A MANUAL FLORA
OF
MADEIRA
AND
THE ADJACENT ISLANDS
OF
PORTO SANTO AND THE DESERTAS.

BY
RICHARD THOMAS LOWE, M.A.

VOL. I.
DICHLAMYDEÆ.

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MDCCCLXVIIII.
Κράναι καὶ βοτάναι, γλυκέρον φυτῶν
Παντᾶ ἔαρ, παντᾶ δὲ νομοί.
Theocr. Idyll. 8. 37, 41.

Hic ver assiduum, atque alienis mensibus aestas;
Bis gravidæ pecudes, bis pomis utilis arbos.
At rabidas tigres absunt, et sæva leonum
Semina: nec miseròs falluntaconita legentes:
Nee rapit immensos orbes per humum neque tanto
Squameus in spiram tractu se colligit anguis.
TO

T. VERNON WOLLASTON, Esq., M.A., F.L.S.,
AUTHOR OF 'INSECTA MADERENSIA,' 'CANARIAN COLEOPTERA,' 'COLEOPTERA ATLANTIDUM,' 'COLEOPTERA HESPERIDUM,' 'ON THE VARIATION OF SPECIES,' ETC. ETC.,

OF WHOSE COMPANIONSHIP AND FRIENDSHIP SO MANY OF THE FOLLOWING PAGES CONTAIN SOME PLEASANT REMINISCENCE,

THIS VOLUME IS AFFECTIONATELY OFFERED AND INSCRIBED

BY

THE AUTHOR.
IMPEDED by graver avocations, and in prospect of being obliged shortly to suspend altogether further progress by the necessity of leaving England for the benefit of health, I have decided on publishing at once the following portion of the Flora of Madeira; which I offer rather for the local use of invalids, or other persons resorting to the island for a temporary residence, and who may find in these pursuits interest and recreation for themselves or kindly employment in behalf of friends at home, than with the hope of imparting to European botanists much new or valuable matter. Still the following pages will supply, it may be hoped, one desideratum: namely, a more complete and correct catalogue of the living plants, actually or heretofore existing in Madeira and the adjacent islands, than has yet been provided. For, although several more or less accurate or full lists have appeared in print, whilst lately one in manuscript, formed by my regretted friend, Dr. Charles Lemann, partly indeed from his own researches, but completed with reference to a great part of the Madeiran and the whole of the Porto-Santan and Dezertan species from my own catalogue lent him for his private use, has been communicated since his death to several botanists, still there is wanting, in a form accessible to every one, any such authentic and exact register of the plants really growing in Madeira as I may not unreasonably hope to furnish: my present list being the careful fruit of a twenty-six years’ constant residence in the island, and of a subsequent six months’ visit in 1855, improved by diligent attention to the previous or contemporary labours of others in the same field, and above all by the free use of the important authentic materials deposited in the Banksian and Hookerian Herbaria, accorded by the liberality and friendship of their respective guardians or owner. To Sir W. J. Hooker,
Mr. Robert Brown, and Mr. J. J. Bennett, are indeed owing my most cordial thanks.

On my return to England it is my purpose, if life be spared, not only to complete the present little publication, but to follow it up, as health and leisure may permit, with a series of similar Manuals on the Ferns and other Cryptogamic plants, the Birds and Fishes, Shells or Mollusks, marine and terrestrial, of the island: such as, in conjunction with the elaborate and admirable works of Mr. Wollaston on the Insects, may furnish together a tolerably complete Natural History of the Madeiran group.

In the mean time, no further inconvenience than delay will accrue to the purchasers of the present instalment, in itself complete, of the Phænogamic Flora, by its separate publication. When its sequel is carried through the press, care will be taken to make the paging continuous with that of the part now published, so that the whole may be ultimately bound up in one volume, for which a fresh title-page, with other introductory or prefatory matter, tables, indices, &c., will be supplied.

One word then only for the present to collectors in Madeira. It is a much better plan to take out a sufficient stock of drying-paper for the day's walk or excursion, strapped or tied up between two common boards of suitable size, placing the plants at once when gathered between the sheets, than to collect them in a herborizing-box, not laying them out till the conclusion of the expedition in the evening. A great amount of trouble is thus saved: and, indeed, the heat of the sun in Madeira renders the herborizing-box almost useless, its contents generally withering long before they can be carried home. The roughest wooden boards are better than the best paste-boards, pressing more equably, and affording more protection from a casual shower. At night, a stone of suitable weight placed on the bundle, forms the best possible plant-press.

EXPLANATIONS AND ABBREVIATIONS.

REGIONS OR ZONES OF VEGETATION IN MADEIRA.

1. CACTUS and BANANA.—Tropical, cultivated, reaching from the sea to a height of 700 feet. Characterized by the following plants:

**Cultivated.**—Banana, Palm, Sugar Cane, Arrowroot, Rose-apple, Custard-apple, Guava, Fig, Cypress, Bamboo, Oleander, Judas-tree, Carob-tree, Coral-trees (Erythrina), Brugmansia, Bignonia, Hibiscus, Poinsettia, Euphorbia, Duranta, Casalpinia, Alpinia, Hedychium, Hoya, Stephanotis, Cereus (triangularis L., speciosissimus Desf., phyllanthoides DC., &c.), Passiflora (quadrangularis L., edulis Ker, Lowei Heer, &c.).


2. VINE and CHESTNUT*.—Temperate, cultivated, from 500 to 2500 feet. The chief characteristic plants are—

* The Chestnut forms from 1500 to 2500 feet a sort of upper belt or border to this zone, below whose upper limit snow never lies longer than a few hours.
EXPLANATIONS AND ABBREVIATIONS.


3. LAUREL and HEATH.—Mountains; uncultivated, from 2500 to 5500 feet. The principal plants are—

Naturalized.—Common Broom and Mountain Ash (Pyrus Au-ccaria L.); the latter perhaps indig.


4. HIGHEST PEAKS.—Rocky crags and summits of the higher mountains, uncultivated, from 5500 to about 6000 feet. The only peculiar plants are—

EXPLANATIONS AND ABBREVIATIONS.

REGIONS OR ZONES OF VEGETATION IN PORTO SANTO.

1. Maritima or Littoral.—From the sea to a height of 100 feet; cultivated. The characteristic plants are—


2. Collina or Hill-side zone.—From 100 to 1200 feet; cultivated.


3. Montana or Mountain-pastures.—From 1000 or 1200 to 1500 feet; partially cultivated, but chiefly grassy.


4. Excelsa or Rocky mountain-peaks.—From 1200 or 1500 to nearly 1700 feet; bare uncultivated highest crags.

EXPLANATIONS AND ABBREVIATIONS.

REGIONS OR ZONES OF VEGETATION IN THE DEZERTAS.

N.D.—North or Little Flat Dezerta.

MARITIME wholly.—Sea-cliffs, and top of the Island at or a little above 300 feet. The principal plants are—


M.D. or G.D.—Middle or Great Dezerta.

1. MARITIME.—Sea-cliffs, and up to a height of 800 or 1000 ft.


2. MOUNTAIN.—Central Valley and Mountains, from 800 or 1000 to 1600 ft.

Cult. or naturalized.—A little Wheat and Rye, a few Firs (Pínus Pinaster L.), a Fig-tree or two, a few Cabbages, a Tobacco plant or two, Common Broom, Furze (Ulex europæus L.), Milk or Holy Thistle (Sílybum Marianum Gaërtn.), Arundo Donax L., Reseda Luteola L., Popaver somniférum L., &c.

EXPLANATIONS AND ABBREVIATIONS.

S.D.—South Dezerta or Bugio.

1. MARITIME.—Sea-banks and cliffs up to a height of 1000 or 1200 ft.


2. MOUNTAIN.—Top of the Island, at or above 1200 or 1300 ft.


LOCALITIES OR HABITATS.

Mad. Madeira.
PS. Porto Santo.
ND. North or Flat Dezerta; “Ilheo Chaç.”
MD. or GD. Middle or Great Dezerta; “a Dezerta.”
SD. South Dezerta; “Bugio.”
reg. Region or Zone in each of these.

When any of these habitats are specified, the plant must be understood not to have been discovered in the rest.

When none are mentioned, the plant has been observed in all.

RARITY OR ABUNDANCE.

EXPLANATIONS AND ABBREVIATIONS.


r. — Rare. In a few spots only, and in those tolerably abundant; but quite local. E.G. Daisy, Dandelion, Musschia aurea Ait., Erica cinerea L., Avena marginata Lowe, Polypodium drepanum Sw., Nothochleena vellea Ait., &c.


c. — Rather common. In many places, but confined to one Region only, and not very abundant. E.G. Heberdenia excelsa Ait. (Aderno), Ramunculus ereticus L. a, R. muricatus L., Cheiranthus mutabilis Her., Sideroxylon Mermulana Lowe, Cheiranthes suaveolens Sw., &c.


EXPLANATIONS AND ABBREVIATIONS.


NATURE AND DURATION.

Herb. ...... Herbaceous.
Shr. ...... Shrub.
Suffr. ...... Do. under a foot high.
Tr. ...... Tree.
Ann. ...... Annual.
Bien. ...... Biennial.
Per. ...... Perennial.

SEASONS.

Sum. ...... Summer, i.e. June, July, Aug.

TERMS OR DESCRIPTION.

ach. ...... achænia.
anth. ...... anthers.
br. ...... bracts.
caps. ...... capsule.
carp. ...... carpels.
cor. ...... corolla.
fil. ...... filaments.
fl. ...... flower.
fr. ...... fruit.
ft. ...... feet.
in. ...... inches.
inv. ...... involucre.
L. l. ...... leaves.
lfts. ...... leaflets.
l. c. ...... loco citato; i.e. in the place last quoted.

ov. ...... ovary.
ouv. ...... ovules.
pan. ...... panicle.
ped. ...... peduncle.
pedic. ...... pedicel.
pet. ...... petals.
pl. ...... plant.
rac. ...... raceme.
recept. ...... receptacle.
seeds. ...... seeds.
segm. ...... segments.
sep. ...... sepals.
sp. ...... species.
spec. ...... specimen.
st. ...... stem.
stam. ...... stamens.
stip. ...... stipules.
var. ...... variety.

PUBESCENCE.

1. Hairs soft.

pubescent ...... downy with short fine hairs.
puberulous ...... downy in lowest degree.
pilose ...... hairy, with long distinct hairs.
villous ...... hairy, with copious long close-set hairs.
lanuginous ...... woolly.
tomentose ...... cottony.
flocose .... woolly or cottony, separating into loose locks.
velutinous .. velvety.
sericeous .... silky.
furry ....... clothed with short crisped or irregularly crumpled pubescence.

2. Hairs hard or stiff.

hispid .... rough, with short coarse hairs.
hispidulous .. rough in lowest degree.
hirtose....... sprinkled with long distinct hairs.
hirsute....... shaggy, with copious long close-set hairs.
strigose .... harsh, with rather short distinct very hard stiff hairs, often springing from a bulb or tubercle.
(Extreme of hispid.)
setose ...... bristly, with copious long close-set very stiff hairs. (Extreme of hirsute.)

DIRECTION OF STEMS.

creeping .... lying flat along the ground, and rooting here and there.
prostrate .... lying flat along the ground, but not rooting.
procumbent .. lying partly flat, the ends ascending: less of prostrate.
ascending . . a little prostrate at the base; then, and for the greater part of their length, upright.
decumbent . . rising obliquely from the base, but falling back upon the ground.
diffuse ...... spreading loosely irregularly from the base, but not falling back upon the ground: less of decumbent.
climbing .... trailing or laying hold in various ways, but not themselves twining.
twining .... twisting or winding spirally.

COLOUR OF FLOWERS.

w. .......... white. | or. .......... orange.
l. .......... lilac. | sc. .......... scarlet.
b. .......... blue. | r. .......... red.
y. .......... yellow. |
leucantha Willd., Gladiolus segetum Ker, Panicum repens L., &c.

††.—More or less naturalized or self-propagating and growing without culture, but certainly introduced originally: e.g. Cape Gooseberry (Physalis edulis Sims), Nicandra physalodes Gaëtn., Ageratum conyzoides L., Eclipta prostrata L., Eupatorium adenophorum Spr., Passiflora caerulea L., Cassia bicapsularis L., Pelargonium inquinans L., Lantana Camara L., Oxalis purpurea Jacq., Commelina communis L., Coccoloba antiquorum Sch. (Inhame), Richardia ethiopica L., Arundo Donax L., Maurandia, Aloe, Agave, Castor-Oil plant, Common Furze, Pomegranate, &c.

†††.—Subnaturalized or perfectly acclimatized, but not self-propagating, and growing not without some slight culture, or chiefly as a crop or common ornamental plant: e.g. Chestnut, Oak, Plane, Acacia, Robinia, Brugmansia, Fuchsia, Pelargonium, Heliotrope, Peach, Fig, Apricot, Quince, Mulberry, Flax, Wheat, Rye, Barley, Orange, Lemon, Plum, Cherry, Vine, Guava, Rosemary, Buddleia, Rose-apple, Lupines, French Beans, Gourds, Pumpkins, Onions, Cabbage, &c.

N.B. When no mark at all is prefixed, the plant is considered to be certainly or probably indigenous.

Books or Authors, etc. Most Frequently Quoted.

L. Linnaeus.
W. Willdenow.
DC. DeCandolle, Prodromus.
EB. English Botany.
EBS. English Botany Supplement.
RIB. Reichenbach's Icon. Botan. s. Plantae Criticæ.
BM. Curtis's Botanical Magazine.
BH. Banksian Herbarium at the British Museum.
HH. Hookerian Herbarium at Kew.
Sm. E. Fl. Smith's English Flora.
Brot. Brotero's Flora Lusitanica.
Desf. Desfontaines' Flora Atlantica.
WB. Webb and Berthelot's Phytographia Canariensis.
Presl Presl's Flora Sicula, Pragæ 1826.
Buch. Von Buch's List of Madeira Plants in "Abhandlungen der Königl. Akademie der Wissen-
EXPLANATIONS AND ABBREVIATIONS.

The earliest extant account of the Island made in this language is a short notice in 'Xubischen Zoren zu Berlin, &c, für das Jahr 1816;" afterwards published in a Collection of Memoirs, 4to, Berlin, 1825.

Holl A List of Plants observed in the Island of Madeira, with descriptions (by Reichenbach in the Phanerogamous Plants, and Kunze in the Cryptogamous) of some new species. By Fr. Holl. Published in the Ratisbon Flora, Regensburg, 1830; and reprinted, with "Notes and Observations on the above list, &c., by R. T. Lowe," in Hook. Journ. of Bot. (Bot. Misc. 2nd Ser.) vol. i. Lond. 1834.

Prim., Novit. Lowe's Primitiae, Camb. 1830; Novitiae, Camb. 1838; and Lond. 1851.

Altitudes of the principal mountains, stations or localities specified in the following pages (from Vidal's Survey chiefly).

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<th>Feet</th>
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<td>Pico Ruivo</td>
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<tr>
<td>&quot; dos Arriéros</td>
<td>5893</td>
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<tr>
<td>&quot; Grande</td>
<td>5391</td>
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<tr>
<td>&quot; Ruivo on the Paul da Serra</td>
<td>5210</td>
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<tr>
<td>Travellers' house on do.</td>
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<tr>
<td>Pico do Arrebentoš.</td>
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<tr>
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<td>Cabo Giraô</td>
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<td>Penha d'Aguia</td>
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<td>Brazen Head</td>
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<td>Encumeadeo de S. Vicente, about</td>
<td>4000</td>
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<tr>
<td>Levada in Rib. Frio and Rib. da Metade, about</td>
<td>3000</td>
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<tr>
<td>Church at Camacha and at S. Antonio da Serra, about</td>
<td>2300</td>
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<tr>
<td>Church in the Curral das Freiras, about</td>
<td>2000</td>
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<tr>
<td>Palheiro, about</td>
<td>2000</td>
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<td>Hotel at Sâ Anna, about</td>
<td>1100</td>
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<td>Levada de Sâ Luzia, from 500 to 600</td>
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<td>Quinta do Valle, about</td>
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<td>Deanery, about</td>
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<th>PORTO SANTO</th>
<th>Feet</th>
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<tr>
<td>Pico de Facho</td>
<td>1063</td>
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<tr>
<td>&quot; do Castello</td>
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<tr>
<td>&quot; Branco</td>
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<tr>
<td>&quot; d'Anna Ferreira</td>
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<tr>
<td>Ilhéo de Baxo</td>
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<td>&quot; de Cima</td>
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<th>DEZERTAS</th>
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<tbody>
<tr>
<td>Dei. Grande</td>
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<tr>
<td>Bugio</td>
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<td>Ilhéo Chaô</td>
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<tr>
<td>Sail-rock, off N. end of I. Chaô</td>
<td>160</td>
</tr>
</tbody>
</table>

Lat. of Funchal—32° 38' 22" N. Long. . . . 16° 54' 56" W.

Lat. of Porto Santo—33° 3' 30" N. Long. . . . 16° 20' 14" W.

Mean annual temperature of Funchal, 65°-67° Fahr.
A MANUAL FLORA
OF
MADEIRA
AND THE ADJACENT ISLANDS.

I. VASCULAR PLANTS.

Leaf-bearing plants, composed of cellular tissue, woody fibre and spiral vessels. Epiderm with stomata. Seeds with a distinct germ (gemma or plumule and radicle) and one or more seed-leaves (cotyledons).

Class I. EXOGENS OR DICOTYLEDONS.

Flowering plants, with stems composed of bark, wood and pith (medulla): the wood interrupted by medullary rays (silver grain of carpenters) and growing by accretion of fresh concentric rings or layers outside. Leaves with generally branched reticulating veins. Flowers distinct symmetrical antheriferous. Cotyledons two opposite, or rarely several whorled, very rarely (in a few exceptionally leafless plants, e.g. Cuscuta L.) none.
Subclass I. THALAMIFLORÆ.

Stam. free or distinct from the pet., and with the latter inserted separately from the sep. on the summit of the flower-stalk (receptacle, thalamus or torus) below the ovary (i.e. hypogynous).

Order I. RANUNCULACEÆ.

The Ranunculus Family.

Sep. 3–6, often 5, mostly deciduous. Pet. 5 or more, sometimes peculiarly shaped, sometimes with a gland or scale inside at the base, rarely 0. Stam. indefinite in number, free, hypogynous: anthers adnate, bursting longitudinally mostly outwards. Ov. 1–many, distinct, each with a style and 1–many ovules affixed to the inner suture. Fruit various, dry (achænial or follicular), or (rarely) baccate. Carpels 1–many-seeded. Seeds erect or pendulous; embryo minute in a hollow of the horny albumen.—Herbaceous rarely shrubby with watery acrid often poisonous juices. Leaves mostly much divided, with dilated sheathing stalks, but no true stipules. Hairs when present simple.

Tribe I. RANUNCULAE.

The Ranunculus Tribe.


1. RANUNCULUS. Sep. 5, rarely 3, deciduous. Pet. 5, rarely many; nectariferous pore at the base of their claw either naked or covered by a scale. Ach. numerous, collected into a globular or oblong head.

Tribe II. HELLEBOREÆ.

The Hellebore Tribe.

Æstivation imbricate. Sep. 5, rarely more, petal-like. Pet. irregular or peculiar in form, or 0. Anthers extrorsal. Fr. consisting of one or several distinct or more or less combined many-seeded follicles, each bursting inwards.

2. NIGELLA. Sep. 5 petal-like deciduous. Pet. 5–10 smaller than the sepals, 2-lipped, their claw with a nectariferous pore covered with a scale. Follicles 5–10 more or less connate or combined into a capsule, each beaked with the long horn-like persistent style.
3. **Aquilegia**. Sep. 5 petal-like deciduous. Pet. 5, 2-lipped funnel-shaped produced downwards between the sepals into a long hollow horn-like spur. Follicles 5 distinct, each acuminate and tipped with the style.

4. **Delphinium**. Sep. 5 petal-like deciduous irregular or unequal, the uppermost being produced downwards into a long spur. Pet. 4, the 2 upper each with spurs enclosed within the sepal-spur, or all combined into a monopetalous single-spurred cor. Follicles 1, 3 or 5, distinct.

**Tribe I. Ranunculæ.**

1. **Ranunculus L.**

**Crowfoot or Butter-cup.**

* Leaves divided. Fl. y. Nectary with a scale. Ach. compressed, lenticular, marginate, even, unarmed.

† Root fascicled or grumose.

1. **R. Grandifolius** Lowe. *Douradinha* or *Ouradinha.*

Hairy pubescent sometimes villose, hairs soft and silky, *all quite simple at the base, those of the stem close-pressed*; st. stout erect branched corymbose; 1. light gr. unspotted shining somewhat harsh or stiff, the lower stem and root-leaves roundish-reniform or cordate, undivided and obtusely pinnatifid, rarely pinnatifid or more deeply cut and gashed, *the edges always sharply and finely or copiously cut and toothed*; upper st.-leaves 3–5-pinnatifid, the uppermost sessile simple lanceolate entire; fl. in a close crowded corymb, large; sep. spreading horizontally; heads of fr. short obtuse globosely oval, sometimes inclining to oblong, rarely oblong; ach. quite smooth with a hooked beak.—Herb. per. Mad. reg. 3; §. Ravines and thickets on wet rocks and banks. Apr.–July.—Root large, often in a almate with fleshy thick divisions, and in b. tomentose. Fl. bright y. large and handsome, 1–2½ inches in diam. densely corymbose. Recept. slightly villose at the base.—Var.:

a. *major*; st. robust 2–4 ft. high; root-l. very large from 5–12 in. broad, scarcely divided with obtuse broad shallow lobes; corymb very large and ample many-flowered; fl. very large; fruit-spikes short and oval.—R. grandifolius Lowe Prim. (Ed. 1. 1830) 38! not Meyer; Walp. Repert. 1. 36; Hook. J. of Bot. 9. 70. R. creticus Prim. (Ed. 2. 1851) App. V. VI! not Linn. R. arcticus (misprint for creticus) Buch Verz. 195. R. cortusæfolius β. sylvaticus WB. i. 8, 9? R. cortusæfolius β. sylvaticus Seub. Fl. Az. 42. R. cortusæfolius Hook. in Bot. Mag. t. 4025! (hairs too
spreading; descr. in part only) not Willd. *R. megaphyllus* Steud.—Ledges and clefts of wet or shady rocks, especially near waterfalls, in ravines everywhere above 3000 ft., ½. Rib. Frio, Rib. da Metade, de Seisal, de Janela, Serra d’Agoa, Boa Ventura, &c. A noble pl., gigantic in its genus, conspicuous on high rocks with its broad ample shining l. and vast corymbs of fine golden y. fl. often as large as a crownpiece or dollar.

