape simple, round, or branched, somewhat flattened, flexuose, upright, smooth, from a hand to a span in height: the branches spreading very much, naked, like the scape: the bractes gray at the base, ferruginous at the tip, slightly toothed and jagged: the flowers pointing one way, handsome, bell-shaped, with a short tube, orange-coloured with a

paler hyaline or transparent mark above the mouth of the tube; seldom two, but most commonly five or seven. It is one of the handsomest of the *Ixias*, and like other sorts becomes handsomer and more branched by cultivation.

It varies with a short, simple, few-flowered scape, and a dark spot above the windowed or hyaline one, with a lofty, many-spiked, many-flowered scape, and with bright red flowers.

Culture.—These plants may be increased by seeds or off-sets.

The seeds of such sorts as can be procured should be sown in pots filled with light earth, in the spring, plunging them in a mild hot-bed. When the plants have attained some growth, they should be removed into separate pots of the same earth, being placed under the protection of a frame till they have taken root. They should be placed during the winter in a hot-bed frame. They may afterwards be removed into warm borders, being protected from frosts in the winter, and a few retained in pots under the frame, or in a dry stove

They are three or four years in flowering when raised from seeds.

The common way is therefore to increase them by planting off-sets from the roots, which are afforded in great plenty; the proper season for this is in the early spring, before the shooting of the root, when the roots should be removed, and the off-sets taken off and planted out.

The old roots should not be removed oftener than every three years.

When the stems and leaves decay to the roots in the borders in autumn, they should be covered over with tan a few inches thick, to protect them from frost and the depredations of mice.

The hardy sorts serve to adorn the borders in the open ground, and the other tender sorts among other potted green-house plants, that require protection in winter.

2. IBERIS GIBRALTARICA.

GIBRALTAR CANDY TUFT.

THIS genus contains plants of the herbaceous, annual, perennial, and under-shrubby kinds.

It belongs to the class and order *Tetradynamia Siliculosa*, and ranks in the natural order of *Siliquosæ*, or *Cruciformes*.

The characters are: that the calyx is a four-leaved perianthium: leaflets obovate, concave, spreading, small, equal, deciduous: the corolla is four-petalled, unequal: petals obovate, obtuse, spreading: claws oblong, upright: of these the two exterior petals are far larger, and equal to each other: the two interior very small, reflex: the stamina have six awl-shaped filaments, upright: of which the two lateral ones are shorter: anthers roundish: the pistillum is a roundish, compressed germ: style simple, short: stigma obtuse: the pericarpium is an upright, suborbiculate, compressed silicle, emarginate, surrounded by a sharp edge, two-celled: partition lanceolate: valves navicular, compressed, carinated: the seeds a few, and subovate.

The species are: 1. *I. umbellata*, Purple Candy-tuft; 2. *I. amara*, White Candy-tuft; 3. *I. linifolia*, Flax-leaved Candy-tuft; 4. *I. odorata*, Sweet-scented Candy-tuft; 5. *I. rotundifolia*, Round-leaved Candy-tuft; 6. *I. semperflorens*, Broad-leaved Evergreen Candy-tuft; 7. *I. sempervirens*, Narrow-leaved Evergreen Candy-tuft; 8. *I. Gibraltarica*, Gibraltar Candy-tuft.

The first has an annual root, white, oblong, fusiform: the stem upright, leafy, half a foot, or from a span to a foot in height, subangular, green, smooth, branching: the leaves are frequent, alternate, lanceolate, acuminate, smooth: the flowers in a hemispherical corymb, on peduncles half an inch in length, of a pale purple colour. It is a native of the south of Europe, flowering in June and July.

There are varieties with bright purple flowers, and with white flowers.

The second species resembles the first very much, but is smaller: the stem is seven or eight inches high, pubescent, somewhat rugged, branched: branches diffused, alternate, the lower ones sometimes opposite, not rising all to the same height: the leaves are alternate, oblanceolate, or linear-lanceolate, blunt, sessile, decurrent, bright green, thickish, smooth, the lower ones serrate, the rest toothletted, especially in front, or with a tooth or two on each side: the flowers white, in a terminating spike-like raceme; or rather, in a corymb lengthened into a raceme as the inflorescence advances. It is a native of Switzerland, &c.

The third has a simple, white, twisted root, having few fibres: the root-leaves lanceolate-linear, serrate, withering and falling as the stem advances: stem-leaves linear, quite entire, sessile, few, gradually shorter, sharpish: the stem herbaceous, straight, slender, branched at top: branches mostly bifid: the flowers of a purple colour, in corymbs, the outer ones peduncled, with the two other petals larger. It is a native of Spain, &c. and is annual, flowering in July.

The fourth species seldom grows so large as the first, and the flowers are much smaller, but have an agreeable odour. They are in close corymbs, and are of a snowy whiteness. It is a native of Geneva.

The fifth has a creeping stem: the leaves are smooth, soft; those next the root quite entire and petioled, those on the stem smooth and entire: the flowers are reddish purple, almost regular, in racemes, on spreading peduncles. It is a native of Switzerland, flowering from May to July.

The sixth species is a low shrubby plant, which seldom rises above a foot and half high, having many slender branches, which spread on every side, and fall towards the ground if they are not supported. These branches are well furnished towards their extremity with leaves, which continue green all the year; and in summer the flowers are produced at the end of the shoots, are white, and grow in an umbel, continue long in beauty, and, being succeeded by others, the

plants are rarely destitute of them from the end of August to the beginning of June. It is a native of Persia, &c.

There is a variety with white striped leaves.

The seventh is of humbler growth than the sixth, seldom rising more than six or eight inches high, the branches rather herbaceous: the leaves continue green through the year, and the flowers are of as long duration as those of the sixth species. It is a native of the Island of Candia, flowering from April to June.

In the eighth species the stems are many, thick, green, striated, ascending from a foot to eighteen inches in length, divided into several branches: the leaves alternate, gradually widening from a narrow base, ending in a blunt point, thick, smooth, veinless except in the middle, dark green above, somewhat paler underneath: the flowers terminating in corymbs, at first white, afterwards pale purple, without scent. It is a native of Spain, flowering early in the spring.

The stems are ridged and woody, and the leaves larger and less bluntly toothed in the cultivated plant. The flowers are also twice as large.

Culture.—The four first annual sorts must be raised annually from seed, by sowing it at different times in the spring, in patches, in the fronts of borders, clumps, and other parts of pleasure-grounds, where the plants are to flower, thinning them properly afterwards.

The fifth sort may be raised by planting the root off-sets and cuttings as below.

The three shrubby perennial sorts may be increased by slips and cuttings, which should be planted out in pots, plunging them in a moderate hot-bed, or in a warm shaded border in the later spring and early summer months, water being occasionally given. When well rooted in the autumn, they should be removed into pots, being protected in the winter season in the green-house.

The first sorts are very ornamental in the open ground, when properly varied. And the latter in green-house, and other potted collections. A few of them may likewise be set out in the warm shrubbery borders.