*R. minor*; altogether smaller and usually more villose-hairy than *a*, with the lower or root-l. pinnatifid or more deeply cut and divided than in *a*, and only 2–4 in. broad; st. 1–2 ft. high; corymb of fewer generally smaller fl., and fruit-spikes sometimes distinctly oblong.—Hook. J. of Bot. 9. 72. *R. creticus* var. *macrophylus* Lindl. Bot. Reg. t. 1432.—Moist open grassy banks, and thickets of *Vaccinium*, Paul da Serra, and close below the waterfall at the head of the Rib. de S'ta Luzia.—A starved or depauperated form of *a*, sometimes almost hoary-villos.

For a fuller account of *R. grandifolius* and its nearest allies *R. creticus* L. and *cortusefolius* Willd., with one or both of which it has been usually united, see a Paper in Hook. Journ. of Bot. ix. 65. The Cretan pl. is on the whole rather more nearly related to the Canarian than to the Madeiran or Azorian sp., ranking intermediately according to affinity between the two, instead of coming in the order of its geographical position.

Nothing like the true Canarian *R. cortusefolius* Willd. (Deless. Ic. 1. t. 36, opt.) has occurred in Madeira to myself or to any other botanist of my acquaintance. But in the BH. the hab. "Madeira, Fr. Masson" is affixed to an undoubted specimen of the pl. with its characteristic smaller thinner sparingly cre-nate black-specked l. sprinkled with bulbous hairs, its smaller scattered not corymbosely crowded fl. on slender elongated stalks, and altogether more delicate habit. Masson however having collected in Teneriffe immediately after Madeira, a mistake might easily arise from accidental transposition of his specimens or labels.

†† Root fibrous.

††2. *R. ACRIS* L. **Tall upright Crowfoot.**

More or less hairy; st. erect branched many-flowered; l. palmately 3–5-partite, the segments trifid deeply and sharply cut and toothed; upper st.-l. tripartite with linear segments; pedic. round; sep. pubescent spreading; ach. oval smooth marginate with a very short slightly hooked beak; recept. smooth.—Brot.
B. 367; EB. t. 652; DC. 1. 36; Sm. E. Fl. iii. 51; Presl 16; Koch 18; Bab. 10.—Herb. per. Mad. reg. 2; rrr. Palheiro, chestnut woods by the road outside, and in fields inside, the Park, whence it has evidently straggled. Up the Caminho do Meio, St. J. M. Moniz. Apr.–June.—St. stout hollow branched 2–3 ft. high. Fl. bright y. Sep. erecto-patent, not reflexed. Beak about 1/4 the length of ach.

3. R. repens L.

Hairy pubescent; st. suberect few-flowered with long creeping stolons; root-l. ternate and biternate, leaflets trifid cut and toothed; pedic. furrowed; sep. pubescent spreading; ach. oval smooth marginate finely punctate, with a rather long slightly hooked beak; recept. hairy.—Brot. ii. 366; DC. i. 38; EB. t. 516; Sm. E. Fl. iii. 51, 52; Presl 17; Koch 19; Bab. 10.—Herb. per. Mad. reg. 1, 2, 3; ccc. All the year. Moist grassy places everywhere.—St. (primary) erect 6–12 in. high. Side-shoots widely spreading prostrate and rooting. L. dark gr. often spotted or blotched with darker. Fl. bright y.

** Leaves divided. Fl. y. Nectary with a scale. Ach. compressed lenticular marginate rugose tubercular or muricate. Root fibrous.

4. R. trilobus Desf.

Smooth or nearly so; st. erect subrobust and firm much branched; root-l. roundish undivided crenate, the rest 3-partite with the segments wedgeshaped cut and toothed; pedic. opposite the l. furrowed; sep. reflexed; pet. subabortive 3–4, rarely 5, oblong scarcely or not longer than the sep.; disk of ach. bluntly warty or tuberculated all over.—Desf. 1. 437; t. 113; DC. 1. 42; Presl 19; WB! i. 10 (excl. var. 3. rhodatifolius).—Herb. ann. Mad. reg. 1, 2; r. May, June.—St. 12–15 in. high branched from the base, stout and upright, more or less erect; herbage pale gr. Fl. small inconspicuous pale y. Ach. with a broad short curved beak, the smooth broadish rim or margin remaining gr. longer than the bluntly granulated disk, which soon turns tawny brown. The whole pl. is of very short duration.—Var.:

a. glabra; nearly or quite smooth.—Var. a. Fontanesii WB! 1.c.—Ascent out of the Cayadas Ravine beyond Camacha, wet places by the roadside. Mexico, wet ditches and places on the beach.

3. subpilosa; st. 1. and sep. more or less hairy; st. somewhat spreading or diffuse.—Borders of cornfields by the road between S. Vicente and the Encomiado, in drier situations than a.

Bourgeau’s specimens from Grand Canary in the BH.
ticketed *R. trilobus* Desf., cannot be distinguished from his Teneriffe specimens of the true *R. parviflorus* L.—The HH. contains however true Canarian specimens from Webb of *R. trilobus* a, with Azorian also of both a. and b. No such pl. has occurred in Madeira as *R. rhœadifolius* DC. Deless. Ic. 1. t. 40, which also, by specimens in III., appears distinct enough, with its much more hairy and divided Escholtzia-like l., from the present sp., to which it is referred by Webb and Walpers.

5. *R. parviflorus* L.

Hairy-pubescent; st. prostrate or procumbent weak and slender almost filiform branched here and there only; l. all trifid, their lobes or segments wedge-shaped, in the upper deeply cut or toothed; pedic. opposite the l. remote all along the st.; sep. reflexed pubescent; pet. subabtortive 3-4 oblong not longer than the sep.; disk of ach. all over thickly echinulate with hooked or pointed tubercles.—Desf. 1. 441; Brot. ii. 371; EB. t. 120; DC. 1. 42; Sm. E. Fl. iii. 53; WB. i. 11; Bab. 11.

b. *acutilobus* DC. WB. 1. c.; l. more deeply 3-cleft, the segments deeply cut with large acute teeth.—Herb. ann. Mad. reg. 1, 2; r. Gutters in Machico, and descent into Rib. Frio in the road. May-July.—St. 6-10 in. long, weak and trailing or diffusely spreading horizontally, their ends ascending. Fl. inconspicuous small pale y. Ach. few (8-10) in a head, rather large proportionately to the pl.; their margin very narrow; tubercles of the disk tipped each with a short hooked weak or bristly point. Beak short curved hooked at the tip. Recept. smooth.

6. *R. muricatus* L.

Smooth or with only a few scattered hairs, shining; st. robust and firm, at first erect, soon diffuse or spreading stiffly, much branched from the base; lower l. round or reniform 3-lobed coarsely inciso-crenate, upper trifid wedge-shaped at the base; pedic. opposite the l. slightly hirtose; sep. slightly hirtose spreading; pet. ovate-oblong small not longer than the sep.; disk of ach. all over prickly with long-beaked hooked or pointed tubercles, the margin unarmed even.—Desf. 1. 440; Brot. ii. 373; DC. 1. 42; Presl 19; WB. i. 9, 10; Koch 20.—Herb. ann. Mad. reg. 1, 2; c. PS. reg. 1; r. Gutters and wet places by roadsides about Funchal, and in PS. about the large tank halfway across the island. March, Apr. principally, but irregularly throughout the year.—Herbage pale gr. very shining. St. 4-8 or 10 in. high, short stiff thick and hollow. Fl. small bright y. Ach. broadly margined, their beak in the specimens short broad slightly curved and hooked at the tip.
NIGELLA.—DELPHINIUM.

Tribe II. Helleboreae.

2. Nigella L.

1. N. Damascena L.

Anthers awnless; carpels 5, even, 2-celled, connected quite to their tips into an ovate-globose capsule; floral inv. cleft like the l. into many capillary segments; sep. spreading; seeds triangular transversely rugose.—BM. t. 22; Desf. 1. 428; Brot. ii. 334; DC. 1. 49; Presl 25; WB. i. 3; Koch 22.—Herb. ann. Mad. reg. 1, 2; c. Cornfields and waste ground, general. Irregularly throughout the year.—Nearly or quite smooth. St. erect sparingly branched; branches 6–12 in. long spreading or diffuse. L. dark gr. finely divided like Fennel: their segments flat linear acuminate. Fl. bluish or grey.—The “Fitches” (Ketzach, Hebr.) Is. xxviii. 25, 27, was probably the seed of an allied sp., N. sativa L., used, like Aniseed, Caraway or Coriander-seed, to flavour cakes or bread.

3. Aquilegia L.

Columbine.

†1. A. Vulgaris L.

Spur of pet. incurved hooked at the tip, their limb very obtuse shorter than the stam.; sep. oblong-ovate; l. twice ternate, leaflets 3-lobed crenate.—Brot. ii. 333; EB. t. 297; DC. 1. 50; Sm. E. Fl. iii. 33; Presl 24; WB. i. 4; Koch 23; Bab. 12.—Herb. per. Mad. reg. 2; r. Rib. de Sta Luzia, especially opposite the Chao dos Tornos. May, June.—St. 2–3 ft. high and with the petioles, pedic. and follicles or carpels subglanclulose-pubescent; l. slightly pub. and whitish or glaucous beneath, quite smooth above. Fl. pendulous large, dark bluish-violet.

4. Delphinium L.

Larkspur.

* Consolida DC. Ov. 1. Pet. 4 united into a 1-petalous cor.; spur internal 1-petalous.

1. D. Consolida L. Branching Larkspur.

More or less pubescent sparingly branched, branches forked spreading lax and straggling, fl. few together in short lax terminal rac., pedic. as long as or longer than the br.; follicles rather short smooth or pubescent.—Linn. ! Herb.; Syst. (Ed. 12) ii. 370; Clus. Rar. Pl. Hist. p. ccvii; Fl. Dan. t. 683; Brot. 2. 302; DC. Syst. 1. 343; Prod. 1. 51; Koch 24; RFG. 3. t. 66. f. 4669. 

β. pubescens; st. 1. and follicles pubescent.—WB. 1. 5. D. Consolida EB. t. 1839; Sm. E. Fl. iii. 30; Bab. 12.—Herb. ann. Mad. reg. 1, 2; c. Cornfields everywhere; PS. r. Apr.–Sept.
1. RANUNCULACEÆ.

—St. 12–18 in. high stiff leafy finely and closely pubescent; branches more than once forked remote few slender lax and widely straggling ending in short lax few-flowered racemes 3 or 4 in. long. L. sessile deeply multifid with narrow linear acute segm. Fl. rather distant about 3–5 in each rac. large deep violet-blue; pedic. often scarcely longer than and never more than twice the length of the bracts. Follicles always (in Mad.) pubescent 4–6 or 8 lines long. DC. and Koch l. c. describe the caps. as smooth; and Brotero says the germen is so sometimes. I have never seen them, either in Herb. or in the living pl., otherwise than pubescent. They are unfortunately wanting in the Linn. type.

D. Ajacis L. ! with straight stiff erect virgate st. either simple or with few short simple stiff erect side-branches, with long closely and many-fld. rac. and always pubescent larger follicles, 8–10 or nearly 12 lines long, which is the origin of the common garden double-fld. Rocket Larkspur of so many varieties of colour, pink, lilac, purple, lavender, &c. and white, and of which D. Consolida Fl. Gr. t. 504, referred by DC. to his D. pubescens, seems to represent, as remarked already by Fischer and Meyer (Animadv. Bot.), a more than usually branched luxuriant state of the single-fld. wild pl., is not found in Mad. except in gardens.

** Delphinium DC. Ov. 3; 2 lower pet. distinct or free and beardless; cor.-spur internal 1–2-petalous.

2. D. PEREGRINUM L.

Smooth or nearly so; st. erect branched leafy; branches rather numerous slender twiggy straight and stiff erect or erecto-patent; 1. 3-partite many-cleft, segm. of the upper 1. and br. long linear acute, of the lower broader and less divided; fl. in short somewhat crowded rac., the 2 lower pet. stalked, their limb orbicular or squarish, cordate at the base; cal.-spur pubescent slender ascending or erect; cor.-spur 2-petalous.—Linn. ! Herb.; Syst. Nat. (Ed. 12) ii. 371. D. peregrinum L. γ. elongatum Boiss. ! in HH.; Walp. Repert. 1. 51. D. cardiopetalum DC. Syst. 1. 347; Prodr. 1. 52.—Herb. ann. Mad. reg. 2; r. Cornfields a little below the Allegria Chapel above S. Roque near Funchal. June–Aug.—Size of the preceding but more slender branched and leafy with more numerous upright virgate branches and smaller more crowded paler b. fl., whitish and elegantly striped outside in the bud. Rachis of rac., pedic., br., sep., spur and ovary minutely downy; the rest smooth. Limb of the 2 lower pet. squarish-orbicular, as broad as long, notched at top, distinctly cordate at the base. Follicles 3, sometimes 5, subpubescent or sparingly downy, 4 or 5 lines long.
It is difficult to account for DC.'s very express reference (Syst. 1. 348) of _D. peregrinum_ L. ("ex herb, suo") to his _D. junceum_ rather than to his _D. cardiopetalum_; for certainly the specimen preserved in the Linn. Herb. has the limb of the 2 lower stalked or stipitate pet. plainly squarish—"orbicular and cordate at the base," instead of "elliptic or obovate" as it is in _D. junceum_ DC. and in _D. peregrinum_ RFG. iii. t. 68. f. 4672; which, with perhaps _D. peregrinum_ Fl. Gr. t. 506 and Desf. 1. 426, differ notably in this respect from the Linnaean type.

Order II. BERBERIDACEÆ.

The Barberry Family.

Sep. 3, 4 or 6 in a double row, deciduous. Pet. the same (rarely double) in number, opposite the sep., with glands at their base. Stam. opposite the pet. Anth. adnate, bursting by valves from the bottom to the top. Ov. 1, 1-celled. Fr. baccate or capsular indehiscent. Seeds attached to the base of the unilaterial placenta. Embryo straight axile.—Shr. or herbs with bristle-serrate or spinulose-serrate compound or by abortion or suppression simple alternate extispulate 1., and acid bitter juices.

1. BERBERIS. Sep. 6, with 3 coloured scale-like br. outside. Pet. 6, each with 2 glands inside at the base. Berry 2-(rarely 3-) seeded.—Shr. often thorny and with fasciculate simple 1.; fl. y. generally in racemes; juices, especially of the berries, acid and astringent.

1. BERBERIS L.

1. B. MADERENSIS LOWE. _Ameixeira d'espinho._

Spines 3-partite; 1. simple subspathulate or bluntly oblanceolate and attenuated downwards, somewhat stiff and coriaceous, very entire, reticulated with pale veins and slightly margined; racemes erecto-patent rather short and few-(6-8) ftd., fl. globose.—Shr. Mad. reg. 3; rr or rrr. High rocks in ravines. Brink of the upper part of the Rib. da Metade at a place called the "Agoa de Bica," on the way from the Fonte das Moças to Pico dos Arrieros. Canhas, J. M. Moniz. May, June.—A low shr. from 3 to 5 feet high, with several arching st. about the thickness of the wrist or arm downwards; the ultimate branches strongly striated or ribbed and of a bright rich or. or or.-chestnut colour. L. few or remote and rather small in proportion, fasciculate, slightly pointed or blunt with a minute mucro; from 1-1½ in. long and from ½-1½ in. broad; their taste very bitter as well as astringently subacid. Racemes scarcely longer than the l. Fl. a little larger and more globose than in _B. vul-
garis L., to which it is indeed less nearly allied than to B. cretica L.; having also some resemblance in its thin scant foliage and subspathulate entire 1. to Lycium europaeum L. as it grows wild in Madeira. Fr. partly y. and red, much shorter and thicker with a larger more tumid style than in B. vulgaris L.

The bright y. wood is employed in ornamental work by the Funchal cabinet-makers, and is called by them Fustete.

Order III. PAPAVERACEÆ.

The Poppy Family.

Sep. 2 deciduous. Pet. generally 4 cruciate regular. Stam. hypogynous free generally many. Ov. single; styles short or 0; stigmas 2, or many, radiating sessile. Ovules many. Fr. unilocular, either podshaped with 2 or capsular with several parietal placentas, many-seeded.—Pl. with exstipulate generally compoundly divided 1., long 1-flowered ped., and narcotic milky or coloured juices. Pet. folded and crumpled in the bud, fugaciously.

* Seeds not crested.

1. PAPAVER. Pet. 4. Stam. many. Style 0. Stigmas 4-20 radiating, sessile on or combined into a radiated peltate disk crowning the ov. Caps. obovate incompletely 4-20-celled, opening by slits or pores beneath the stigmas. —Fl.-buds cernuous. Juices white milky.


** Seeds crested.


1. PAPAVER L.

Poppy.

* Filaments subulate, capsule smooth.

1. P. RHŒAS L. Common Red or Corn Poppy. Papoula or Papoila.

Hispid-pilose; 1. 1-2-pinnatipartite, their segments oblong-lanceolate unequally inciso-serrate bristle-pointed; st. much branched many-flowered hairy substrigose; ped. clothed like
the st. with generally spreading soft hairs; sep. hairy with more upright hairs; caps. smooth shortly obovate or turbinate subglobular; lobes of the stigma-disk imbricated laterally.—Desf. 1. 406; Brodt. ii. 253; EB. t. 645; DC. 1. 118; Sm. E. Fl. i. i. 11; Presl 32; WB. i. i. 59; Koch 31; Bab. 15.—Herb. ann. Mad. reg. 1, 2; PS. reg. 2; ccc. Cornfields and waste ground. Apr.–June.—St. 6–18 in. high. Fl. large deep scarlet with usually a black patch at the base of each pet.—Var.:

a. hairs of ped. spreading.—Mad. and PS. ccc.

b. hairs of ped. adpressed.—P. Rhaes β. strigosum Böningh. ex Koch 1. c.—PS. 9, Pico de Conselho, intermixed with a; Mad. r, along the Levada de Sª Luzia, the pet. wanting the usual black spot.

2. P. DUBIUM L.

Hispid-pilose; l. 1-2-pinnatipartite, their segments linear remotely inciso-serrate bristle-pointed; st. many-flowered hairy, the hairs spreading, those of the ped. adpressed; sep. hispid; caps. smooth narrow-oblong clavate; stigma-disk with few distinct and distant lobes or crenatures.—Brot. ii. 253; EB. t. 644; DC. 1. 118; Sm. E. Fl. iii. 10; WB. i. 59; Koch 32; Bab. 15.—Herb. ann. Mad. reg. 2, 5; Cornfields above the Mount, Cayadas Ravine, &c. Apr.–July.—St. 1–2 feet high. Fl. large paler scarlet than in P. Rhaes, their claw black. Herbage also paler. Caps. elongate, marked lengthways with pale lines.

** Filaments dilated upwards; caps. smooth.


Smooth pale glaucous; st. very erect little branched many-flowered; l. broadly oblong waved or curled, irregularly and somewhat bluntly toothed, the lower unequally sinuated cut and lobed attenuated towards the base, the upper undivided cordate at the base amplexicaul; st. ped. and sep. smooth; caps. smooth short truly globular and very glaucous.—Desf. 1. 407; Brodt. ii. 254; EB. t. 2145; DC. 1. 119; Sm. E. Fl. iii. 11; Koch 32; Bab. 12.—Herb. ann. Mad. and PS. reg. 1, 2, c; ND. r; MD. 2, c; SD. 1, 2, ccc. Waste ground amongst vineyards and cornfields about Funchal, &c. Apr.–June.—St. 2–4 ft. high. Whole pl. very smooth except now and then a bristly hair or two upon the ped. and sep. or tipping the teeth of the l. Fl. large, uniformly in Mad. bluish-white with the claw violet.

4. P. SETIGEBUM DC.

Dark or dull lurid smoky green scarcely glaucous; st. very erect little-branched few-flowered; l. oblong regularly and
sharply doubly aristato-serrate, the teeth sphaeolate and callous, tipped with a stiff bristly awn or mucro, the midrib and principal nerves beneath hirtose or copiously fringed or bearded with long bristles, the lower 1. more sinuate or lobed, attimated at the base, the upper undivided sessile subamplexicaul not cordate; st. smooth; ped. more or less hirtose with erect or adpressed bristles, rarely quite smooth; sep. copiously bristly upwards, the bristles erect or adpressed; caps. smooth top-shaped oval or ovate-oblong scarcely glaucous.—DC. 1. 119; Deless. Ic. ii. t. 7. *P. somniferum a. Setigerum* WB. i. 58, 59.—Herb. ann. PS. reg. 1; c. About the town and to the eastward in fields, waste ground and vineyards at the back of the beach, and in cornfields again 2 or 3 miles to the westward, growing often intermixed with *P. somniferum* L. Apr., May.—St. 2–3 feet high. Fl. large, like those of *P. somniferum* L., but the pet. uniformly dull purple with a broad darker atropurpureous spot at their base. Sūgma-disk 9–10-rayed. Caps. more oblong than globular, and like the whole pl. scarcely (except in a dried state) glaucescent. This and the dark or lurid dull green of the foliage, the finely and regularly biserrate 1. with aristate teeth, and colour of the fl. give a peculiar aspect to the pl., distinguishing it to the eye at once from the nearly allied *P. somniferum* L. The two pl. in PS. grow continually intermixed, preserving mutually their distinctive characters; but intermediate forms have not occurred, nor has *P. setigerum* been found in the Dezertas or Madeira.—A not uncommon var. of *P. somniferum* L. with bristly fl.-stalcs, sometimes seen in English gardens, has perhaps been often taken for this pl.; which has also been supposed to be merely the wild state of *P. somniferum* L., an idea to which the facts above related are opposed.

2. GLAUCIUM TourT.

Horned Poppy.

1. *G. corniculatum* (L.) Curt. **Scarlet Horned Poppy.**

Hispid-pubescent; st. pilose; l. all sinuate-pinnatifid oblong, the upper sessile and truncate at the base; pods hispid-pilose.—DC. 1. 122 (var. a.); WB. i. 56, 57 (the Fuerte-venturan pl.); Koch 32. *G. phamiceum* EB. t. 1433; Sm. E. Fl. iii. 7; Bab. 16. *Chelidonium corniculatum* L. Desf. i. 404.—Herb. ann. PS. reg. 1; c. Waste ground amongst cornfields and vineyards towards the S.W. end of the island, Pia de Malhado. Apr., May.—St. 1–2 ft. high with remarkably rigid stiffly divaricated branches. Whole pl. pubescent or pilose rather than hispid, scarcely or not at all glaucescent. L. furry with short crumpled cottony hairs. Fl. rather small. Pet. scarlet with a black patch at the base. Pod 6–8 in. long narrow, finely and rather closely erecto-
4. FUMARIACEÆ.

pubescent. In the Canaries, except in Fuerte-ventura, the fl. according to WB. are always y.

3. CHELIDONIUM L.

Celandine.

†1. C. MAJUS Mill. a, L.—Ceredonha. Common Celandine.

L. deeply pinnatifid; fl. umbellate, fl. dilated upwards.—Brot. ii. 255; Sm. E. Fl. iii. 4; WB. i. 55; Bab. 16; Koch 32. a. obtusilobum; segm. of l. rounded and bluntly lobed or crenate. —C. majus a, Sm., Koch, Bab. l. c.; C. majus EB. t. 1581; DC. l. 129; Presl 1. 34.—Herb. per. Mad. reg. 1, 2; e. Rocks, walls and waste places about towns or houses everywhere. Spr. and Sum.—Habit of a Siliquose Cruciferous pl., remarkable for the thick bright or juice of its roots and y. juice of the l. and st. St. 1-2 feet high and with the sep. more or less hairy, sometimes almost woolly. L. deep full gr. above, pale glaucous and pubescent beneath. Fl. bright y. Caps. slender smooth.

Order IV. FUMARIACEÆ.

The Fumitory Family.

Sep. 2 deciduous. Cor. irregular; pet. 4 cruciate, one or both of the 2 outer gibbous or saccate at the base, the 2 inner cohering at the tip. Stam. 6 in 2 sets opposite the 2 outer pet.; anther of middle stamen in each set 2-celled, of the side stamens 1-celled. Ov. free 1-celled; ovules 1 or more. Style filiform. Stigma with 1 or more points. Fr. an ach., caps., or silique. Seeds crested.—Herbs with alternate multifid l. and watery juices. Fl. mostly in racemes.

1. FUMARIA. Sep. 2. Pet. 4; the upper one spurred at the base. Stam. diadelphous. Fr. an ach. (indehiscent 1-seeded silique).

1. FUMARIA L.

Molarinha. Fumitory.

*M ripe fruit even.

1. F. MURALIS Sond. in Koch. Molarinha.

Ach. nearly or quite even, perfectly globose or equably orbicular all round, either quite entire and merely dimpled on each side, or with a minute inconspicuous notch or crenule at the apex, not apiculate mucronate or retuse; sep. rather broadly orate acute generally jagged or toothed, rarely quite entire, nearly as broad as but only \( \frac{1}{3} \) the length of the cor.; br. linear or narrow-oblong half the length of the erecto-patent pedic. in fr.; rac. rather short
broad lax and few-fl.; general and partial l.-stalks twining prehensile; segm. of l. flat broadish ovate-wedge-shaped mostly trifid, their laciniae oblong obtuse mucronulate.—Koch 1017. F. Petteri Koch 435 (not Reichenb.).—Herb. ann. Mad. reg. 1, 2, 3, ccc. PS. reg. 2, c; 4, rrr. ND. 1, r. Nov.—July—St. 1-3 ft. long rampant climbing usually by the prehensile l.-stalks. Very variable in size, luxuriance and glaucescence of herbage; less so in size and colour of fl. which are mostly from 4-6 lin. long more or less deep rose with the tip dark atropurpureous or black, seldom pale. Ach. obtuse or equally rounded at top as elsewhere, and neither pointed (apiculate) or mucronate, nor truncate or retuse; but either wholly uninterrupted at the apex, with the minute short not prominent white scar-like base of the style remaining and having a slight dimple or depression on each side of it, or else with a minute indistinct or inconspicuous notch or crenule: the surface in the living pl. mostly quite even or at least comparatively so with that of the following sp.; yet sometimes and especially in the dried pl. very obsolescally verruculate or indistinctly rugulose with (as it were) close-shaven pimpls when examined with a lens.—Var.:

a. vulgaris; more or less glaucous; fr. mostly even, quite entire at the apex; sep. toothed.—F. muralis Sond. Alex. Jordan! 1852 (fr. minutely verruculate) v. s. in HH. F. officinalis Buch! 195, no. 303; WB. i. 53; Bourg.! Pl. Can. no. 1173 in BH. and HH.; Vogel.! in HH. and Solander in BH. (as to Mad. spec.)

b. Bastardi (Boreau) Boissier et Beut.! It. Alg. Hispan. 1849 (fr. quite even) in HH.—Mad. ccc, everywhere in waste and cultiv. ground; the commonest of weeds in vineyards, gardens, cornfields, by roadsides, in beds of ravines, &c. about Funchal and elsewhere.—Varies according to soil or exposure: (1), larger more robust and often less glaucescant with broader larger lfts. and fl. twice as large 4-6 lin. long. often paler; and (2), smaller more bushy and slender, with smaller more finely divided lfts. and smaller darker-coloured fl.: the former state occurring in rich or moist soil and shady spots, the latter later in the season or in sunny drier places, as amongst corn.

β. pustulosa; glaucous; fr. rather larger and especially in the dried pl. more distinctly verruculate, with a minute notch or crenule at the apex; sep. toothed.—F. Bastardi (Boreau) Krälik! Pl. Tunet. no. 7 in HH.; Balansa! Pl. d’Alger. no. 627 in HH. F. capreolata var. β. patula (Coss. ex Germar) Bourg.! Pl. de la Corse, no. 20 in BH. and HH. (not Linn.)
—Herb. ann. PS. reg. 2, c; ND. 1, r.—Sandy cornfields and waste ground towards the Fonte d'Área in PS., Apr., May; ND. near the ruined house, June, but nearly dried up with paler smaller fl. and very glaucous whitish foliage. The ach. in this ND. pl. appeared "perfectly smooth and even" (MSS. Notes) when fresh gathered. They are minutely but evidently verruculose and rugulose, or tuberculated with little flat pimples and slightly wrinkled in the dried state.—This is a very trivial var. and rather a mere accidental state of a. I found only a single spec. in the ND., and unfortunately preserved one only of the PS. pl. I cannot therefore vouch for the constancy of the foregoing characters, and should not have noticed here the form at all, but for its exact agreement on comparison with *F. Bastardi* Bor. of the botanists above quoted.

*γ. leota*; like a. (1), but of a light y.-gr., not in the least smoky or glaucescent; lfts. more regularly ternate ovate and leaflike; fl. not larger than in a. (1), but handsomer and more brightly or distinctly coloured; sep. quite entire or only sometimes here and there indistinctly toothed; fr. indistinctly and obstolutely verruculate.—PS. on the rocky summit of Pico de Faço, Apr. May.—Approaches *F. capreolata* (L.) Koch; but the sep. though mostly entire and rather large and broad are only ½ instead of ⅓ the length of the cor., the fr.-stalks are not "patent or recurved," the fl. are darker full rose-colour and smaller, and the ach. (entire at the apex as in a.) are exactly orbicular and hence only obtuse (as in a. and β.) not "subtruncate" or "very obtuse." Rac. 8-12- or 15-fl.; fl. tipped conspicuously with deep purple-black.—The true *F. capreolata* L. has never occurred in either PS. or Mad. It is constantly distinct from every state of *F. muralis* by its larger pale fl., large leafy sep. half the length of the cor., recurved fr.-stalks, and more obtuse ach.

**Ripe fr. distinctly verruculate.**

2. *F. parviflora* Lam.

*Ach. strongly verruculate globose or equably orbicular all round with a short minute mucro at the apex; sep. subovate strongly toothed or jagged very minute and inconspicuous not ⅓ the length and not above ¼ or ½ the breadth of the cor.; br. narrow-oblong usually as long as the short erecto-patent fr.-stalks; rac. nearly sessile short few-flowered; general and partial leafstalks simple not prehensile; segm. of l. ternate, their laciniae narrow linear-oblong or ligulate acute cuspidate, st. suberect or erecto-patent, branches diffusely spreading.—*F. parviflora* Lam. Diet. 2. 567; Broth. 1. 592; DC. Syst. 2. 136 and Prod. 1. 130 (excl. syn. Sm. EB. t. 590); Presl 38; RIB. 41. t. 50. f. 102; RFG. iii. t. 1. f. 4451; WB. ! l. 53; Bourg. ! Pl. Can. no. 437 in BH.
and HH.; Koch 36, 1018. *F. fol. tenuissimis, fl. albis circa Monspodium nascens*, Vaill. Bot. Par. 56. t. 10. f. 5. *F. parviflora β. albiflora* Moris. Fl. Sard. 1. 91. *F. parviflora β. Walp. Rep. 1. 122* (excl. syn. *F. Vaillantii* Lois. and RFG. iii. t. 1. no. 4452). “*F. leucantha* Viv. Fl. Cors.” ex. Moris. l. c.; De Heldreich! in HH. *F. Vaillantii* EBS. t. 2877; Bab. 17, 18 (not Loisels.).—Herb. ann. PS. reg. 1; cc. Vineyards and cultivated ground about the town and all along behind the beach towards Pta de Malhado, Apr., May.—Very glaucous leafy and bushy, with rather short branches 6–18 in. long. Fl. white or greenish-white, very distinctly tipped with black and gr., very small, 1½–2 lines long. Rac. dense in fl., lax in fr. Sep. like minute scales and scarcely visible without a lens, somewhat irregular in shape, narrower even than the pedicels. Ach. the size and shape of those of *F. muralis*, but with a minute abrupt projecting point or mucro at the apex, and strongly and distinctly granulate. Herbage strongly smoky-glaucous pale or whitish.—This is certainly the true *F. parviflora* Lam. of almost all continental botanists, as Cosson! Bove! Schimper! Kotschky! Hohenacker! Krälik! Boissier! Bourgeau! Webb! &c. in HH. And though not a question directly affecting the Mad. Fl., I am almost equally satisfied, by examination of numerous authentic specimens from different countries and authors in HH., together with a careful scrutiny of synonmys and figures, that not only *F. parviflora* EB. t. 590 (with larger fl. than usual), Sm. E. Fl. iii. 256 (which however comprehends the true white-flowered *F. parviflora* Lam.) and Bab. 17, but also that the true *F. Vaillantii* Loisel. (Not. 102, Fl. Gall. ii. 101; Vaill. Bot. Par. 56. t. 10. f. 6; RIB. p. 42. t. 50. f. 103; RFG. iii. t. 1. f. 4452; WB. 1. 53) are merely purple-flowered varieties, forms or modifications of the same sp. Little or no dependence can be placed on the laciniae of the fl. being more or less narrow (*i.e.* filiform or linear) as in EBS. t. 2877. Compare *F. parviflora* a. and β. in Moris. Fl. Sard. 1. 91, with remark at the end.

**Order V. CRUCIFERÆ.**

The Cabbage, Mustard and Cress Family.

Sep. 4 deciduous, the 2 side ones gibbous at the base. Cor. regular cruciform; pet. 4 alternate with the sep. opposite each other. Stam. 6 (rarely 4) tetradytraneous, the 2 shorter opposite the side pet., the 4 longer in pairs opposite the anterior and posterior sep. and stigmas. Torus with green glands between the pet. and stam. or stam. and ovary. Ov. free 1–2-celled with 1, 2 or more ovules in each; placentas parietal meeting in the middle and forming a false dissepiment. Stigmas 2. Fr. a siliqua (pod) or silicle (pouch) mostly 2-celled with a spurious
dissepiment and bursting by 2 valves, rarely 1-celled and indehiscent, 1-many-seeded.—Herb. rarely shrubby, sulphurously fetid in decay, antiscorbutic and stimulant, never poisonous. L. alternate. Fl. y. and white, more rarely purple or violet.

**Suborder I. Siliquosæ.**

Pod long and narrow, with 2 valves opening longitudinally, and 2 cells separated by a long narrow linear spurious dissepiment.

**Tribe I. Arabideæ.**

Seeds flattened or compressed, often bordered, their cotyledons accumbent parallel to the dissepiment of the pod; radicle lateral applied to their edges.

1. **Matthiola.** Pod linear round or compressed. Stigma 2-lobed, lobes erect or converging, gibbous or horned at the back.

2. **Cheiranthes.** Pod linear quadrangular or compresso-quadrangular 2-edged, with a prominent longitudinal nerve or keel along the back of each valve. Stigma 2-lobed, lobes spreading or recurved. Seeds in a single row in each cell.

3. **Nasturtium.** Pod rather short thick and swollen roundish-tapering or elliptic; valves convex almost nerveless. Stigma capitate. Seeds irregularly in 2 rows in each cell.

4. **Barbara.** Pod linear round or subquadrangular; valves convex with a subprominent longitudinal nerve. Stigma capitate obtuse entire or notched. Seeds in a single row in each cell.

5. **Arabis.** Pod linear compressed; valves flattish with a more or less prominent longitudinal nerve, or nerveless with several longitudinal veins. Stigma obtuse. Seeds in a single row in each cell.

6. **Cardamine.** Pod linear or lanceolate-linear compressed; valves flat nerveless. Stigma capitate. Seeds in a single row in each cell, their funicle simple filiform.

**Tribe II. Sisymbreæ.**

Seeds ovate or oblong notbordered. Cotyledons incumbent contrary to the dissepiment, radicle dorsal applied to their back.

7. **Sisymbrium.** Pod linear round rarely quadrangular; valves convex with 3 longitudinal nerves. Stigma obtuse entire. Seeds in a single row in each cell, smooth; their
funicle filiform. (In S. thalianum the pod is quadrangular and the valves keeled with the side nerves fine and obsolete: thus approaching Erysimum.)

Tribe III. BRASSICEÆ.

Seeds often globose. Cotyledons incumbent conduplicate folded together longitudinally in the middle, radicle dorsal embraced in their fold.

8. BRASSICA. Pod linear or oblong; valves convex with a single straight dorsal nerve; lateral nerves none or represented by a few anastomosing veins. Seeds globose in a single row in each cell.

9. SINAPIS. Pod linear or oblong; valves convex with 3 or 5 straight prominent strong nerves. Seeds globose in a single row in each cell.

10. SINAPIDENDRON. Pod linear slender curved or wavy, round or slightly quadrangular subtorulose; valves convex with a single strong straight dorsal nerve and a few lateral longitudinal anastomosing veins. Seeds subangular oval or oblong in a single row in each cell and partly imbedded in the somewhat spongy dissepiment.

11. ERUCA. Pod oblong short; valves convex with a single subprominent dorsal nerve. Seeds globose in a double row in each cell.

SUBORDER II. SILICULOSÆ LATISEPTÆ.

Pouch short oval orbicular or globose, compressed from back to front, opening with 2 broad valves, 2-celled; partition or dissepiment nearly or quite as broad as the pouch in its broadest diameter.

Tribe IV. ALYSSINEÆ.

Seeds compressed. Cotyledons flat accumbent.


13. DRABA. Pouch oblong or elliptic slightly convex or tumid. Seeds many in each cell, not margined, in 2 rows. Filaments simple.

SUBORDER III. SILICULOSÆ ANGUSTISEPTÆ.

Pouch short, compressed laterally, opening (except in Senebiera) with 2 narrow generally boat-shaped valves keeled or winged on their back; dissepiment narrow linear or lanceolate acute at each end.
Tribe V. *THLASPIDÆ*.

Seeds compressed. Cotyledons flattened accumbent.

14. *THLASPI*. Pouch oval or obovate notched; valves boat-shaped winged at the back; ovules 4 or more in each cell, rarely 2. Pet. equal or nearly so. Filaments simple.

15. *TEESDALIA*. Pouch roundish or oval notched; valves boat-shaped keeled below, narrowly winged upwards at the back; ovules 2 in each cell. Pet. equal or the 2 outer larger. Longer filaments with a scale or petal-like appendage at the base.

Tribe VI. *LEPIDINEÆ*.

Seeds compressed. Cotyledons flattened incumbent.

16. *LEPIDIUM*. Pouch orbicular or oblong, roundish or ovate notched or (rarely) entire; valves compressed boat-shaped keeled or winged at the back; cells 1-seeded. Pet. equal. Filaments simple.


Tribe VII. *SENEBIERÆ*.

Seeds turgid subglobose or ovate. Cotyledons long linear doubly incumbent twice bent or folded.

18. *SENEBIERA*. Pouch subreniform or 2-lobed not bursting or at least not scattering the seeds; cells 1-seeded.

**SUBORDER IV. SILICULOSÆ NUCUMENTACEÆ.**

Pouch short not bursting often 1-celled from abortion of the dissepiment.

Tribe VIII. *ISATIDEÆ*.

Seeds ovate-oblong. Cotyledons incumbent slightly channeled.

19. *ISATIS*. Pouch oblong-cuneate or oval longer than broad compressed laterally 1-celled 1-seeded; valves boat-shaped keeled or winged scarcely bursting.

**SUBORDER V. LOMENTACEÆ.**

Pod indehiscent divided transversely into 1-seeded cells or joints; the lowest cell or true pod often barren, the seeds being in the beak.
Tribe IX. *CAKILINEÆ*.

Seeds "elliptical" Sm. Cotyledons accumbent.

20. *CAKILE*. Pod short oblong quadrangular of two 1-seeded indehiscent joints, the upper persistent corky subturbinate barren or with a pendent seed.

Tribe X. *RAPHANÆÆ*.

Seeds globose. Cotyledons incumbent conduplicate.

21. *RAPISTRUM*. Pouch 2-jointed, joints each 1-seeded indehiscent, the upper globose or ovate and produced into the style with an erect seed, the lower round resembling a thickened pedicel with a pendent seed, rarely barren. Funicles short.

22. *CRAMBE*. Pouch 2-jointed, joints indehiscent, the upper deciduous globose or ovate with one seed pendent from a long curved funicle springing from the bottom of its cell, the lower joint barren resembling a pedicel. Longer filaments generally forked.

23. *RAPHANUS*. Pod of several 1-seeded cells, linear or sub-cylindrical-oblong and subconic tapering upwards, either even and not separating, or moniliform and dividing transversely into 1-seeded indehiscent joints, the lowest joint barren imperfectly 2-valved, resembling a pedicel.

**Suborder I. SILIQUOSÆ.**

Tribe I. *Arabideæ*.

1. *MATTHIOLEA R. Br.*

Stock.

*Pachynotum* DC. Pet. obovate. Stigmas gibbous not horned at the back.


St. herbaceous suffrutescent at the base erect, branches spreading; 1. elongato-lanceolate acute softly tomentose hoary or greyish-white almost always very entire, the lowest forming a dense rose-like tuft; pedic. shorter than the cal.; pods spreading very long and slender compressed generally muricato-glandulose. —Novit. 551 or 29.—Herb. bien. Mad., PS., N. and MD. reg. 1, 2, cc; SD. rrr.—Sea-cliffs everywhere, Febr.—Aug.—A representative and close ally of the European *M. sinuata* and *incana*
C.rrEntANTni'S. 21

L., but in Mad. constantly distinct. A large branching pl. 1–3 ft. high; flowering branches elongated; some of the l. occasionally here and there faintly repand-toothed; fl. rather pale violet or dingy violet-purple, very rarely pure white, fragrant (with a slight pungency) at night only; pods distinctly compressed not torulose 3–5 in. long, 1–2 lines broad, generally waved and thickly muricate with large stipitate glands. The following may be distinguished, but are scarcely entitled to rank as var.

a. muricata; fl. lilac, pods and fl. branches thickly muricate with glands.—Sea-cliffs everywhere.

b. mitis; fl. lilac, pods and fl. branches nearly or quite without glands. Occasionally with a. in Mad., PS., and MD.; very rare.

c. albiflora; fl. pure white. Occasionally with a. in Mad.; very rare.

2. Cheiranthus L.
Wall-flower.


1. C. tenuifolius Her.

Shrubby, branches slender and fragile often tortuous; l. linear acute very narrow and entire grey or hoary densely silky somewhat stiff and strigose; fl. y., pods linear very slender stiffly erect or erecto-patent.—DC. Syst. ii. 183; Prod. i. 136.—Shr. per. Mad. reg. 1, rrr.—Cabo Girão, and Pico de Facho or P. de Ranch o between the former and Camera de Lobos, along the edge of the cliff at a height of from 1500 to nearly 2000 ft., Mar.–June.—A small shr. 1–2 ft. high, with longish slender often tortuous or twisted and entangled very brittle pale greyish naked branches, bearing a tuft of fine narrow almost filiform grey l. about an inch long and only half a line broad, at their ends. Fl. lemon-y. rather large, like those of a Sinapis, not versicolorous or fragrant, at least by day. Style 2 lines long capitate. Pods stiff straight very slender and narrow, 1–2 in. long. Seeds numerous.—The pl. referred to by myself (Prim. p. 57) as Ch. tenui-folius Herit. and by Webb and Berth. 1. 67 as Dichroanthus tenuifolius, was the following sp., Ch. arbuscula, which I gathered abundantly halfway up Pico Branco in Porto Santo with my lamented friend Webb in May 1828. The true Ch. tenuifolius Herit. has never yet been found in Porto Santo.

2. C. Arbuscula Lowe.

Shrubby dwarfish thickly bushy and leafy; st. erect short, branches stout short stunted forming usually a dense capitulate head; l. linear a little broader upwards acute very entire grey or
hoary harshly strigose spreading or recurved; fl. lilac, pods large stiffly and closely erect.—Hook. Journ. Bot. 8. 289.—Shr. per. PS. reg. 3, 4, r.—Rocks towards the summits of Pico Branco and P. de Conselho abundant, March–May.—A low tufted bushy shrub 4–8 or 9 in. high, with a stout very short stiff flexuose woody stem as thick often as the little-finger, dividing at a height of 2 or 3 inches into several short branches, each terminating in a thick rose-like tuft of spreading or recurved perfectly entire narrow linear leaves from \( \frac{1}{2} \) to 1 in. long and about a line wide, densely clothed with adpressed bristles, scabrous and harsh to the feel. Fl. large and handsome in perfectly erect short numerous close terminal racemes 2–4 in. high, as large as in C. mutabilis Her. and of the same more or less deep lilac, but not in the wild pl. (so far as observed) either changeable or fragrant; their pedic. not shorter than the sep. Style 2 lines long; stigma capitate bilobed. Pods large 1–2 in. long and 1 line broad sub-quadrangular apparently smooth but really covered with short close-pressed bristles; each valve with a prominent dorsal rib.

—Cultivated in England by the Rev. M. J. Berkeley, it preserves in great measure its peculiar habit, the branches only becoming more lax and slender and the foliage less hoary. In gardens near the sea especially it thrives vigorously in the open air, and is very ornamental on rock-work, flowering abundantly in the summer, but perishing with the first autumnal frosts. In pl. kept in a greenhouse the fl. were larger and always lilac. In others treated more hardily they were smaller, and at first white. M. J. B. in HH.


Shrubby loosely branched, branches simple straight and elongate, l. linear-lanceolate sharply serrate scarcely hoary and not closely silky-pubescent; fl. lilac fading into white, pods erecto-patent.—Curt. BM. t. 195; DC. Syst. ii. 183 (var. a.); Prod. i. 136. Dichroanthus mutabilis WEB. i. 66. t. 8 A. f. 1–3 (pod).—Shr. per. Mad. reg. 3, 4.—Rocks in ravines everywhere above 2500 ft.; Rib. Frio abundant, March–June.—Like C. tenuifolius in habit, but taller (2–4 ft.) and altogether larger and more robust, with long straight straggling branches generally pendent from the sides or face of perpendicular high rocks. L. dull green somewhat naked scarcely at all hoary or silky, 1–3 in. long and \( \frac{1}{2} \) in. wide but extremely variable in both respects, sometimes at high elevations and on bare exposed mountain peaks very narrow as in C. tenuifolius, but always serrate; the teeth very fine and sharp almost pungent. Fl. in large and handsome terminal bunches, cream-colour in the bud, then more or less deep lilac, lastly white, fragrant like the white Jessamine at night. Pods about 2 in. long and 1 line wide stiff and straight.—Dwarf
starved or stunted pl. with the l. very narrow differ greatly in appearance from luxuriant pl. growing on more shaded rocks with larger broader greener and more naked l. But every intermediate form occurs between the two extremes: nor are the fl. less variable in intensity of colour in different situations, ranging from full bright lilac to almost white.

3. NASTURTIIUM R. BR.

* Cardaminum DC. Pet. white entire, longer than the sep.


Pods spreading ascending scarcely longer than their often subdeclining stalks, wavy or subtorulose; l. lyrato-pinnate, leaflets subininate or repand, the lateral elliptic, the terminal one larger more rounded and subcordate.—DC. Syst. ii. 188; Proc. 1. 187; EB. 855; Sm. E. Fl. iii. 192; Presl 44; WB. i. 71; Koch 37; Bab. 22. *Sisymbrium Nasturtium* Desf. ii. 81; Brot. 1. 587.—Herb. per. Mad. reg. 1, 2, 3, ccc; PS. reg. 2, rrr. Watery places and streams in Mad. everywhere; in PS. only at the Fonte d'Área; not found in any of the Dezertas. Febr.–July, but almost throughout the year.—Whole pl. generally smooth, occasionally here and there a little hairy. St. creeping or procumbent rooting copiously, often floating. Cal. always closed with the sep. erect. Fl. white rather small. Very variable in size and luxuriance; when growing out of water, with small leaflets and short st., it is according to Koch and Babington *N. microphyllum* Reich.; when very large with stout thick st. and large leaflets like a *Sium*, it is *N. suffolium* Reich. (N. officinale Koch).

4. BARBAREA R. BR.

†1. B. praecox R. BR. Early Winter Cress.

Lower l. lyrate, the pairs of lobes gradually larger upwards, the upper pair nearly as large as the roundish subcordate ovate or oval terminal lobe; upper l. deeply pinnatifid with parallel distant very entire linear or linear-oblong blunt lobes; pods long erecto-patent.—DC. Syst. ii. 207; Proc. 1. 140; Sm. E. Fl. iii. 199; WB. i. 71, 2; Koch 40; Bab. 22. *Erysimum praecox* EB. t. 1129.—Herb. bien. Mad. reg. 2, r. Wet places by the upper road to the Jardim above the Estreito Church; and at a little hamlet called Ribeira de Machico at the head of the Machico Valley half a mile below the Portella. Apr.–July.—St. ribbed angular erect 1–2 ft. high. L. dark green, their terminal lobe not abruptly or greatly larger than the preceding. Fl. y. rather small and pale. Pods 2–3 in. long quadrangular. Whole pl. smooth. Flavour pungent not at all bitter: hence much used for early salads in Europe, though not in Mad.
5. 

Arabis L.

* Alomatium DC.; seeds without or with only an obscure slight narrow margin. Limb of pet. distinct from the claw, obovate spreading horizontally.

1. A. alpina Stev.

L. somewhat sparingly but equably and strongly sinuate-toothed white or hoary tomentose (like the whole pl. except the pods) with branched starry pubescence, the lower l. crowded lanceolate-oblong or subspathulate, the upper lanceolate amplexicaul and slightly sagittate or cordate at the base; pedic. twice or thrice, pet. twice as long as the cal.; pods quite smooth very long and slender almost filiform loosely erecto-patent, ultimately vaguely spreading, curved or waved, valves faintly many-nerved; seeds oval or elliptic very narrowly and obscurely margined.—DC. Syst. ii. 217; Prod. 1. 142; Preel 47; WB. i. 62, 63. A. alpina Buchl 196. no. 316 (not Linn.). Turritis verna Desf. ii. 92 (excl. syn.).—Herb. per. Mad. reg. 2, 3, c. Rocks in ravines, &c. everywhere above 1000 ft. flowering irregularly throughout the year but chiefly in Spr.—Rib. de Sta Luzia, de Joao Gomez, Curral das Freiras, Rib. Frio, &c.—Habit of A. alpina L. but with larger more conspicuous fl. in larger fuller bunches. St. short procumbent sparingly branched thickly leafy subcespitose; fl. st. ascending about 6 in. high. L. about 2 in. long and half an inch wide, the teeth equal prominent distinct and acute; st. l. varying with rounded angular or pointed basal lobes. Fl. conspicuous rather large and handsome pure white inodorous; limb of pet. horizontal as long as the claw. Pods 2–2½ in. long, ½ or ⅓ of a line broad compressed subtorulose tipped with a very short beak much narrower than the pod; the valves with several fine and slender nerves but no one prominent. Seeds compressed lenticular broadly oval or elliptic, i.e. as broad at one end as at the other, not ovate as in A. alpina L. Webb l. c. remarks that the gland at the base of the longer fl. is mostly wanting, whereas in A. alpina L. it is conspicuous and somewhat elongate.

6. Cardamine L.

St. slender straight angular; l. all pinnate not auricled at the base, leaflets of the lower l. shortly stalked roundish repand-sinuate or toothed, the terminal one rather larger, of the upper l. narrower oblong or linear; pet. twice as long as the cal. obovate, pods and pedic. erect, beak or style shorter than the pod is wide.—Desf. ii. 80; Brot. 1. 583; EB. t. 492; DC. Syst. ii. 259; Prod. 1. 152; Sm. E. Fl. iii. 188; Preel 52; Koch 47; Bab. 24.—Herb. ann. Mad. reg. 3, 5. Moist shady places in ravines; Rib. Frio, de Sta Luzia at the foot of the Waterfall, &c. Nov.
June.—Nearly smooth or but slightly pubescent. Root-l: numerous in a rose-like tuft. St. 4–12 in. high slender straight angular erect sparingly branched and leaved. Fl. small white. Sep. erect. Stam. in the same pl. varying in number, generally 5, rarely 6, more rarely 4; 1 or 2 of the shorter wanting. Stigma capitate pubescent subsessile, the style being very short. Pods linear slender scarcely an inch long, half a line wide, the upper considerably overtopping the fl.

Tribe II. Sisymbriae.

7. Sisyembrium L.

* Velatum DC. Pods subulate attenuated upwards. Fl. yellow.

1. S. officinale (L.) Scop.

More or less pubescent; 1. pinnatipartite slightly runcinate, with 2 or 3 pairs of oblong coarsely and unequally toothed lobes and a large hastate terminal lobe; pods linear-subulate short and with their very short pedicels close-pressed to the stem.—DC. Syst. ii. 459, 460; Prod. i. 191; Sm. E. Fl. iii. 196; Presl 73; Koch 51; Bab. 25. Erysimum officinale L. Desf. ii. 85; Broth. i. 575; EB. t. 735. Chamapodium officinale WB. i. 76.

β. leiocarpum DC. l. c.; smoothish, pods with their pedicels and rachis quite smooth.—Herb. ann. Mad. reg. 1, 2, c; PS. reg. 1, 2, r. By roadsides and in waste ground and vineyards about Funchal, &c., chiefly below 1000 ft. March–June.—St. nearly smooth 1–2 ft. high straight erect, branches very tough and hard stiffly spreading subdivaricate, in fr. declining or de-flexed. Foliage neither hoary nor dull green somewhat hispid downwards, the upper 1. nearly smooth. Fl. inconspicuous small y. Pods ½ an inch long hexangular.—These characters are constant. The more hairy common European state or var. is not found in Mad. In Teneriffe Webb states that both the smooth and pubescent podded varieties occur promiscuously.

2. S. erysimoideas Desf.

Smooth, 1. sinuate-pinnatifidate or lyrate-runcinate with 1 or 2 pair of coarsely and unequally toothed lobes and a very large triangular or rhomboidal terminal one; pods linear-subulate very slender and rather long subsessile spreading almost horizontally.—Desf. ii. 84. t. 158; DC. Syst. ii. 482; Prod. i. 195. Pachypodium erysimoideas WB. i. 75.—Herb. ann. Mad. reg. 1, 2, c; PS. reg. 2, r. On walls and buildings and in waste places by roadsides in or near deserted houses about towns or villages, Funchal, Machico, &c. March–June.—Pl. 1–2 ft. high nearly
5. CRUCIFERÆ.

or quite smooth rather dark full green leafy. St. stiffly erect not much branched often violet or purple towards the base. L. stalked 4 or 5 in. long. Fl. y. very small and inconspicuous, the pet. scarcely longer than the sep. Pods shortly stalked an inch or more long attenuated upwards neither compressed nor angular but round and striated, the valves being distinctly 3-nerved. Seeds minute cylindric-oblong finely reticulato-punctate.—In habit as in characters allied to S. officinale. The identity of Desfontaines’ pl. cannot be questioned, although he describes (probably from dried specimens) the fl. as being white: whence also doubtless its wrong reference by De Candolle to the following section. Sisymbrium nitidum Zea and S. rigidulum Lag. are also, according to Webb, precisely the same pl.

** Arabidopsis DC.** Pods linear, fl. white.

3. S. Thallanum (L.) Gaud.

L. undivided oblong-lanceolate subobtuse sparingly and slightly toothed subhispid with forked or simple hairs nearly all radical and stalked; st. slender more or less branched; sep. erect, pods 4-angular linear very slender ascending longer than their spreading pedicels.—Koch 53 (var. a); Bab. 25. Arabis Thalliæa L. Brot. i. 579; EB. t. 901; DC. Syst. ii. 226; Prod. i. 144 (var. a); Sm. E. Fl. iii. 209; Presl 48.—Herb. ann. Mad. reg. 2, 3; rr. Dry rocks and banks in ravines; Rib. de Santa Luzia, da Metade, das Cayadas, &c. March—August.—A small inconspicuous delicate pale green pl. 3–10 in. high, of short continuance and easily overlooked. St. erect single or several from a small flat rose-like tuft of a few 1., loosely branched, often simple, almost filiform, slightly hairy below; smooth upwards. Root-leaves scarcely \( \frac{1}{2} \) in. long attenuated downwards into a stalk pilose, their hairs forked and simple; st.-l. few linear-lanceolate smoother than the others. Rac. elongated lax filiform. Fl. small white. Pedic. longer than the cal. Pet. obtuse about twice as long as the erect sep. Stam. about as long as the pet. Pods scarcely an inch long and \( \frac{1}{4} \) of a line wide, not much longer than their pedic. very fine and slender subquadrangular, the valves having a prominent dorsal nerve, but the lateral nerves faint and obscure. Seeds bright tawny y. oval not striated.

Tribe III. Brassiceae.

8. Brassica L.


L. smooth glaucous, the lower lyrate stalked, upper oblong sessile, rac. before flowering elongated lax, sep. and all the stam.
erect.—Desf. ii. 93; Brot. i. 580; DC. i. 213; Koch 58. \emph{B. oleracea} and \emph{B. Botrytis} Presl 88, 89.—Var.:

\emph{B. acephala} DC.; st. elongated branched, 1. expanded.—Sprouts or Winter Greens. Subvarieties, \emph{Couve de Rincão}, \emph{C. de Batatinha}, &c.

\emph{D. capitata} DC.; st. short, 1. concave imbricate forming a dense globose head.—Common Cabbage. Subvar. \emph{Couve Murciana}, \emph{C. de Repolo}, \emph{C. roxa}, &c.

\emph{F. Botrytis} DC. (\emph{Brassica Botrytis} Presl 89); fl. abortive and with their thickened fleshy stalks forming a compact dense corymb.—Subvar. Cauliflower, Brocoli, &c. \emph{Couve Flor}.

Herb. bien. Mad., PS., MD., reg. 1, 2, 3; B, D, ccc; F, $\frac{5}{8}$—F, cult. in gardens only; B, D, in gardens and fields, cult. and partially naturalized, everywhere, throughout the year; forming a staple article of food amongst all classes, and a principal ingredient in Portuguese Sopas.—Although the exact original wild stock (\emph{B. oleracea} A, DC.; EB. t. 637; Sm. E. Fl. iii. 219; Bab. 26) does not perhaps occur, the varieties B and D are too commonly found seminaturalized in some form or other to allow of their omission in a Flora of Madeira.—L. and whole pl. perfectly smooth more or less glaucous. Fl. rather large bright lemon-\emph{y}, pale ochre, or more rarely white, not veined. Pods not beaked.

2. \emph{B. nigra} (L.) Koch. \textbf{Black Mustard. Mostarda}.

L. all stalked, the lower hispid lyrate toothed with the terminal lobe very large and lobed, the upper smooth lanceolate very entire pendulous; sep. spreading; pods close-pressed to the st. quadrangular 2-edged shortly beaked.—Koch 59; Bab. ed. 1. 24. \emph{Sinapis nigra} L. Brot. i. 585; EB. t. 969; DC. i. 218; Sm. E. Fl. iii. 222; Presl 95; Bab. ed. 4. 27. \emph{S. incana} Herb. Linn. C. Lemann in litt. \emph{S. incana} (Mass.) Buch 196. no. 320 (not of others).—Herb. ann. Mad. reg. 1, 2; ccc. Borders of cornfields and vineyards in waste ground about Funchal, &c., everywhere. Febr.–June.—St. 2–3 ft. high stiffly erect straight glaucous and purplish nearly smooth; branches remote straight slender with pendulous narrow 1. and terminal rac. giving a peculiar light graceful habit to the pl. when flowering. Lower 1. hispid or roughish, upper nearly quite smooth. Fl. bright lemon-\emph{y}. Pet. roundish-obovate, entire. Pods half an inch long smooth torulose 1–4-seeded with a very short square slender seedless beak.

—This is undoubtedly the pl. intended by Von Buch and others in their lists of Mad. pl. under the name of \emph{S. incana} L. And in fact the late Dr. Charles Lemann found the original \emph{S. incana} of the Linnaean Herbarium to be nothing but \emph{S. nigra} L. The synonym has been however usually referred to a different pl., a specimen of which also exists in the Linn. Herb., though with-
out name or number, viz. *Erucastrum incanum* Koch, EBS. t. 2843 (*Hirschfeldia adpressa* Moench, WB. i. 85), which is found in Teneriffe but has not yet occurred in Madeira.

An old S. of Europe specimen (Herb. D™ Yalden 1778) of *Diplotaxis muralis* β. DC. in the BH. has been formerly marked *Brassica muralis*; and, though totally unlike any pl. with which I am acquainted in Madeira, is the only semblance of authority I can discover for *Brassica muralis* of Buch’s List of Mad. pl. p. 196. no. 317. His no. 311, *Cheiranthus littoreus*, ought also to have been quoted above under *Matthiola maderensis*; and nos. 312 and 313 (*Cheiranthus argutus* and *dentatus*) both under *Cheiranthus mutabilis*, of which *Ch. dentatus* is merely the more hoary narrower-leaved form from more exposed or sunny rocks, such as are indicated by the locality, “Ribeira dos Soccoridos,” of the original specimens in BH.

9. *Sinapis* L.


L. ovate-oblong unequally toothed, the lower sublyrate or auriculate at the base, the upper sessile; sep. spreading; pods subcylindric torulose not shorter generally longer than the conical 2-edged seedless beak, valves subprominently 3-nerved.

—Koch 60; Bab. 27.—Herb. ann. Mad. reg. 1, 2, ecc; PS. reg. 1, 2, c; GD. reg. 2, c. Cornfields and vineyards in waste ground everywhere. Nov.–June.—St. 1–2 ft. high diffusely branched bristly towards the base with short deflexed hairs. Whole pl. scabrous. Fl. y. rather large. Pods suberect about an inch long including the long distinct beak, when ripe many-ribbed or angular. Seeds brown.—Var.:

   a. Pods smooth. *S. arvensis* (L.) Brot. i. 584; EB. t. 1748; DC. Syst. ii. 615; Prod. i. 219; Sm. E. Fl. iii. 221; Presl 90; WB. i. 78. *S. incana* Lowe in Hook. Bot. Misc. New Ser. i. 42 (not of others).

   β. Pods retrorsally hispid. *S. arvensis* β. Koch l. c. *S. orientalis* Brot. i. 584.—A Madeiran specimen of this var. in BH, with the lower part of the pod and often of the beak retrorsally hispid, has been ticketed “*Sinapis alba* Linn.” by Solander.

+++2. *S. alba* L. White Mustard.

L. lyrato-pinnate, pinnae unequally and coarsely toothed and lobed, the uppermost confluent; sep. spreading; pods hispid cylindric torulose not longer generally shorter than the sword-
shaped compressed 2-edged seedless beak, the valves subprominently 5-nerved.—Brot. i. 585; EB. t. 1677; DC. i. 220; Sm. E. Fl. iii. 222; WB. i. 77; Koch 60; Bab. 27.—Bonannia officinalis Presl 99.—Herb. ann. Mad. reg. 1, 2; rr. Occasionally in the neighbourhood of Funchal, but merely as an outcast or straggler from gardens. Apr., May.—St. 1–2 ft. high, and with the l. more or less hispid but always more so than the l. Fl. v. rather large. Pods spreading. Seeds pale.—This is the “Mustard” so commonly grown with “Cress” (Lepidium sativum L.) in Europe for winter or early spring salads. It has very slender claims however to a place in the Madeiran Flora.

10. Sinapidendron Lowe.

1. S. frutescens (Ait.) Lowe.

Shrub mostly smooth much branched, branches interlacing fragile, l. crowded towards their ends stiff more or less fleshy, the lower oblong-lanceolate or elliptic-ovate regularly and distinctly serrate or crenate, the uppermost linear-lanceolate or linear quite entire; sep. at first erect presently subpatent immaculate.—Var. :

a. diffusa; branches long slender tufted often pendulous, l. less fleshy more distinctly veined serrate and more or less sprinkled with short adpressed strigose hairs.—S. frutescens Prim. 37. Sinapis frutescens Sol. ! MSS. and BH.; Ait. ! Hort. Kew. iv. 127; DC. Syst. ii. 628; Prod. i. 220; Hook. Bot. Misc. i. 119. t. 28. Hesperis diffusa Buch ! 196. no. 315; Spr. Syst. ii. 900.—Shr. per. Mad. reg. 3, 4; z. Rocks in ravines and highest peaks; Rib. de Santa Luzia on high rocks by the Waterfall, Caminho Central along the ridge dividing the Curral das Freiras from the Serra d’Agoa and under Pico Grande; Pico dos Arrieiros, &c. April–July.

b. succulenta; branches short stiff and thickish forming a low dwarf stunted shrub, l. in terminal rose-like tufts very thick and fleshy veinless obsolescetly crenate perfectly smooth.—Shr. per. Mad. reg. 2; r. Sea-cliffs on the N. coast in several places between Santa Anna and S. Vicente; Vista da Rocha do Navio, Santa Anna; S. face of the Penha d’Aguia between Fayal and Porto da Cruz. May–July.

Branches often in a 3 or 4 ft. long interlaced and hanging in thick tangled tressy masses down perpendicular rocks: in b. more erect. L. bright but rather pale gr. not glaucous. Fl. like those of Brassica nigra L. rather large bright lemon-y.; claw of pet. and fil., especially in b. purplish lilac. Sep. with a few short scattered hairs and even in b. pale immaculate. Pods 1–2 in. long with a short cylindric seedless beak erecto-patent flexuose;
30

5. CRUCIFERÆ.

in β distinctly quadrangular and striated when ripe though previously round; in all stages smooth.

2. S. ANGUSTIFOLIUM (DC.) Lowe.

Shrubby quite smooth, branches interlacing elongated fragile; l. crowded towards their ends all linear veinless stiff and fleshy generally quite entire sometimes sparingly toothed upwards; sep. erecto-patent spotted with purple.—S. salicifolium Prim. 37, Novit. 29 or 551. Sinapis angustifolia DC. Syst. ii. 624; Prod. i. 220. Brassica frutescens Sol. ! MSS. and BH.; Buch! 196. no. 318.—Shr. per. Mad. reg. 1; rrr. Beyond Camera de Lobos all along the sea-face of the Pico de Rancho or P. de Facho and Cabo Giraö at a height of 1500–2000 ft. April–June.

—Habit with fl. and fr. entirely of S. frutescens Ait.: but the shape of the l. is constant, without intermediate forms, and they are only toothed occasionally towards their tips. L. 2–3 in. long; 2–3 lines wide, generally perfectly entire but now and then with a few remote teeth towards their tips. Sep. sprinkled with a few short hairs pale mottled or speckled with purple. Limb of pet. short and broad bright lemon-y.; claw and fil. often purple. Pods as in S. frutescens β.


Herb. suffrutescent at the base strigose-hispid; st. branched erect; l. stiffly scabrous harsh and rough ovate-oblong and lanceolate sharply toothed and sinuate stalked, the lowest sublyrate or auriculate at the base, the uppermost elongated linear-oblong or linear very entire; sep. widely or horizontally spreading quickly falling; pods smooth.—Prim. 37.—Var.:

a. chaetocalyx Prim. 38; rough and bristly, l. stiff but not fleshy or succulent; pedic. germens and sep. hispid, the latter spotted with dark purple.—Herb. ann. or bien. Mad. reg. 3; rr. Ravines of the interior, Rib. da Metade, R. de S. Jorge. May–August.

β. gymnocalyx Prim. 38; smoother, l. more succulent thick or fleshy and shining, the lower shorter more oval or rounded and obtuse; pedic. germen and sep. smooth, the latter subimmaculate; pods short.—Herb. ann. or bien. Mad. reg. 1; rr. Sea-cliffs on the north coast at the Entroza and descending into Ponta Delgada. June–Oct.—A mere maritime state of a.

A tall upright large rankly growing sparingly and stragglingly branched pl. 3–4 ft. high, in general aspect or habit much resembling S. arvensis L. St. and branches woody downwards stout and stiff, divided in a straggling flexuose manner, angular or ribbed. Foliage dark gr. coarse and harsh; the l. large and rank. Fl. lemon-y. rather larger than in S. frutescens; claw of pet. and fil. almost always purple, Sep. conspicuously spotted
with dark violet-purple. Pods loosely, erecto-patent slender about 2 in. long (in $\beta$. thicker and shorter) with a short seedless 2-edged beak $\frac{1}{3}$ in. long; subquadangular subtorulose and striated. Seeds oblong subangular light brown finely reticulopunctate, imbedded in the pithy or spongy dissepiment.

11. Eruca DC.

1. E. SATIVA Lam. Fedorente.

St. and branches hirsute; 1. lyrate pinnatifid, their lobes toothed and all acute; pedic. shorter than the deciduous sepals.

—DC. i. 223; Presl 104; WB. i. 79; Koch 62. Brassica Eruca (L.) Desf. ii. 95; Brot. i. 581; Spr. Syst. ii. 912.

γ. DC., Presl l. c.; fl. pale ochre veined with black or dusky; pods smooth.—Herb. ann. PS. reg. 1, 2; ccc. Sandy beach, barren sunny slopes, borders of fields and roadsides, everywhere near the sea in Porto Santo and the Ilheo de Baxo.—A low spreading bushy pl. about a foot high with remarkably hard and tough stiffly divaricated straggling branches and dull greyish dark gr. more or less smooth foliage: when bruised or brushed emitting a strong rank foxy smell. Fl. like those of Raphanum Raphanistrum L., rather large ochroleucous with blackish purple or violaceous veins. Sep. erect rather long. Pedic. very short. Pods with their beak from $\frac{1}{3}$ to $\frac{3}{4}$ in. long; short and broad turgid, with a broad short 2-edged compressed ensiform pointed seedless beak $\frac{1}{3}$ in. long; valves with the dorsal nerve prominent. Seeds subovate subangular tumid numerous, regularly in 2 rows in each cell.

Suborder II. Siliculoseae Latiseptae.

Tribe IV. Alyssineae.


St. suffrutescent downwards, procumbent; 1. linear-lanceolate acute silky grey or hoary; pouches oval with an abrupt point smooth.—Bab. 28. Lobularia maritima (Desv.) Koch 65. Clypeola maritima L. Desf. ii. 72. Alyssum maritimum Brot. i. 558; EB. t. 1729; DC. Syst. ii. 318, 319; Prod. i. 164; Sm. E. Fl. iii. 162. Alyssum halimifolium Curt. BM. t. 101.

β. canariense DC. ll. cc.; branches elongated, cells of pouches often 2-seeded.—Lobularia intermedia WB. i. 92.—Herb. ann. Mad. reg. 1; r. Waste ground amongst vineyards about Funchal here and there: but a mere outcast of gardens. About
the Quinta do Val. Aug.-Dec.—St. numerous weak slender much branched from the base forming a low spreading tuft, presently in fr. elongated to the length of 1 or 2 ft. or more, the ends ascending. L. crowded small ¼-1 in. long quite entire dull greyish-gr. clothed like the branches with copious close-pressed whitish silky forked hairs. Fl. very numerous pure brilliant white in terminal corymbose racemes which are much elongated in fr. Pouch oval or elliptic erecto-patent. Seeds 1 or 2 in each cell.—Seems scarcely worth distinguishing as a var. from the usual European garden pl. The st. and branches are indeed woody or suffrutescent downwards, but the pl. is notwithstanding truly annual or only accidentally of longer duration in Madeira.

13. Draba L.

1. D. muralis L.

Root simple; st. leafy puberulous; l. hairy-pubescent ovate amplexicaul toothed, root-l. narrowed downwards forming a rose-like tuft; pedic. spreading as long or nearly twice as long as the 8-16-seeded smooth erecto-patent pouches.—Desf. ii. 66; Brot. i. 559; EB. t. 912; DC. i. 171; Sm. E. Fl. iii. 161; Koch 70; Bab. 29.—Herb. ann. Mad. reg. 3; rr. Rocky banks in ravines: Rib. de Santa Luzia close below the Waterfall; Rib. Frio by the Fountain. April, May.—Very variable in luxuriance with an erect slender st. 4-18 in. high often simple, but properly, as in more robust pl., branched sparingly from the base. Whole pl. more or less stellato-pubescent. Fl. small and inconspicuous white; pet. obovate entire but little longer than the erect always (in Madeira) hairy sep. Style very short scarcely any. Pedic. filiform subpuberulous. Pouch elliptic 1-2 lines long, the length or only half the length of its pedic., quite smooth.

Suborder III. Siliculoseae Angustiseptae.

Tribe V. Thlaspiace.

14. Thlaspi L.


St. very erect branched at top, l. oblong toothed sagittate sessile; rac. in fr. elongated; pouches shorter than their stalk orbicular broadly winged, seeds arcuato-ribbed or striate several in each cell.—EB. t. 1659; DC. i. 175; Sm. E. Fl. iii. 171; Presl 61; Koch 73; Bab. 30.—Herb. ann. Mad. reg. 1, 2; ½.—In Yam—(Colocasia antiquorum Sch.) beds, S. Vicente, Serra d’Agua, &c. May-Aug.—Altogether smooth. St. 6-12 in. high stiffly erect and straight branched only at top or upwards, often simple.
TEESDALIA.

Root-l. obovate. Fl. white very small and inconspicuous. Pouches very large and numerous erect deeply notched at top. Seeds brown shining beautifully ribbed and grooved spirally, biting in taste like Mustard with a strong flavour of Garlic.

15. TEESDALLA R. Br.

1. T. NUDICAULIS (L.) R. Br.

Pet. unequal.—Sm. E. Fl. iii. 170; Koch 75; Bab. 31. T. Iberis DC. i. 178. Iberis nudicaulis L., Brot. i. 570; EB. t. 327. T. caulescens Reichenb. in Holl's List, Hook. Bot. Misc. N. Ser. i. 21, 41.—Herb. ann. Mad. reg. 3, 4; ccc. Mountain pastures in moist or shady places everywhere above 2500 ft. up to the summits of the highest peaks. April-Aug.—A small insignificant stemless pl. consisting of a tuft of l. with many short mostly unbranched flowering st. or scapes from the crown of the root, and altogether smooth or only now and then with a few scattered hairs. L. numerous in a rose-like tuft mostly pinnatilobate or lyrate, sometimes undivided and spatulate. Scapes several soon becoming numerous 2-4 in. long; at first simple leafless, each with a terminal dense corymb of small white hexandrous fl., later in the season often sparingly 1- or 2-branched with a small leaf at each subdivision, constituting T. caulescens Reich., of which I have one of Herr Holl's original specimens gathered "at a little spring near the top of Pico Ruivo" in Aug. 1827. Pet. scarcely longer than the sep.; the 2 outer largest. Stam. 6 with large petal-like scales at their base. Pouches deeply notched spreading, about the length of their pedicels.

2. T. LEPIDUM DC.

Pet. equal.—DC. i. 178. T. regularis Sm. Lepidium nudicaule L., Brot. i. 566. Thlaspi nudicaule Desf. ii. 67 (var. a).

3. integrifolia DC. i. c.; l. simple entire spatulate or lanceolate.—Herb. ann. PS. reg. 1; irr. Sand-rocks very sparingly on the right hand at the mouth of the Serra de Fora (Porto dos Frades) close to the beach. March, April.—A small insignificant inconspicuous pl. 3 or 4 in. high with several slender erect or spreading sparingly branched and leafy altogether smooth stems. L. principally radical, all simple or undivided elongato-spathulate or lanceolate and more or less acute, attenuated downwards into long stalks. Pouches orbicular notched, about twice the width of the narrow lanceolate septum, shorter than their horizontally spreading pedic.; each cell 2- sometimes 3-seeded. Seeds very minute tawny oval compressed but not bordered. Cot. accumbent.—The few pl. observed were quite out of fl. and nearly burnt up when discovered early in May.
But the slender decidedly branched stems, and laxer not cespitose habit, not to speak of the peculiar locality, forbid their reference to any state of the common Madeiran *T. nudicaulis* L. which is never found below 2000 ft.

**Tribe VI. Lepidineae.**

16. *Lepidium* L.

1. *L. virginicum* L.

L. all undivided sharply inciso-serrate smooth, root-l. oblong-spathulate, st.-l. lanceolate, the uppermost linear-lanceolate; stamens 2–4, style very short; pouches orbicular notched keeled winged upwards spreading about the length of their pedicels.—DC. Syst. ii. 538; Prod. i. 205; Buch 196. no. 306. (*L. Iberis* Schk. not Linn.) DC. *Cynocarum virginicum* W.B. i. 97. —Herb. ann. (occasionally bien.) Mad. reg. 1, 2; ccc. Roadsides, sunny waste ground and dry beds of ravines, a universal weed; throughout the year. St. stiffly erect and straight about a ft. high often woody and suffrutescent at the base; branches slender stiff and rigid somewhat tough woody downwards minutely puberulous substriate. L. about an inch long narrow, the root-l. broader soon disappearing. Fl. very small and inconspicuous white; pet. often not unfolding spathulate obtuse. Seeds light tawny yellow compressed partly pellucid-bordered reticulato-punctate. Cotyledons accumbent.

No dependence can be placed upon the cot. in this pl. which vary from accumbent to incumbent. DC. in his *Systema* originally described them as incumbent. Webb finding them accumbent in his Canarian, Madeiran, N. American, and Porto Rican (Wydler's) specimens, was led to form his genus *Cynocarum*: stating however the cot. to be "all incumbent in a most closely allied if not altogether identical" Mexican sp. from Berlandier.

+++2. *L. sativum* L. *Cress.*

Lower l. stalked variously cut and lobed pinnate or bipinnate, upper l. sessile linear undivided; pouches orbicular or oval winged obtuse notched close-pressed to the st.—Brot. i. 507; DC. i. 204 (var. a); Koch 77 (var. a); Bab. 32. *Lepia sativa* (Desv.) Presl 83.—Herb. ann. Mad. reg. 1, 2; rr. Occasionally in the neighbourhood of Funchal in waste ground amongst vineyards &c.; a mere outcast from gardens. March, April.—Pl. 1–2 ft. high much branched and leafy smooth more or less glaucous. L. deeply and much divided with narrow linear
lobes; sometimes entire. Fl. small white very numerous in long erect racemes. Style scarcely any. Cot. often tripartite. Cultivated for early salads with *Sinapis alba* L. frequently in Europe.

17. **Capsella** Med.

1. **Capsella Bursa-pastoris** (L.) Moench. **Shepherd’s Purse.**

Pubescent; root-l. lanceolate runcinate-pinnatifid or undivided, those of the st. sessile sagittate and toothed, the uppermost undivided; pouch triangular-obcordate.—EB. t. 1485; DC. i. 177; Presl 86; WB. i. 68; Koch 79; Bab. 33. *Thlaspi Bursa-pastoris* Desf. ii. 68; Brot. i. 568; Sm. E. Fl. iii. 173.

 yen. *Capsella* var. *y. Bursa-pastoris* Desf. ii. 68; Brot. i. 568; Sm. E. Fl. iii. 173. Pubescent; root-l. pinnatifid. Herb. ann. Mad. reg. 1, 2, c.; PS. reg. 2, r. Roadsides about Funchal, Dec.-Apr. and PS. at Camacha, Apr. Very variable in foliage; st. erect branched 6-12 in. high. Root-leaves in a flat rose-like tuft either undivided and lanceolate (var. y. DC.; a. Koch), sinuate-toothed (var. b. Koch) or, as in Madeira and Porto Santo, pinnatifid (var. y. Koch): but these three forms seem scarcely worth distinguishing. Pouches smooth on erecto-patent or spreading stalks of about their own length in long branched racemes, each 3 lines long and 2 broad at top, their cells each with from 10 to 14 seeds.

**Tribe VII. Senebierae.**

18. **Senebiera** Pers.

1. **Senebiera Coronopus** (L.) Poir. **Swine’s Cress.**

Smooth; l. fleshy unequally and coarsely pinnatifoliate, lobes entire or incised on their fore-edge; pedic. shorter than the fl.; pouch altogether closed not bursting, undivided reniform compressed crested and toothed at the back tipped with the pyramidal prominent style.—DC. i. 203; Sm. E. Fl. iii. 179; Presl 81; Koch 80; Bab. 33. *Coronopus Ruellii* Brot. i. 565; EB. t. 1660; WB. i. 96. *Cochlearia Coronopus* L.—Herb. ann. Mad. reg. 1; s. Streets and roads about Funchal, Jan.-Apr.—St. short branched prostrate and with the l. lying flat to the ground. L. light or dark full not at all glaucous gr. Fl. small white in short close lateral corymbs. Pouches in dense clusters large in proportion and of singular appearance, not bursting or splitting asunder, of a somewhat corky or leathery substance, not distinctly 2-lobed. Fl. when bruised fetid.

2. **Senebiera Didyma** (L.) Pers.

St. hairy; l. regularly and elegantly pinnatifoliate flattened, lobes oblong toothed or cut at their fore-edge; pedic. longer than
the fl.; pouch compressed deeply and distinctly 2-lobed granulate or reticulato-rugose widely notched at the top and bottom, the lobes turgid splitting asunder but not discharging the seeds, style very short.—Sm. E. Fl. iii. 180; Koch 80; Bab. 33. Lepidium didymum EB. t. 248. S. pinnatifida DC. i. 203; WB. i. 95. Coronopus didymus Spr. Syst. ii. 853.

B. pinnatifida DC. i. c.; lobes of 1. 3-4-partite.—Herb. ann. Mad. reg. 1, 2, ccc.; PS. reg. 1, 2, c. Roadsides, streets, on walls, in waste ground in Madeira everywhere; less common in PS.; has not occurred in the Dezertas. Jan.–June.—St. at first prostrate then procumbent or diffuse a foot long or more and with the fl.-stalks more or less hairy, the rest of the pl. mostly smooth. L. dark green elegantly pinnate and flattened, the lobes usually deeply 3-toothed in front. Fl. white very small and numerous in dense rac. abundantly produced opposite the 1. often apetalous and diandrous. Pouches pale green or yellowish erecto-patent deeply and widely notched, the lobes joining only in their middle and easily separating. Pl. fetid when bruised.—In a young state growing between the stones in a dry paved road it assumes sometimes a very peculiar and anomalous appearance, producing little sessile whitish or hoary and woolly globose rooting buds (gemmae or stolons) much resembling the flowering heads of Trifolium tomentosum L. or T. resupinatum L.

SUBORDER IV. SILICULOSÆ NUCUMENTACEÆ.

Tribe VIII. Isatideæ.

19. Isatis L.

†1. I. præcox Kit. Pastel.

More or less glaucous and hairy-pubescent; lower 1. stalked oblong, upper 1. sessile sagittate; pouches smooth oblong or slightly fiddle-shaped obtuse or rounded at each end, rarely or but slightly narrowed or attenuated at the base, twice as long as broad, tumid and corky towards the margins which are slightly winged.—DC. ! Syst. ii. 568; Prod. i. 210. I. tinctoria y. præcox Koch 81. I. bannatica RFG. ii. t. 4. f. 4177 b. I. tinctoria Buch! 196. no. 322 (not Linn.).—Herb. ann. Mad. reg. 1, 2; ccc. Waste rocky ground in sunny places everywhere, especially near the sea. Spr.; but at almost all seasons.—St. 2-3 ft. high very erect virgate branching upwards into a large panicle. Lower 1. large generally crenate and waved, upper more entire. Fl. small very numerous and with the smaller subdivisions and uppermost bracts of the large spreading panicle bright golden-y. Pouches pendulous, in all stages smooth, shining violet or steely blackish, rarely somewhat cuneate and
always nearly if not quite half as broad as long, i. e. not quite half an in. (10–11 millim.) long, \( \frac{1}{2} \) in. (4 or 5 millim.) wide, tumid and corky towards the edges, scarcely or but very narrowly winged, imperfectly bursting and discovering in the middle the single pendulous large oblong seed, not separating.—Varies not only greatly in size, height and foliage, but in being (1) more hairy and less glaucous, (2) nearly or quite smooth and very glaucous, (3) pouches truncate or rounded at top, and sometimes a little narrowed or attenuated, though scarcely cuneate or wedge-shaped, at the base: but all these forms are too much blended together to be separable. And although the pouches vary thus in shape a little from their normally oblong character, the proportion of their greatest width to their length is quite constant, even in the most cuneate forms, in which the upper tranverse diameter manifestly exceeds the lower or basal. —United by Koch to \( I. \) \( tinctoria \) L., but more nearly perhaps related to \( I. \) \( alpina \) All.; the pouches being of precisely the same shape, only considerably smaller. Still in \( I. \) \( alpina \) All. the pouches are not only 15–16 millim. long and 8 wide, but they are also altogether thicker, though neither tumid or corky towards the sides, nor more distinctly winged than in \( I. \) \( precocex \) Kit.—\( I. \) \( precocex \) RFG. ii. t. 4. f. 4178 does not seem to differ materially from f. 4177, which is the true \( I. \) \( tinctoria \) L. But the fig. 4177 b, "I. bannatica Link," exactly represents the fruit of the Madeiran plant. By Steudel both \( I. \) \( bannatica \) Link and \( I. \) \( bannatica \) Kit. are referred to \( I. \) \( tinctoria \) L., in which the pouches are not only finely attenuated downwards into the stalk, but are uniformly at least three times as long as broad.

Occasionally used for dyeing blue by the country people, but now almost superseded. Formerly it was much cultivated for commerce, but it is now quite neglected: and though extensively and perfectly naturalized in Madeira, its non-occurrence in Porto Santo and especially in the Dezertas is a fact (considering its favourite places of growth) opposed to its being truly indigenous.

**Suborder V. Lomentaceae.**

**Tribe IX. Cakilineae.**

**20. Cakile Tourne.**

1. \( C. \) \( maritima \) Scop. a. DC.

\( L. \) fleshy sinuato-pinnatifid, the lobes toothed; upper joint of the pod 2-edged ensiform acute.—DC. i. 185, var. a; Sm. E. Fl. iii. 183; Presl 69; Koch 83, var. a; Bab. 34. \( Cakile \) \( maritima \)
Desf. ii. 77. *Cakile Seraphonis* Brot. i. 561. *Bunias Cakile* L. EB. t. 231.—Herb. ann. PS. reg. 1; cc. Sandy beach in front of the town abundantly. Apr.–June. Pl. altogether smooth and fleshy, 6–12 in. high or more, with numerous flexuose spreading hard stiff branches forming a close often pyramidal bush. Foliage light gr. not glaucous. Fl. handsome pale lilac rather large in rac. opposite the 1. or terminal. Pods an in. long, hard and woody, sharply quadrangular, beak compressed.

Tribe X. *Raphaneae*.


Root annual; branches widely and stiffly patent or divaricate; l. toothed, the lower oblong obtuse lyrate or lyrate-pinnatifid, sometimes undivided and merely sinuate, the upper l. acute; pouches pubescent hispid or smooth many-ribbed, upper joint ovate then globose strongly granulato-costate or rugose, equal to or shorter than the elongated conico-subulate style, lower joint clavate.—WB. i. 86; Koch 88.—Var.

a. *eriocarpum* Webb l. c.; pouches hispid-pubescent, lower l. lyrate obtuse.—*R. rugosum* DC. i. Syst. ii. 432; Prod. i. 227; Presl 107; RFG. ii. t. 2. f. 4168. Varr. silic. hirsutis (*R. hirsutum* Host) and silic. scabris (*R. scabrum* Host) Koch l. c. *Myagrum rugosum* L. ! *M. perenne* Buch! i. c.; pouches hispid-pubescent, lower 1. lyrate obtuse.—

b. *rugosum* DC. i Syst. ii. 852.—Herb. ann. Mad. reg. 1; cc. PS. reg. 2; GD., reg. 2; c. Waste sunny places and cornfields chiefly near the sea. Abundant to the westward of Funchal about the Gorgulho, Praya Formosa, &c. Ponta S. Lourenço about the fossil bed, &c. Less common in Porto Santo than var. β. March–May.—Root subfusiform strong tough and woody, perennial-looking, but always decidedly annual only. Pl. 1–2 ft. high with remote straggling divaricate very tough and stiff or rigid branches, and small scanty foliage. L. not above 2 or 3 in. long and 1 broad, principally radical in a flat rose, with the st. more or less hispid, the latter retrally strigose. Rac. in fruit much elongated and divaricated or declining. Fl. rather smaller than in *Sinapis arvensis* L., bright y. Sep. smooth. Pedic. very short erect closely adpressed in fr. Pouches when young densely hispid; in all stages and even when ripe more or less pubescent all over, corky, coarsely ribbed and rugose longitudinally, 3–5 lines long, the lower joint rarely seedless not longer than the pedic., as long as the upper globose joint which is strongly ribbed longitudinally and tipped by the slender conico-subulate style which is as long as or longer than the
joint; the ribs more or less broken into irregular coarse warts or granules.—The pubescence of the fruit affords a very obvious but the only well-marked or perhaps altogether permanent distinction between this and var. β. The two however grow continually intermixed; so that the differences between them cannot be ascribed to soil or situation.

β. leiocarpum Webb 1. c.; pouches smooth, lower l. sinuate-toothed acute.—R. rugosum var. silic. glabris (R. glabrum Host) Koch 1. c. R. glabrum (Host) RFG. ii. t. 2. f. 4171. R. orientale Presl 107 (not DC.). Myagrum hispanicum Broti. i. 563 (not Linn.). M. clavatum Poir. ex Webb 1. c. Rapistrum clavatum DC. Syst. ii. 433; Prodr. i. 227.—Herb. ann. Mad. reg. 1, c; PS. reg. 2, cc; GD. reg. 2, c. Waste ground and cornfields with a; but the commoner of the 2 varr. in Porto Santo, though rather the rarer in Madeira. March–May.—Habit, size and general characters precisely as in a: but besides the smoothness of the fr. from its earliest stage, the lower l. are more acute and not lyrate but merely sinuate and toothed. In one Porto-Santan specimen the l. however are decidedly lyrate or pinnatifid, and the pl. is altogether smoother and the root more woody or perennial-looking than usual; the pouches being also merely ribbed and not verrucose or rugose, though with the ordinary slender elongated style.—R. perenne (L.) Berg, and R. orientale DC. with which a. and β. have often been respectively confounded, are both much taller larger more robustly growing and more upright pl., 2 or 3 ft. high or more, with long erect not straggling patent or deflexed branches, and much larger foliage: the l. in R. perenne L. being 6–8 in. long, lyrate-pinnate, with 3 or 4 pairs of pinnae and a large terminal lobe; and in R. orientale DC. a foot long, very obtuse, and merely sinuate with obtuse lobes and sinuses. In R. perenne also the root is decidedly perennial, sending up fresh stems annually from the old woody stock, which is never the case even by accident with the Madeiran pl.

22. CRAMBE L.

1. C. FRUTICOSA L. fil.

Shrubby hoary-pubescent and harshly strigose; l. scabrous harsh and stiff sinuate-pinnatifid or lyrate, coarsely unequally and sharply toothed grey or glaucous; panicle corymbose open spreading, its branches forked elongated slender smooth, the fl. numerous and crowded at their ends; pouch reticulato-rugose ovate-mucronate subcompressed more or less quadrangular.—Var.:

a. pinnatifida; 1. sinuato-pinnatifid, all the lobes acute and inciso-dentate; panicle large compound corymbose.—Crambe
fruticosa DC. i. 226. Myagrum scabrosum Buch! 195. no. 305. M. scabridum Sol. ! in BH.—Shr. per. Mad. reg. 2; r. Dry sunny rocks and cliffs on the S. coast, as on the edge of the Cabo Girão or of Pico de Facho beyond Camera de Lobos; more rarely in ravines, as nearly at the bottom of the Cural das Freiras down the Voltas on the high rocks to the right of the road above the Church. March–July.—A low shrub 2 or 3 ft. high with stiff fragile straggling crooked branches. L. ovate-oblong 1–2 in. long and ½–1 in. wide. Panicle large corymbose; its branches thin stiff and naked; the fl. white mediumsized crowded in dense racemes towards their ends, smelling rather disagreeably. Longer fl. often forked or toothed. Fr. dark brown the upper seed-bearing joint ovate tipped with the style, about a line long, soon and easily falling or separating from the short minute stalk-like quadrangular strongly corrugated lower barren joint.

b. brevifolia; dwarfish stunted, sparingly or not branched; L. short roundish or oval obtuse thick and fleshy toothed but nearly simple with only a pair of very small inconspicuous auricles at the base; panicle scarcely or not at all corymbose, of few simple or sparingly divided branches.—Shr. per. Mad. reg. 1, r; PS. reg. 4, rr; ND. 1, rr; GD. 1, r; SD. 1, s. Sea cliffs; Mad. at Paul do Mar above the Waterfall, at Ponta de Pargo &c.: Porto Santo on the rocky summit of Pico d'Anna Ferreira. May–July.—Merely the maritime form of a, with all the usual variations characteristic of its locality. Fl. and fr. rather larger than in a.

The Canarian C. strigosa from authentic specimens in the BH. is very distinct in its greater size, large ovate finely toothed L. 4 or 5 in. long and 2 or 3 broad, large ample elongated not at all corymbose panicle with the fl. thinly scattered, few together, and not more than half the size of those of C. fruticosa. The whole pl. is devoid of hoary fine pubescence, but sprinkled with conspicuous long coarse bristles. The greater or less development of the tooth of the longer filaments is equally variable in both sp.

23. Raphanus L.

Pods oblong rounded tapering acuminate continuous or sometimes strangulated here and there scarcely longer than their stalks spongy and 2-celled within; seeds reticulato-rugulose.—Brot. i. 574; DC. i. 228; WB. i. 84; Koch 84.—a. rotunda; root fleshy globose red purple pink or white: R. sativus A.
6. RESEDACEÆ.

Raphanistrum L.  Saramago.

Pods linear slender tapering acuminate moniliform or strangled between the seeds 1-celled and longitudinally ribbed or striated when ripe; seeds even.—Brot. i. 574; DC. i. 229; Sm. E. Fl. iii. 228; WB. i. 84, 5; Koch 84, 1019; Bab. 34.—Herb. ann. Mad. reg. 1, 2; ccc. PS. 1, 2; r. Cornfields waste ground and by roadsides in Madeira everywhere but especially from 1000 to 2000 ft. March–June chiefly but at almost all seasons.—Hispid dark green, st. glaucescent diffusely spreading or straggling 1-2 ft. long. Root slender fibrous. L. lyrate toothed, terminal lobe large. Fl. rather large. Sep. erect soon turning purplish. Pods smooth about an inch long, 2-4 times as long as their subulate acuminate smooth or adpresso-pubescent beak, when ripe breaking across between the seeds as if jointed, 2-celled whilst very young but the longitudinal dissepiment soon obliterated, the seeds becoming imbedded in a spongy mass.—Var.:

a. DC., Koch l. c.; fl. white with blackish violet veins giving them a bluish tint.—Not common. About S. Amaro and S. Martinho intermixed with β. and equally abundant.

γ. DC., Koch l. c.; fl. pale dull yellow (ochroleucous) or straw-colour with darker or dusky (not violet) veins.—EB. t. 856. Common everywhere. The fl. become deeper y. ascending from the sea.

Order VI. RESEDACEÆ.

The Mignonette Family.

Fl. irregular. Cal. 4-6-partite persistent. Cor. irregular, pet. 4-6 unequal alternate with the sepals deciduous. Stam. indefinite numerous, fil. free or variously united, inserted on a glandular fleshy flat collar-like or ruff-like irregular unequally dilated disk broadest and scale-like on the upper side. Ovary 3-6-lobed, 1-celled, multiovular, with 3-6 parietal placentas and 3-6 stigmas. Fr. a 1-celled many-seeded caps. open from an early stage at the top and exposing the seeds; rarely of 3-6
few-seeded follicles. Seeds kidney-shaped; embryo curved mostly exalbuminous.


1. Reseda L.

†1. R. luteola L. Dyer’s Weed or Weld. Lúrio.

St. erect; l. undivided elongato-lanceolate entire with usually a single small toothlet on each side at their base; cal. 4-cleft.—Desf. i. 373; Brot. ii. 305; Buch 196. no. 323; EB. t. 320; Sm. E. Fl. ii. 347; Presl 112; Koch 97; Bab. 35.—Herb. ann. or bien. Mad. reg. 1, 2, cc; PS. reg. 1, 2, c; ND. r, or ½; GD. c. Open waste ground everywhere. Spr., Sum.—Whole pl. smooth and shining. St. virgate branched 1–3 ft. high. L. undulate dark green. Fl. scentless pale greenish-ochroleucous, in long terminal erect tapering racemes densely crowded and spicate upwards. Pet. 3–5, the 3 upper laciniate. Caps. verrucose or granulate 6-valved 3-cuspidate, the points of the alternate valves inflexed.—Used by the country people to dye woollen yellow or green.—Luteola tinctoria var. australis WB. i. 106 by Bourgeau’s spec. in HH. and BH. seems to be merely a trifling accidental form or more branched state of the common pl. such as I have seen in Madeira produced by the cropping or browsing down of the main st. before flowering.

Order VII. Cistaceæ.

The Cistus Family.

Fl. regular. Sep. 5 persistent unequal, the two outer larger or smaller sometimes wanting, 3 inner twisted in aestivation. Pet. 5 equal fugacious crumpled and twisted contrariwise to the sep. in aestivation. Stam. numerous free. Stigma capitata. Ovary free. Fr. a 3-, 5- or 10-valved 1-many-locular many-seeded capsule. Embryo spiral or curved within the farinaceous alumen.

1. Cistus. Sep. 5, the 2 outer larger or smaller or 0. Pet. 5 fugacious. Caps. 5- or 10-valved.—L. opposite without stip.

1. Cistus L.

†1. C. monspeliensis L. Alecrim de Fora.

L. sessile linear-lanceolate 3-nerved reticulato-rugose villous on both sides, presently smooth; fl. in villous viscous secund corymbose racemes, stigma nearly sessile.—Brot. ii. 260; Desf.
8. VIOLACEÆ.

The Violet Family.

Fl. mostly irregular. Sep. 5 usually persistent. Cor. unequal or irregular. Pet. 5 marcescent rarely deciduous. Stam. 5, anthers introrse connivent or cohering round the ovary, sessile in the middle of the short dilated fil. which is produced above the anthers into a dry membranous point or crest. Ovary 1-celled with 3 parietal placentas. Style persistent thickened upwards with an oblique hooded stigma. Caps. 1-locular 3-valved loculicidal. Seeds often carunculate or subarillate. Embryo straight erect in the axis of the fleshy albumen.—Leaves with persistent stipules.

1. VIOLA. Sep. unequal produced downwards at the base. Pet. unequal, the hinder or lower one produced behind into a hollow spur. Stam. approximate into a cone or cylinder, but free; the two lower spurred at the base.

1. VIOLA L.

Sect. 1. Nomimum Ging. in DC.; the 4 upper pet. spreading irregularly sideways; the 2 side pet. generally bearded inside downwards: the 2 upper naked. Style slightly flexuose thickened or dilated upwards, constricted at the base.—Rhizome oblique or creeping; the later fl. apetalous.
* Stigma hooked attenuated into a deflexed beak. Fruit-stalks prostrate. Summer-fl. large and fl. apetalous.

1. **V. odorata** L.

Stemless or shortly caulescent; *summer shoots creeping stoloniferous*; fl. all broadly ovate rounded deeply cordate, more or less pubescent on both sides, on long *deflexedly pubescent stalks*; stip. altogether smooth ovate- or oblong-lanceolate acuminate ciliato-serrulate or fringed with glands much shorter than the breadth of the stip.; br. *above the middle of the ped.*; sep. smooth or pubescent at the edges only, oblong mostly obtuse; spur straight obtuse; fruit-stalks deflexed or prostrate deflexedly pubescent; caps. short globose pubescent.—Desf. ii. 313; Brot. i. 305; EB. t. 619; DC. i. 296; Sm. E. Fl. i. 301; Presl 132; Koch 90; Bab. 37.—

**β. maderensis.** Violêta.

Somewhat more decidedly caulescent or suffrutescent and pubescent than the common English fl.; ped. always deflexedly pubescent; sep. smooth subacute; fl. paler violet than in the E. pl., never white, highly fragrant, the 2 side pet. very slightly bearded; spur mostly very obtuse; anthesis subperennial, stolons flowering together with the mother-pl.—*V. odorata* Buch no. 345; WB. i. 110. *V. odorata* L. var. Webb in Ann. des Sci. xiii. 138, 9. **V. maderensis** Prim. 36.—Herb. per. Mad. reg. 2, 3; ccc. In woods and shady places above 1000 ft. everywhere, e.g. the Mount, Camacha, St. Anna, S. Vicente, &c. Oct.—June.—Probably the origin of the "Perpetual Violet" of English gardens.

** Stigma hooked attenuated into a deflexed beak. Fruit-stalks erect, caps. drooping.—Summer-shoots annual not rooting or stoloniferous, with shorter-stalked fl., smaller stip., and often apetalous fl.

2. **V. sylvestríus** Lam. Round-leaved Dog Violet.

Nearly or quite smooth shortly caulescent, *summer-shoots ascending or procumbent*; fl. shortly and broadly cordate simply acute or pointed, the lower orbicular or reniform and more obtuse, the upper more ovate or distinctly acute; stip. of ann. st. fimbriate-ciliate narrow attenuato-acuminate, the intermediate half as long as the slightly margined petiole, the upper as long as or longer than the same; sep. very narrow attenuato-acuminate; caps. oblong or elliptic acute apiculate.—Lam. Fl. Fr. ii. 680; RIB. Cent. 1. t. 94. ff. 200, 201; Cent. 7. t. 601. f. 822; RFG. iii. t. 12. f. 4503; Koch 91. **V. sylvatica** (Fries) Bab. 37. **V. canina** EB. t. 620; DC. i. 298; WB. i. 110 (not Linn.).

**β. Riviniana** Koch l. c.; fl. larger and paler, spur mostly pale or whitish. **V. Riviniana** RIB. l. c. t. 95. f. 202, 203; t. 601.
VIOLA.

f. 821; RFC 1. c. f. 4502.—Herb. per. Mad. reg. 3; cc. Dry rocks and sunny banks above 2000 ft. general; e. g. about the Torre de Luta and Arrebentão above the Mount, at the Portella of Porto da Cruz, the Encumeado de S. Vicente, &c. Nov.–July.—Pl. quite smooth, early in the season with short subcespitose suffrutescent st. and tufts of small cordate orbicular scarcely pointed 1., producing numerous fl. in long succession, and throwing out, as the spring advances, several trailing but never-rooting shoots, 6–12 in. long, bearing more cordate-ovate larger 1. and smaller sometimes apetalous or imperfect fl. Primordial fl. larger and much handsomer, but much paler and clearer blue than in *V. odorata* L. var. β. mad., scentless, never white. Pet. varying in shape from very broad and oval or rounded to oblong or ligulate. Spur white or pale, obtuse, varying much in length.—L. crenate mostly as broad as long, varying much in size but not in shape except in being more or less ovate and pointed, yet never assuming the isosceles-triangular form of those of the true *V. canina* L. Early in the year or in dry exposed situations starved dwarf pl. with very small rounded 1., 1–2 in. diam., and large fl. with often short broad almost orbicular pet., exactly represent *V. flavicornis* Forst. (not Smith) in EBS. t. 2736 (*V. canina* γ. pusilla Bab. ed. 1. p. 34).—The modification *sylvatica* of the original name *sylvestris* would be very inappropriate to this *Viola* in Madeira, where it is generally found in open sunny places and not at all in woods.

Sect. 2. *Melanium* DC.; the 4 upper pet. ascending imbricated, the 2 uppermost more or less erect, the 2 side pet. and the lowest bearded inside at the base. Style ascending, expanding upwards into the large urceolate stigma labiate below with a tuft of hairs on each side.


St. suffrutescent branched cespitose procumbent or ascending, in flower elongated suberect diffuse; l. ternate crenate shining on long slender marginate petioles, the lower quite smooth rounded or ovate and cordate or truncate at the base, the upper subpuberulous spatulate or lanceolate; stip. simple entire spatulate ligulate or linear; sep. oblong-lanceolate entire thickly ciliato-pubescent; spur obtuse much shorter than the sep. or pet., longer than the basal calyx-lobes; anther-spurs not half the length of the stam.; caps. obsoletely 6-angular smooth.—Novit. 28 or 550. —Herb. per. Mad. reg. 4; rrr. Highest bare rocky mountain peaks: Pico dos Arrieiros and the neighbouring peaks. May–July.—An elegant little pl. smooth below, finely mealy-puberulous upwards; l. shining dark green, very small and elegant, from \( \frac{1}{2} \) to \( \frac{3}{4} \) inch long or
broad, on slender petioles an inch long, before flowering crowded in tufts at the ends of the naked prostrate ascending branches, which are lengthened out when flowering often a foot or more, diffusely straggling, and producing from 2 to 6 or 8 fl. Fl. sub-corymbose scentless large conspicuous bright full y., like those of the common garden Pansy, \( V. \) \textit{tricolor} \( \text{L.} \), but less flat and regular, \( \frac{3}{4} \) to 1 inch in diameter. Lower ped. elongated puberulous, upper shorter and with the br. and pedic. measly-pubescent. Sep. acute puberulous, ciliato-pubescent at the edges. Claw of all the pet. pubescent; the 3 lower streaked and bearded inside at the base. Seeds from 15 to 20 ovate pale yellowish.

An exact representative and near ally of the European \( V. \) \textit{calcarata} \( \text{L.} \).

4. \( V. \) \textit{tricolor} \( \text{L.} \). \textit{Wild Heartsease or Pansy.}

St. diffuse ascending branched; l. deeply crenate, the lower ovate-cordate, the upper ovate-oblong or lanceolate, stip. large lyrate-pinnatifid, their terminal lobe large ovate-oblong or lanceolate crenate.—DC. \textit{i.} 303; EB. 1287; Sm. \textit{E. Fl.} \textit{i.} 306; Presl 134; Koch 94; Bab. 39.

\( \beta. \) \textit{arvensis} Sm., Presl, Koch, Bab. \textit{ll. cc.}; fl. small inconspicuous, pet. scarcely longer than the cal. very pale y. almost w., the lower odd one y. and streaked at the base; spur obtuse about the length of the basal lobes of cal.—\( V. \) \textit{tricolor} \textit{var. a. L.}, \( \kappa. \) DC. \textit{i.} \textit{c.} \( V. \) \textit{arvensis} Brot. \textit{i.} 306; EBS. 2712. \textit{Mnemion} \textit{tricolor} (Spach) WB. \textit{i.} 112.—Herb. \textit{ann. Mad. reg.} 2; \( \frac{3}{2} \). Cornfields, roadsides and waste ground here and there; about the Mount, Allegria, \&c., near Funchal. March–Sept.—Shining and apparently smooth but more or less puberulous. St. 6–12 in. long angular often flexuose. Fl. varying in size, but never so large as in \( a \), the larger blue-flowered var., which is not found except in gardens in Madeira.

Order IX. TAMARISCACEÆ.

The Tamarisk Family.

Fl. perfect regular. Cal. 5–4-partite persistent imbricate in the bud. Pet. 5 or 4 hypogynous regular imbricate in the bud, marcescent. Stam. 5–4 or 10–8, hypogynous free or monadelphous. Caps. 1-celled 3-valved many-seeded loculicidal, placentas often imperfect. Seeds ascending comose; embryo straight; albumen none.

Shrubby or small trees. L. cypress-like minute sessile scale-like alternate more or less imbricated entire, falling off together with the branchlets. Fl. small in dense terminal spikes or racemes, white or pink.
1. Tamarix. Pet. 5 or 4. Stam. 5 or 4 inserted on a hypogynous ring. Styles 3 patent. Seeds affixed at the base of the caps. with a sessile coma or pappus-like pencil or tuft of simple hairs at the apex.

1. Tamarix L.

Smooth not at all glaucous; 1. keeled cordate-lanceolate or ovate-acuminate imbricate amplexicaul mostly narrowed and produced into a spur below the base; spikes lateral panicled, about four times as long as broad, cylindric-oblong, obtuse; fl. buds shortly globose-ovate or ovoid; hypogynous disk or ring fleshy irregularly 5-lobed, each lobe often indistinctly notched; fil. inserted in or behind the notch; anthers shortly apiculate; caps. pyramidal trigonal attenuated gradually upwards from the base.—Desf. i. 269; Brot. i. 475; EB. t. 1318; Sm. E. Fl. ii. 111; Fl. Gr. t. 291; DC. iii. 96; Koch 274. T. anglica Bab. 116. T. gallica and T. anglica Webb in Hook. Journ. of Bot. iii. 429, 430. t. 15. T. canariensis (Willd.) WB! i. 171. t. 25. T. senegalensis DC. iii. 96.—Shr. or subarboresecent per. Mad. reg. 1, rr, only in a few gardens, e. g. Quinta do Val; whence introduced in 1834 by Sr José Antonio Pedroso into PS. it is now almost naturalized, spreading over the whole island in reg. 1, 2, ccc. April-June.—A smooth reddish-barked shrub or low tree from 10 to 20 ft. high with red-barked numerous elegant feathery slender upright or slightly drooping branches, and minute cypress-like l. which when dry are distinctly punctate. Fl. pale rose or pinkish-white small in densely crowded lateral spikes about an inch long and i inch broad forming large elegant subterminal drooping panicles. Sep. pet. and stam. 5; the latter scarcely longer than the oblong obtuse concave spreading pet. Anth. apiculate. Hypog. disk normally 8-10-lobed, the lobes united in pairs, often indistinct or obsolete. Caps. trigonal bulbous with an abrupt neck.—A most valuable acquisition to Porto Santo for fences and firewood.

Order X. FRANKENIACEÆ.

The Sea-Heath Family.

Fl. perfect regular. Cal. persistent; sep. 5 or 4 united nearly to the top into a long ribbed or furrowed 5-toothed tube. Pet. 5 or 4 marcescent with a long claw and the limb with a scale or appendage at its base. Stam. mostly 6 rarely so few as the pet. and then alternate; anth. roundish. Ovary free; style slender 2-3-fid. Caps. within the calyx-tube I-celled 2-4-valved septicidal with 3 parietal placentas. Seeds minute
numerous. Embryo straight in the axis of the albumen.—L. without stipules.

1. Frakenia. Style 3-fid, the lobes oblong bearing the stigma on their inner side. Caps. 3–4-valved many-seeded.

1. Frakenia L.

Sea-Heath.

1. F. pulverulentA L.

Herbaceous diffuse or prostrate; l. obovate retuse smooth above, furry-pubescent beneath, petioles ciliate at the base; cal. smooth.—Desf. i. 316; Brot. i. 556; EB. t. 2222; DC. i. 349; Sm. E. Fl. ii. 186; Presl 140; WB! i. 130; Bab. 41.—Herb. ann. Mad. reg. 1, rrr; PS. reg. 1, §. In Madeira only at Porto da Cruz on the N. coast near the sea, and "beach at S. Jorge," Sr. Moniz; in PS. by roadsides, &c., not uncommon. April–June.—St. suffrutescent at the base, 6–12 in. long, much branched dichotomously, thickly leafy. L. small. Fl. small very pale pink or almost white, axillary.

2. F. levis L. Resteira or Rasteyro.

St. shrubby prostrate wiry thickly cespitose; l. linear stiff smooth on both sides sessile comate and subciliate at the base, their margins revolute; fl. solitary or collected in little terminal heads subcymose longer than the l.; cal. slightly hairy-pubescent at the base and between its ribs or angles.

a. hebecaulon; st. more or less velvety-pubescent. F. levis, hirsuta and Nothria Linn. Herb! F. intermedia and ?F. hispida DC. i. 349. F. intermedia Presl 141? F. Nothria (Thunb.) DC. i. 34. F. hirsuta Desf. i. 317, 8. F. levis Brot. i. 556; Sm! E. Fl. ii. 186; Bab. 41; Buch! 196. no. 351. F. cespitosa Lowe! Novit. 28. F. capitata WB! i. 131. t. 16.—Suffr. per. Mad. reg. 1, §; PS. reg. 1, ccc. Confined in Madeira to Ponta S. Lourenço; in Porto Santo general in barren exposed places near the sea. April–June.—Much branched and leafy, trailing, forming a thick spreading turf 2 or 3 in. high, with tough thick woody long wiry roots and st., and heath-like crowded often encrusted l. ½ in. long and ½ line broad, enlivened by the conspicuous rather large pink fl. which are either sessile and solitary or aggregate in leafy cymose heads of 2–4 towards the ends of the branches. Cal. and st. upwards reddish or purplish chestnut. In foliage the pl. resembles Empetrum nigrum L.; in fl., Silene acaulis L. It varies with fl. bright full pink or rose; and fl. pale flesh-colour or nearly w.; the latter occurring only, and that rarely, in Porto Santo.

The var. B. leiocaualon with smooth st. (F. levis Desf. i. 317; EB. t. 205; DC. i. 34; Presl 141) has not occurred either in Mad. or PS.
Order XI. CARYOPHYLLACEÆ.
The Pink and Chickweed Family.

Fl. regular sometimes imperfect. Sep. 5 or 4 connected into a tube or free, persistent. Pet. 5 or 4 with a distinct claw and often notched or bifid limb, sometimes abortive. Stam. mostly 10 or 8, sometimes 5 or 4, connected at the base or free. Ovary 1 often stalked. Stigmas 2–5 sessile filiform. Caps. 1- or imperfectly 2–5-celled, 2–5-valved, but usually opening at the top with twice as many teeth as stigmas, many-seeded; placenta central. Embryo annular or curved round the farinaceous albumen.—L. opposite without or rarely with stipules.

Suborder I. SILENEÆ.

Sep. connected into a tube 5–4-toothed at top. Stam. connected below into a tube and with the pet. inserted on the distinct more or less elongated stalk (gynophore or carpophore) of the ovary. Caps. stalked. Pet. marcescent.

1. DIANTHUS. Cal. 5-toothed clothed at the base with 2 or more imbricated opposite scales or bracts (except in D. prolifer L.). Pet. 5 with long linear claws. Stam. 10. Styles 2. Caps. 1-celled opening at the top with 4 valves. Seeds peltate, convex above, concave beneath and keeled.

2. SILENE. Cal. 5-toothed naked. Pet. 5 with long linear claws. Stam. 10. Styles 3. Caps. more or less completely 3-celled opening at the top with 6 valves. Seeds reniform.

3. AGROSTEMMA. Cal. 5-toothed naked; the teeth produced elongated leafy. Pet. 5 with long linear claws. Stam. 10. Styles 5; stigmas hairy, papillary on their inner side. Caps. 1-celled opening at the top with 5 teeth.

Suborder II. ALSINEÆ.

Sep. distinct. Stam. free inserted on a more or less distinct hypogynous ring. Caps. sessile.—Pet. often deciduous.

* Values of caps. as many as the styles.

4. SAGINA. Sep. 4 mostly spreading or 5 closed in fruit. Pet. 4, 5, or 0 entire. Stam. 4, 5, 10. Styles 4, 5. Caps. 4–5-valved many-seeded. Seeds reniform not winged.—L. without stip., connate at the base. (SAGINA L. and SPERGELLA Reichb.)

5. SPERGULA. Sep. 5. Pet. 5 entire. Stam. 5–10. Styles 5. Caps. 5-valved many-seeded. Seeds lenticular, their mar-
11. CARYOPHYLLACEÆ.

gin keeled or winged.—L. with scarious stip., free not connate at the base.

6. Sparganium. Sep. 5. Pet. 5 entire. Stam. 10, the outer fil. with 2 short glands at their base. Styles 3. Caps. 3-valved many-seeded. Seeds either triangular or roundish-ovate compressed and aterous, or lenticular and keeled or winged.—L. with scarious stip., free not connate at the base. (Lepigonom Fr.)

** Valves of caps. twice as many as the styles.


Suborder I. SILENEÆ.

1. Dianthus L.

Fl. in a dense close scaly head, involucral scales 6 membranous pellucid scarious elliptic, the 2 outer short and mucronate, the inner very obtuse equal to or a little longer than the cal.; st. smooth; l. lanceolate smooth; seeds boatshaped granulate.—Desf. i. 344; Brot. ii. 176; EB. t. 950; DC. i. 355; Buch 196. no. 352; Sm. E. Fl. ii. 286; Presl 145; WB. i. 135; Koch 102; Bab. 44.—Herb. ann. Mad. reg. 1, 2, c; PS. reg. 2, rr. Dry sunny barren places in Madeira general, particularly beyond Camera de Lobos ascending Cabo Girão. At all seasons.—St. 6–12 in. high erect and solitary or several from the same root ascending geniculate. L. remote few finely serrulate. Fl. small pink or rose-colour scentless not more than 1 or 2 opening together in long succession from the hard compact ovate head which is coated with about 6 outer dry brown chaffy shining smooth scales.

2. Silene L.

* Fl. in secund or distichous racemes or spikes. (Stachymorpha Otth. in DC., Viscogo Koch.)

1. S. gallica (L.) Webb and Berth.

More or less hirsute; l. lanceolate or oblong, the lower
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spathulate or obovate obtuse; st. single erect or branched and straggling, branches spreading divaricate; rac. terminal single or in pairs viscid-hairy; fl. second alternate; cal. villous tubular, in fr. ovate ventricose, the teeth narrow-acuminate or subulate; pet. obovate mostly undivided and irregularly crenulate, rarely subbifid or entire; carpophore rather short; lower pedic. in fr. often spreading or reflexed.—WB. i. 138; Koch 109. *S. anglica* Bab. 45.—Herb. ann. Mad., PS., reg. 1, 2, 3, ccc; N, M, and S. D. c. Cornfields and waste ground everywhere, a universal weed. March–June, but at almost all seasons.—St. 4–12 in. high often simple erect. Rac. 2–4 in. long. Fl. rather pretty varying from deep pink or rose to white, their throat crowned with erect bifid scales. Var.:

a. *vulgaris*; rac. mostly many-flowered, fl. imbricate or crowded, pet. undivided finely crenulate immaculate, fr. mostly erect.—*S. gallica* (L.) DC. i. 371; Buch 196. no. 354. *S. cerastoides* DC. i. 372; Presl 149 (not Linn. ex Koch l. c.). *S. busitanica* (L.) Desf. i. 347; Broth. ii. 184.—In sunny places everywhere.

β. *quinquevulnera*; pet. with a deep crimson or blood-red spot, mostly undivided but sometimes obcordate or subbifid; pedic. in fr. all erect.—*S. gallica* β. Koch l. c. *S. anglica* β. Bab. l. c. *S. quinquevulnera* (L.) EB. t. 86; Desf. i. 348; Sm. E. Fl. ii. 292; DC. i. 372.—In drier, poorer or scantier soil, as on walls, &c. More hirsute in Madeira than a, with shorter often simple st. and equally dense many-flowered rac.

γ. *anglica*; less hirsute; st. spreading branched diffuse, fl. axillary or remote in leafy elongated rac., pet. often slightly cloven or obcordate, pedic. of lower fl. spreading or reflexed.—*S. gallica* γ. Koch l. c. *S. anglica* a. Bab. l. c. *S. anglica* (L.) EB. t. 1178; Sm. E. Fl. ii. 291; DC. i. 371.—In moister richer soil or shady places, occasionally.

*S. busitanica* L. (Desf., Broth.) and *S. gallica* β. Koch differ respectively from a and β in having the fr. spreading or reflexed; whilst *S. quinquevulnera* EB. t. 86 (*S. anglica* β. Bab.) differs from β in its diffusely branched st. and lax leafy few-flowered rac. much as γ (*S. anglica* L.) differs from a (*S. gallica* L.). But it would be endless to define the multifarious forms of this very variable pl. dependent upon soil and situation. I have therefore abstained from making the Mad. pl. a and β distinct varr.

2. S. NOCTURNA L.

Shortly and closely furry-pubescent; st. and branches quite erect rather tall; l. lanceolate, the upper linear, the lower spathulate and fringed or ciliate with long hairs at the base;
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rac. terminal single elongate, fl. secund alternate adpressed, cal. tubular cylindric-oblong 10-striate pubescent, the teeth short ovate, pet. small inconspicuous narrow bifid involute; caps. cylindric-elongate contracted at top; carpophore short thick.—Brot. ii. 183; DC. i. 372; WB. i. 138. S. nocturna and S. mutabilis (L.) Spr. ii. 409. S. vespertina Bourg. ! Pl. Can. exsicc. in BH. no. 333, “Lancerottae in cultis” (not Retz nor WB. i. 139).—Herb. ann. Mad. reg. 1, rr; PS. reg. 2, c. Cornfields near the Gorgulho and Ponta S. Lourenço; in Porto Santo general. April, May.—St. 1-2 ft. high very erect straight and stiff. Herbage dull gr. not glaucous or viscid. Pet. scarcely longer than the cal., dull smoky-greenish outside, white inside, tightly rolled up inwards in the daytime. Fl. inodorous at least by day, the throat crowned. Var. :

a. fl. crowded and more numerous. S. nocturna L.

β. pauciflora Otth. in DC. i. c.; fl. remote and fewer, "pet. smaller."—S. mutabilis L. ex DC. Cucubalus reflexus L. ex BH.

—This is the common and apparently normal condition of the pl. in Porto Santo. But the two forms are scarcely worth distinguishing, and are often indeed united on the same pl.

** Fl. in loose forked corymbose cymes. (Atocion Koch; Behenantha, Conoimorpha, Rupifraga &c. Otth. in DC.)

3. S. inflata Sm. Orelha Boi.

Glaucous and usually quite smooth; st. decumbent at the base; l. oblong-lanceolate or elliptic acuminate; cyme terminal dichotomous subcorymbose, fl. drooping; cal. ovate or oblong inflated bladdery smooth many-nerved reticulate, with short broad ovate or triangular acute teeth; pet. deeply cloven, either naked and simply bituberculate at the base of the limb, or crowned; caps. short obovate; carpophore rather long or distinct.—DC. i. 368; Hook. Fl. Scot. i. 134.—Herb. per. Mad. PS. and Dez. nearly throughout the year. Var. :

a. vulgaris; quite smooth and glaucous; fl. st. tall erect, panicle large lax compound many-flowered, pet. w. or flesh-col. not crowned but bituberculate.—S. inflata a and γ Otth. in DC.; c., Hook. i. c.; Sm. E. Fl. ii. 292; Presl 148; WB. i. 136; Koch 112; Bab. 46. Cucubalus Behen (a, L.) EB. t. 164; Desf. i. 347; Broth. ii. 180; Buch 196. no. 353.—Mad. and PS. reg. 1, 2, c.; GD. r. Borders of cornfields, &c. general. Feb.–June.—St. decumbent and leafy at the base, erect and 1-3 ft. high when flowering. Fl. generally w. sometimes pale dull pink or flesh-col.

β. intricata; smooth light gr. scarcely glaucous; root-stock often woody and st. suffrutescent or slightly woody at the base,
much branched and cespitose prostrate, often elongated pendulous; 1. smaller fringed with minute cartilaginous points or teeth; cymes small 1–3-few-flowered, cal. smaller less inflated oblong, pet. w. not crowned but bituberculate.—Novit. 28 or 550.—Mad. reg. 3, c. Rib. de Sta Luzia and other ravines, generally hanging in long dense entangled flowery masses down perpendicular rocks. June–Aug.

\( γ. \) mari\-\( \text{t}i\)\( \text{m}a \); altogether (except the fl.) smaller than \( α \), very smooth glaucous; st. prostrate ascending often cespitose; 1. smaller fringed or serrulate with minute cartilaginous teeth; cymes small 1–3-flowered, rarely more compound; fl. larger than in \( α \), cal. generally less inflated or more oblong with a violet or purple tint, pet. w., generally but not always crowned with conspicuous bifid scales.—\( S. \) inflata \( β \). Hook. l. c.  \( S. \) mari\-\( \text{t}i\)\( \text{m}a \) (With.) Sm. E. Fl. ii. 293; EB. t. 957; Bab. 46. \( S. \) uni\-\( \text{f}o\)\( \text{r}a \) Roth ex Sm., Koch, &c, ll. cc.—Mad. reg. 1, cc; PS. reg. 1, 2, 4, 5; ND. ecc; GD. cc; SD. ecc. Sea-coast and cliffs, Machico, Ponta S. Lourenço, Paul do Mar, &c.; Porto Santo, hills on the coast to the eastward, Ponta de Guillerme on the N. coast, Zimbral d’Araéa, and top of Pico de Conselho.—Passes by a thousand intermediate gradations into \( α \).


Nearly or quite smooth not viscous more or less glaucous; st. erect dichotomously branched; 1. oblong-lanceolate, the lower spathulate, the margin cartilaginous often denticulate with minute points or teeth; fl. remote single solitary stalked erect; cal. at first oblong or subclavate, then ovate or elliptic membranous not inflated 10-striated reticulate upwards, the teeth rounded-ovate and obtuse; pet. inconspicuous small deeply cloven, their lobes equal ligulate or oblong rounded or obtuse crowned with 2 erect truncate scales at the base, scarcely longer than the cal.-teeth; fr. ovate ventricose urceolate or barrel-shaped, carpophore very short.—Novit. 27 or 549. \( S. \) Pseudo-\( \text{be}h\)\( \text{e}h\)\( \text{en} \) Boiss. Diagn. Pl. Orient. 36, 37; Walp. Rep. ii. 778.—Herb. ann. Mad. reg. 1, rr; PS. reg. 2, r. Cornfields, Ponta S. Lourenço; and in PS., between the town and Fonte d’Araéa. March–May.—St. 9–12 in. high branched leafy. L. rather large and broad sometimes subciliate towards the base. Fl. single in the forks of the stem and axils, stalked erect inodorous. Pet. dull lilac-pink or flesh-colour deeply and equally 2-lobed, the cor. thus appearing 10-petalous; sometimes abortive. Fr. rather large erect. Caps. finely and obsolesly granulated. Seeds rather large subechinulate most elegantly ribbed and cancellate.

The “more or less velvety-pubescent” variety (Novit. 549) is a mistake, caused by some intermixture or confusion with
this pl. of young or imperfect specimens of *S. nocturna* L. observed or collected by the late Dr. Charles Lemann. Except occasionally a few long hairs or cilia sprinkled on the edges of the l., *S. ignobilis* is always, so far as I have seen, quite smooth.

5. **S. inaperta** (L.) Ait.

Erect dichotomously branched minutely and closely puberulous or furry-pubescent; branches divaricate stiff and rigid slender or filiform corymbose; l. inconspicuous small lanceolate acute, the lower subobtuse, the upper remote linear acuminate; fl. inconspicuous loosely corymbose erect, their stalks filiform often elongated nearly or quite smooth; cal. slender narrow linear-clavate; pet. linear slightly cloven or obcordate not longer than the cal. teeth; caps. oblong or elliptic, carpophore not quite half its length.—Brot. ii. 188; Buch 196. no. 355; DC. i. 376; WB. i. 140. *S. filiformis* Novit. 27 or 549, not of Otth. in DC.—Herb. ann. Mad. reg. 2; r. Rocky barren waste ground amongst cornfields and dry beds of ravines; ascent of the Rancho and Cabo Girão beyond Camera de Lobos; bed of Rib. de Santa Luzia, &c. Sum., Aut.—Brot fibrous decidedly annual. Whole pl. with a peculiar light slender appearance, finely hoary-pubescent below, smooth or nearly so upwards, 1-2 ft. high, with a thin very straight erect virgate st. and forked filiform branches forming a spreading loose corymbose cyme, with the internodes often viscid. L. few remote small and inconspicuous soon falling. Cor. small abortive inconspicuous, not exserted; pet. dull greenish-brown. Caps. oblong or cylindric.


3. **Agrostemma L.**

††1. **A. Githago L.** Corn Cockle.

Pet. obcordate or repute, half the length of the long linear acuminate sepals.—Brot. ii. 220; Sm. E. Fl. ii. 325; EB. t. 741; Koch 117. *Lychmis Githago* (Lam.) a, DC. i. 387; Bab. 48. *Githago segetum* Desf. i. 363; WB. i. 144.—Mad. reg. 2; rrr. Once brought “from Rib. Frio” in October by a countryman; but a mere accidental straggler and scarcely entitled to admission, though so likely to occur with other corn flowers.—Pl. 2-3 ft. high dichotomously branched hairy; l. linear-lanceolate. Fl. conspicuous handsome solitary stalked. Cal. hard ribbed angular, its teeth narrow slender elongate erecto-patent.
Pet. large not crowned deep crimson or purple with bluish-black longitudinal lines or streaks. Carpophore none.

**Suborder II. Alsineae.**

4. **Sagina L.**

* Sep. 4 spreading in fr. Pet. 4 or 0. Stam. 4. Styles 4. Caps. 4-valved. (*Saginella Koch.*)

1. **S. procumbens L.**

Smooth cespitose or moss-like; main-st. very short, barren branches or stolons elongate slender filiform procumbent or prostrate often rooting at the joints their ends ascending; l. numerous crowded often fasciculate linear somewhat abruptly mucronate quite smooth; sep. obtuse much longer than the pet. rather shorter than the caps.; fr. at first drooping then erect.—Brot. i. 213; Sm. E. Fl. i. 238; EB. t. 880; Buch 196. no. 347; DC. i. 389; H. Fl. Sc. i. 59; Presl 158; WB. i. 147; Koch 118; Bab. 49.

β. spinosa (Gibs.) Bab. l. c.; l. very minutely ciliated-serrulate or spinulose at the edges; sep. distinctly shorter than the caps.—An S. bryoides Fröl. in Koch l. c.?—Herb. per. Mad. reg. 2, 3, ccc; GD. reg. 2, rr. Moist places on walls, banks, rocks &c., and in the turf on mountains, everywhere. At all seasons.—A small moss-like dark green pl. like a *Polytrichum* or *Dicranum*, forming tufts or patches 1 or 2 in. high; l. scarcely half an inch long and half a line wide, flat above, convex beneath, more or less fasciculate especially on the barren shoots, often forming terminal rose-like tufts. Pet. irregular small much shorter than the sep. white, sometimes 0. Sep. spreading cross-wise below the ripe caps.

2. **S. apetala L.**

Barren shoots or stolons none, st. much and regularly branched dichotomously from the base, branches more or less erect slender filiform stiff and straight regularly forked; l. few remote very small and inconspicuous in pairs and not fasciculate linear very narrow gradually or acuminato-mucronate; sep. obtuse much longer than the pet. and shorter than the caps.; fr. always erect.—Sm. E. Fl. i. 240; EB. 881; DC. i. 389; H. Fl. Sc. i. 60; WB. i. 146, 7; Koch 118; Bab. 49.—Var.:

α. glandulosa; glandular-pubescent; l. ciliate at the base.

β. glabra, Bab. ed. l. p. 45; nearly or quite smooth; l. not ciliate.

Herb. ann. Mad. reg. 1, 2, r; PS. 3 or 4, r. Dry sunny spots. α, in garden walks at the Valle near Funchal, and on the walls
of the old Fort at the top of P. de Castello in Porto Santo; α and β intermixed on the terrace in front of the church-door of N. S. de Livramento in the Curral das Freiras, Mad. March–July.

—A small inconspicuous pl. only 2 or 3 in. high, pale dull gr. and very distinct in its more delicate light bushy sparingly leafy habit, like Radiola millegrana L., and regularly forked branches, from S. procumbens L. Sep. obtuse, the 2 outer sub-mucronulate. L. not uniformly ciliate; in β not at all so. Pet. w. very minute, sometimes none. Sep. spreading crosswise below the ripe caps.

5. Spergula L.

1. S. Arvensis L.

L. somewhat fleshy linear-filiform convex above channelled or grooved beneath blunt at the tip; fl. in forked glandular-pubescent cymes; sep. ovate and with the deflexed fruit-stalks glandular-pubescent; pet. slightly longer than the sep.; seeds dull coal-black spheroidal-lenticular or strongly doubly-convex and subglobose, simply carinate with a narrow raised keel or margin, not winged, finely and obsolescently granulated or papillose.—Desf. i. 368; Brot. ii. 214; EB. t. 1535; DC. i. 394; Presl 159; WB. i. 146; Koch 120; Bab. (ed. 1) 46, (ed. 4) 124. S. arvensis a, Sm. E. Fl. ii. 336.

β. vulgaris Koch, Bab. 11. cc.; seeds frosted with white or pale brown clavate warts or papillae.—Herb. ann. Mad. reg. 1, 2; ½. Cornfields at Camaxa, S. Vicente, and between Feijão d'Ovelha and Pia de Pargo; bed of the Rib. de Maxico, &c. Oct.–June.

—St. loosely spreading 6–12 in. long; 1 imperfectly whorled or fascicled at the joints, linear-subulate rather obtuse flaccid 1–1½ in. long. Branches of cyme pedic. and sep. always more or less glandular-pubescent. Pet. white a little longer than the sep. Stam. 4–10, often 5. Styles always 5. Caps. always distinctly 5-valved. Seeds dull coal-black not shining; frosted with pale yellowish deciduous bristly warts like grains of sand, lenticular-globose or tumid-lenticular subangular, with an equatorial distinct keel, which is sometimes broader and thinner than usual and with a pale edge, but never at all winged.


1. S. Fallax Lowe.

Altogether smooth; 1. somewhat fleshy linear-filiform flattish and slightly grooved towards the base above, convex or flattened beneath, blunt at the tip; sep. lanceolate and with the deflexed fruitstalks wholly smooth; pet. lanceolate as long as

† Bourgeau’s no. 334 in HH. is the present pl. His no. 334 in BH. is Spergularia fallax. (See Hook. Journ. Bot. viii. 290.)
the sep.; seeds shining coal-black flattened lenticular finely and sharply granulate bordered with a broad membranous radiate-plicate wing or frill.—Hook. Journ. Bot. viii. 289, 290; ix. 75. Spergula pentandra WB. i. 145 (not Linn.); Bourg. Pl. Canar. no. 410 in BH., partly; Hook. fil. and Thoms. ! Herb. Ind. Or. in HH.; Griff. ! Affghan. Exs. no. 1029 in HH. Spergularia? (595) Stocks! Scinde, in HH. Spergula pentandra var. intermedia Boiss. ! Pl. Or. nov. Ser. 2. 93, 94. Spergula arvensis Bourg. ! Pl. Canar. exs. no. 394 in BH. (not Linn.). Arenaria flaccidea Roxb. Fl. Ind. ii. 447.—Herb. ann. Mad. PS. and ND. reg. 1, SD. reg. 1, 2; r. or ½, locally c. Sea-cliffs a little to the E. of Funchal and cornfields about the Brazen Head; roadsides and borders of cornfields towards Pico d'Anna Ferreira in PS.; at the top of N. and SD. March-July.—Habit and stature of Spergula arvensis L. but a more delicate pi. in all its parts, and always altogether smooth. L. slightly flattened above and beneath, obsolesely channelled above. Fl. similar but smaller, with the sep. more lanceolate than ovate and narrower, of a fresher more vivid green contrasting more with the narrow white membranous edges. Pet. lanceolate clawed not longer than the cal. white. Stam. 6 or 7. Styles and valves of the caps. always 3. Seeds intense coal-black shining as if polished. —At once distinguishable from Spergula arvensis L. by the constantly 3-valved instead of 5-valved caps., the perfectly smooth pedicels and sep., and broadly winged seeds. The true Spergula pentandra L. by the original types from Löfing in the Linn. Herb. has also smooth-stalked cymes and sep., but is a much smaller pl. with larger fl. especially in bud, broader ovate sep. broadly edged with violet-purple, and pet. a little longer than the sep. The caps. are immature; but in the largest of the specimens on a separate sheet, 5 or 6 in. high, the caps. is truly 5-valvular, being partially split into 4 distinct valves, one of which is twice the breadth of the others and has manifest traces of a 5th medial suture. The smaller specimens on the other sheet, ½-1½ in. high, are marked “Hab. Madriti in collibus vulg.”; and though ambiguous as to their capsular valvation, agree precisely otherwise with 6 specimens in BH. of “S. pentandra L.” marked “1. Hispania C. G. Ortega M.D. 1777,” and with another marked “H. L. Hab. prope Madritum, Löfing,” which have a distinctly 5-valved caps. Thus Spergularia fallax seems to be no less distinct from the true Linnaean Spanish pl. (S. pentandra L.) of Löfing and Ortega, with which it agrees in its entire freedom from glandular pubescence, than from Spergula arvensis L.
2. **S. RUBRA** (L.) Pers.

Glandular-pubescent at least upwards; st. round; l. somewhat fleshy linear-subulate flattened above and beneath mucronate; fl. somewhat racemose and secund; fruitstalks deflexed viscid-pubescent; sep. lanceolate obtuse nerveless with broadly scarious margins viscid-pubescent; caps. not longer than the sep. rather shorter than the slightly declining fr.-stalks; seeds pale brown compressed subtriangular pear-shaped or obovate, finely granulate or echinulate at the back, wingless.—Presl 160. *Arenaria rubra* (L.) **EB.** t. 852; **Desf.** i. 357; **Sm.** E. Fl. ii. 311; **Hook. Fl. Sc.** i. 138; **Spr.** ii. 400. *A. rubra* L. a, **DC.** i. 401. *Lepigonum rubrum* Koch 121; Bab. ed. 4. 124 (var. a). *Alpine rubra* (Wahlenb.) **WB.** i. 148; **Bab.** ed. 1. 50.—Herb. ann. Mad. reg. 1, ε; reg. 2, ρρρ; **PS.** reg. 1, cc; **GD.** reg. 2, ς. Gorgulho rocks; Praza in front of the Governor's palace in Funchal; at Machico, Porto da Cruz, and Porto Moniz, near the sea: Curral das Freiras in front of the church-door. March—July.—St. prostrate in a circle numerous subcespitose jointed dichotomous leafy 4—12 in. long the ends ascending. L. fascicled acute almost always except in PS. specimens bristle-pointed, in pl. growing near the sea almost or quite smooth. Fl. pale dull pink or rose-purple small and pretty racemose and secund on the terminal branches of the cymes. Pet. purple of varying intensity deeper towards the tip not longer than the sep. Styles 3. Caps. always 3-valved not longer than the calyx. Seeds very minute pale reddish-brown minutely scabrous most distinctly at the back or rounded thickened outer edge, not shining or polished and never winged.

**7. ARENARIA L.**

1. **A. SERPYLLIFOLIA** L.

Finely and closely pubescent; st. erect or ascending dichotomously branched; l. ovate acute or acuminate subscabrous sessile, the lower contracted at the base into a short stalk; fl. in forked cymes; sep. lanceolate acuminate 3-nerved or ribbed longer than the pet.—**Desf.** i. 356; **Brot.** ii. 200; **EB.** t. 923; **Sm.** E. Fl. ii. 307; **DC.** i. 411; **Presl** 164; **Koch** 128; Bab. 52. *A. glutinosa* Koch l. c.; smaller viscous clothed upwards with glandular hairs besides the short close pubescence. *A. serpyllifolia* WB. t. 1. 150. *A. serpyllifolia* B. vscida DC. l. c.?; γ, de-pauperata Novit. 27 or 549.—Herb. ann. Mad., PS., reg. 4, ρρρ; SD. reg. 2, cc. Summit of Pico Grande Mad. and P. de Castello PS. in the turf. April—Aug.—A small insignificant pl. 2 or 3 in. high with erect or spreading forked stiff slender branches. Fl. numerous from the forks of the st. or axils of upper 1. Pet. w. small inconspicuous, narrow-ovate. Caps.
6-valved ovate-elongate or conic-acuminate shorter than the sep. Seeds minute tumid-reniform dark brown granulated.

8. STELLARIA L.


St. prostrate ascending flaccid cespitose dichotomous hairy on alternate sides between the joints; l. ovate acute or shortly acuminate stalked, the uppermost sessile; fl. axillary and terminal single on long stalks which are hairy on one side; pet. deeply cloven not longer than the lanceolate 1-nerved glandular-hairy sep.; fruitstalks deflexed; caps. oblong rounded at the base a little longer than the sep., 6-partite or with the valves cloven below the middle.—EB. t. 537; Sm. E. Fl. ii. 301; DC. i. 396; Presl 160; WB. i. 152; Koch 129; Bab. 53. Alsinie media (L.) Desf. i. 271; Brot. i. 476.—Herb. ann. Mad. reg. 1, 2, 3, ccc; PS. reg. 2, 3, c. One of the commonest weeds in Mad., about Funékal, and in cultivated ground, everywhere; less common in PS., and not observed in the Dezertas. Nov.–June chiefly.—Herbage very variable in size and luxuriance light or y. gr. tender succulent or juicy. St. very numerous matted leafy often elongate 6–12 in. long. Petioles broad ciliate. L. smooth. Fl. small white. Stam. 3–10 generally 5; in richer or moister soil 10, the whole pl. being larger and more robust with the sep. smooth, constituting var. B major Koch, or γ umbrosa (Opitz) Bab. l. c.

2. S. ULIGINOSA Murt.

St. diffuse 4-angular smooth, l. sessile ovate or oblong-lanceolate with a callous tip smooth ciliated at the base; cymes dichotomous small few-flowered lateral and terminal, br. scar­ious smooth at the edges; pet. bipartite shorter than the lanceolate 3-nerved sep.; caps. ovate attenuated at the base about equal to the sep.—Brot. ii. 196; EB. t. 1074; Sm. E. Fl. ii. 303; Koch 131; Bab. 54. S. aquatica DC. i. 398. Larbrea aquatica (St. Hil.) DC. iii. 366, (not of Ser. in DC. i. 395). Arenaria alsinoides Raddi, Breve Osserv. sull' Isola Madera (Firenze 1821) p. 13 (with apetalous fl.). A. Raddiana (Ser.) DC. i. 412.—Herb. ann. Mad. reg. 2, 3; ccc. Wet sandy or muddy places chiefly in beds of ravines everywhere above 1500 ft. May–July chiefly.—Whole pl. nearly or quite smooth pale gr. often slightly glaucous. St. numerous branched and matted jointed trailing often rooting at the lower joints, 6–18 in. long. Ped. axillary mostly 1–3-flowered. Fl. small inconspicuous, often apetalous. Sep. very narrow acuminate spreading like a star in fl., afterwards erect. Pet. caducous very small white not half the length of the sep.—A bad but undoubted Mad. specimen of this pl. in the BH., marked "S. graminea L."?
has doubtless occasioned the insertion of *S. graminea* as well as of *S. uliginosa* in Von Buch’s list of Mad. pl. The true *S. graminea* L. is certainly not found in the Madeiran islands.

I am much indebted to M. Alph. De Candolle for an extract from the rare little work of Raddi above quoted, which by its accuracy of application to the Madeiran apetalous state of *S. uliginosa* Murr. enables me to quote *Arenaria alsinoides* Raddi, and hence *A. Raddiana* Ser., with little short of the certainty accruing from actual comparison of types.

9. **CERASTIUM** L.

* Root scarcely more than annual or biennial. Pet. not longer than the calyx.
† Caps. curved. Pet. about as long as the sepals.

1. **C. GLomeratum** Thrall.

Hairy-pubescent light gr. viscid; st. stiffly erect and straight or ascending, several and tufted, or single; l. short broadly ovate or oval and rounded; fl. of cyme aggregate in close compact or crowded heads or fascicles; br. all herbaceous and like the narrowly scarious-edged sep. hairy quite to the points which are mostly bearded or tipped with a distinct pencil of several long hairs; fruitstalks and pet. shorter or not longer than the cal.—WB. i. 151; Koch 132 (var. a); Bab. 54. *C. viscosum* Linn. Syst. Nat. ed. 12. 320, and Sp. Pl.; Desf. i. 306; also Fries, Gaudin (ex Koch). *C. vulgarum* Linn. Herb. ! EB. t. 789; Sm. E. Fl. ii. 330; Hook. Fl. Sc. i. 142; DC. i. 415 (var. a and b). *C. vulgarum* b (C. viscosum) Brot. ii. 218.—Herb. ann. Mad. reg. 1, 2, 3, c; PS. reg. 4, r; SD. reg. 2, 5. Rocky banks and hill-sides, beds of ravines, &c., above the Mount, in Rib. Frio, near the sea at Campanario, Machico, S. Vicente, &c., Mad.; summit of Pico de Facho and P. de Castello, PS., and of SD. Febr.–Oct.—St. 4–12 in. high very erect and simple. L. shortly ovate often rounded and obtuse. Pet. small and inconspicuous. Caps. cylindric ascending twice as long as the cal.—Distinguished at once from the more common *C. triviale* Link by its pale herbage turning y. after flowering, its short broad leaves, and smaller fl. collected into heads or bundles.

2. **C. TRIVIALE** Link.

Hairy-pubescent dark gr. scarcely viscid; st. spreading diffuse and straggling sometimes rooting, the ends ascending; l. ob-long-lanceolate; fl. of cyme lax or distinct, only the uppermost aggregate; br. and sep. with a broadly scarious margin, smooth at the tips; pet. as long as, fruitstalks at least as long as, and
mostly distinctly longer than the cal.—Koch 133 (var. α and β); Bab. 55 (var. α).  
C. vulgatum a. Brot. i. 218.  
C. viscosum Linn. Herb. ! EB. t. 790; Sm. E. Fl. ii. 330, 331; Hook. Fl. Sc. i. 142, 143; DC. i. 416.—Herb. bien. or subper. Mad. reg. 2, 3, ecc. Mountain 
pastures, ravines, &c., everywhere above 1000 ft. May–Oct. chiefly.—St. 6–18 in. long widely branched and straggling, only 
erect or ascending when supported. L. ovate-oblong pointed.  
Hairs of pedic. and sep. more or less intermixed with viscid 
glands. Pet. as long as or rather longer than the sep. Caps. 
cylindric ascending twice as long and fruitstalks often more 
than twice as long as cal.—An altogether coarser and larger pl. 
in all its parts than C. glomeratum, with longer rampant st., 
narrower l. longer in proportion to their width, larger more 
branched and spreading cymes, longer pedicels, more scarious 
br. and sep. not tipped with hairs, and larger more conspicu­
ous fl.

† Caps. nearly straight. Pet. shorter than the sep.

3. C. TETRANDRUM Curt.

Hairy-pubescent, glandular and viscid upwards; st. forked 
from the base with a fl. in each fork leafy, branches erect short 
numerous often densely tufted and pulvinate, sometimes de­
cumbent at the base; l. oblong or oval mostly recurved, the 
upper ovate or lanceolate sessile, the lower oblong attenuated 
into long petioles, all acute; br. wholly herbaceous broad and 
leafy altogether without scarious tips or margins oval or ovate 
acute or apiculate; sep. lanceolate acute herbaceous with their 
tip and margins narrowly scarious; fl. or rather fr. large, the 
former erect mostly tetrarmemous in forked leafy subcorymbose 
cymes, not aggregate or fascicled; pet. bifid and much shorter 
than the sep.; fruitstalks straight mostly erect 2–3 times as long 
as the sep.; caps, as long as or rather longer than the sep. with 
mostly 8 very short and obtuse or truncate shallow teeth.—
Sm. E. Fl. ii. 332; Koch 133; Bab. (ed. 4) 55.  
C. atrovirens and C. tetrandrum Bab. (ed. 1) 52, 53.  
Sagina cerastoides EB. t. 166 (a drawn-up luxuriant garden state of the pl.).—Herb. 
ann. Mad. reg. 4, and upper part of 3; r. Highest summit of 
Pico Grande, top of the Paul; “peaks above the Icehouse,” Dr. 
C. Lemann. July, Aug.—Habit and pale colour of C. glomeratum 
Thuill. but of much smaller humbler growth and size, being not 
more than 2 or 3 in. high. Fruitstalks in both native and cul­
tivated Madeiran plants almost always erect, rarely patent or 
a little deflexed or declining, but never so far as I have seen 
reflexed, and usually not more than twice the length of the 
sep., often in the upper fl. less. A few fl. (the primary or lower
in the forks) are pentamerous and larger, with more bulky 10-valved caps.; but the great majority are tetramerous though still often with 5 stam. Pet. small inconspicuous about \( \frac{3}{5} \) the length of the sep. heart-shaped with blunt lobes cloven nearly halfway down. Seeds bright reddish-chestnut, compressed, granulate most strongly at the back.

** Root perennial. Pet. twice as long as the calyx.

4. C. vagans Lowe.

More or less pubescent, always glandular and viscid upwards; st. elongate diffuse and weakly straggling, suffrutescent downwards, ascending upwards, and with the whole cyme, br. pedic. and sep., densely clothed with tawny glandular viscid hairs; l. narrow linear-lanceolate acuminate or ensiform and sessile crowded downwards; fl. numerous; br. ovate or lanceolate herbaceous; sep. generally bluntish with broad scarios tips and margin, pet. biffid conspicuous scarcely twice as long as the sep.; caps. short ovate or oval before bursting, equal to or a little longer than the sep.—Novit. 26, 27, or 548, 549.—Per. Mad. reg. 3; rr. Dry rocks from 4500 to 5500 ft. Along the Caminho Central, between the Primeira Vista and the first view into the Serra d'Agoa; also under Pico Grande. July, Aug.—Habit and foliage of a Stellaria. St. 6 to 18 in. or 2 ft. long, slender, and with long internodes upwards, but decidedly shrubby below and thickly jointed, the joints swollen, with short internodes, never rooting, and although branched, and often crowded, not at all cespitose. L. more or less pubescent but never ciliate, stiffish and sharp-pointed, very like those of Stellaria Holostea L. but shorter, scarcely an inch long and 2 or 3 lines wide, usually tapering gradually from the base to the point, sometimes more or less lanceolate. Cymes erect forked subcorymbose 7–14– or more flowered. Even the minute uppermost bracts are very slightly if at all scarios at the tips or margins; but the sep. are broadly so. Pedic. before and after flowering always perfectly erect, not bent beneath the cal., but with buds, fl. and fr. alike erect. Styles 5. Caps. usually concealed by the cal., with 10 short blunt valves. Var.: 

a. fulva; altogether densely clothed with tawny glandular hairs.

b. calva; altogether smoother, the lower l. nearly or quite smooth.

Approaches nearest to C. arvense L. γ. suffruticosum Koch 136; but is sufficiently distinct from every state of the sp. by its altogether larger size and diffuse or rampant not at all cespitose habit, its long straggling divaricate branches with long internodes and fulvous pubescence, its longer not ciliate leaves.
and larger more ovate or oval capsules. A further argument in proof of the two pl. being really distinct sp. is the occurrence of the true C. arvense L. (WB. i. 152; Bourg. Pl. Can. exs. no. 719) in the Canaries, retaining all the char. and habit of the common English or European form.

Order XII. MALVACEÆ.

The Mallow Family.

Fl. perfect. Cal. 5- (rarely 3-4-) cleft valvate in the bud, often double with an outer involucre or bracteole. Cor. regular. Pet. as many as the inner sep. twisted in the bud, often connate with the stamen-tube. Stam. mostly numerous monadelphous united into a tube; anth. 1-celled reniform bursting transversely. Ovary composed of several or many carpels arranged round a common axis. Fruit capsular rarely baccate. Carpels verticillate 1-many-seeded. Embryo curved with twisted or doubled cotyledons and little or no albumen.—Leaves alternate stipulate. Pubescence generally stellate.

* Cal. double or involucrate.

1. LAVATERA. Inner cal. 5-cleft, outer of 3 leaves or bracts partly connate or united at the base. Caps. orbicular many-celled, cells 1-valved 1-locular 1-seeded unarmed simple.

2. MALVA. Inner cal. 5-cleft, outer of 2-6 (mostly 3) quite distinct not united narrow oblong or setaceous bracts. The rest as in Lavatera.

3. MODIOLA. Inner cal. 5-cleft, outer of 3 distinct narrow or setaceous bracts. Caps. orbicular many-celled, cells 2-valved 2-locular armed bicuspidate or aristate. ( Modiola Lam., applied in zoology to a well-known Mytilaceous genus of Lamellibranchiate Mollusks, must yield to the long prior claim of the present well-marked botanical genus of Mœnch. For the Molluscan genus Modiola Lam., it would be best perhaps to modify the Lamarckian name into Modiolus or Modiolaria.)

** Cal. single, without bracts or involucre.

4. SIDA. Cal. 5-cleft 5-angular. Caps. orbicular many-celled, cells 1-valved 1-locular 1-seeded often armed beaked or aristate.

5. ABUTILON. Cal. 5-cleft 5-angular. Caps. orbicular or globose many-celled, cells inflated bladdery 1-valved 1-locular many-seeded unarmed.
1. **Lavatera** L.


Greyish and clothed all over with starry pubescence; st. herbaceous diffusely spreading more or less erect; l. roundish-heartshaped with mostly 5 crenate lobes shallow and rounded in the lower, deeper and pointed in the upper l.; fl. axillary stalked aggregate often ternate, pedic. always erect shorter than the petioles; involucral br. or outer sep. broadly ovate united about one-third upwards; pet. narrow notched or bilobed thrice as long as the cal.; fr. quite smooth covered by the inflexed sep., valves rounded plain and even at the back, entire or with only a few faint obscure plaits or obtuse teeth at the edges; central disk small simple.—Brot. ii. 277, 278; Brot. Phyt. Lusit. ii. 225. t. 179. f. 2; DC. i. 440. *Malva Pseudo-Lavatera* WB. i. 29, 30. Bourg. Pl. Can. Exsicc. no. 667. in BH. and HH. *L. cretica* Cav. Diss. 2. 89. t. 32. f. 1 (not Linn.).—Herb. ann. Mad., PS. reg. 1, 2; ccc. Roadsides and waste places everywhere. April–July.—St. 1–2 ft. long mostly branched and spreading, sometimes simple and erect, rarely prostrate. Stip. ovate or ovate-lanceolate. Fl. pale rose-purple middle-sized; claw of pet. slightly fringed or ciliate. Carpels sometimes very faintly reticulate at the back and obsolescent toothed at the edges but mostly quite plain and even and always perfectly smooth as described by Cavanilles, who mistook it for *L. cretica* L. (Jacq. Vindob. i. p. 15. t. 41), which is an altogether larger stouter much more hirsute pl., with larger thickly shaggy fr. and sep., hispid-pubescent or densely strigose carp., and sharply lobed leaves. Jacquin's fig. above quoted well agrees with the original Linnaean type of *L. cretica* L. in Herb. Linn.: but neither one nor the other affords any information as to the carpels, which however by numerous specimens in HH. are closely and thickly hirsute.—*L. sylvestris* in general aspect much resembles the common English *Malva sylvestris* L.; but it is at once distinguished by the 3 bracts being united at the base into the monophyllous outer cal. of a *Lavatera.*

*Lavatera arborea* L. (the Tree Mallow) occurs in 2 or 3 places (Porto da Cruz in Madeira, and in Porto Santo) about cottages and in gardens near the sea; but it has no claim to a place in the Flora.

2. **Malva** L.


More or less starry-pubescent but often nearly smooth and shining; st. spreading prostrate or ascending rarely upright; l. subreniform or broadly roundish-heartshaped with 5–7 very shallow and obtuse or rounded crenate lobes; stip. ovate;
fl. small and inconspicuous in axillary clusters, 1-3 or 4 together, mostly 2 or 3, and nearly or quite sessile; pet. but little longer than the cal. retuse or widely notched, their claw very faintly and minutely ciliate; invol. br. or sep. 3 very narrow linear shorter than the broadly ovate sep. of the more or less smooth sometimes pubescent inner cal.; pedic. in fr. slightly elongated mostly erect; fr. somewhat pubescent, rarely quite smooth, with the cal. spreading or erect and open; valves strongly and elegantly cancelled or sharply reticulated at the back, with the margins usually sharply raised or prominent and irregularly but distinctly toothed; central disk small.—Linn. Herb. ! Cav. Diss. 2. 68. t. 26. f. 1; Desf. ii. 116; DC. i. 433; WB. ! i. 29; Presl 177 (except "cor. cærulea").—Herb. ann. Mad. reg. 1, 2, ccc; PS. reg. 1, 2, ½; ND. r; GD. ½; SD. r. Roadside and waste ground. March-July.—St. branched 6-18 in. long. L. dark dull gr. on very long petioles which have frequently a thickly pubescent line on their upper side; upper l. always pubescent and more deeply and sharply lobed. Pet. pale pink or rose-colour, limb retuse with a wide irregular shallow sinus, the lobes unequal; claw very slightly and sparingly fringed or ciliate. Var. :

a. pubescent; st. prostrate; fl. and fr. nearly or quite sessile; pet. scarcely longer than the cal.—In dry poor soil or exposed places everywhere.

β. nearly smooth; st. more erect or ascending; fl. and fr. distinctly stalked, pedic. deflexed or declining; pet. sometimes rather longer than in a, yet not exceeding twice the length of the cal.—In richer moister soil or amongst other herbage.—A rather larger stouter and more upright pl. than a, with the fruit-stalks often an inch long and mostly 2 or 3 together. I can perceive no sure or constant marks of difference to distinguish from this state of the species M. borealis (Wallm.) Bab., Koch (M. parviflora Huds., M. pusilla Sm. EB. t. 241, M. rotundifolia 3. DC., Sm. E. Fl., M. rotundifolia Fries) : and indeed, not only Hudson, but Linneaus himself in his Herb. (see also EB. at t. 241) appears to have referred the plant in question to M. parviflora L.: a specimen marked by Linneaus himself "parviflora," with "(Huds. J. E. S.)" added in pencil by Sir J. E. Smith, being pinned in the Linn. Herb. to his original M. parviflora, from which it only differs in the carpels being quite smooth (which is however sometimes the case in the Mad. pl.) and in their being perhaps somewhat more finely or neatly cancelled, with their margins not raised or prominent. It is remarkable that Dillenius in Ray’s Synopsis, p. 251, no. *3, calls the cor. "cærulea" in the "Hithe" pl. (M. parviflora Huds.), as Presl does in his Sicilian M. parviflora L.; whereas it is as truly pink or rose-colour in the EB. "Hythe" pl. as in
the Madeiran.—*M. Nicaensis* All. (Cav. Diss. 2. 79. t. 25. f. 1; RFG. 5. t. 168. f. 4888) is another closely allied pl., which may possibly have been overlooked in Madeira. It is mainly distinguished from *M. parviflora* L. by the broader leafy ovate or oblong-lanceolate (ovate-lanceolate Cav.) outer sep. or invol. br.; and the fr., which is either (as in *M. parviflora* L.) smooth, or more or less pubescent (subvillose Cav.), is also more neatly and finely cancellated, with the central disk often larger (as in *M. rotundifolia* L.), and with the edges of the carp. not raised or prominent. None of these char. however can be much dep­ended upon to distinguish it from *M. parviflora* L. unless it be the first, in which it approaches *M. mauritiana* L.; forming as it were an intermediate link between the two; having the shorter pet. and more sharply or distinctly cancellated fr. of the former sp., and the leafy invol. br. and immarginate carpels of the latter.


More or less starry-pubescent but mostly somewhat smooth and shining; st. diffusely spreading or procumbent, often pro­strate; l. on long smoothish or slightly pubescent footstalks with often a hairy line on the upper side, reniform or broadly roundish heart-shaped, with 5 obtuse or rounded toothed or crenate lobes shallow in the lower l., deeper but scarcely ever acute in the upper; stip. ovate; pedic. axillary few i. e. 1-3 rarely 5 together erect usually much shorter than the petioles; fl. large conspicuous, pet. fully 4 times longer than the cal. deeply and widely notched or subbilobed, their claw thickly and copiously fringed or bearded on each side; invol. br. or sep. 3 unequal elliptic-ovate or lanceolate shorter than the inner sep., which are inflexed, closing over the fr.; fr. rather large thickly pubescent almost hirsute, the valves obscurely cancellated or reticulato-scrobiculate and beaded or granulated up the sutures at the back, not margined or toothed at the edges; central disk small.—Linn. Syst. (ed. 12) ii. 460; Cav. Diss. ii. 77. t. 25. f. 2; Brot. ii. 274; Brot. Phyt. Lusit. ii. 223. t. 179. f. 1; DC. i. 432; Koch 142 (under *M. sylvestris* L.).—*M. mauritianca* Linn. Herb! Buch! 196. no. 343. *M. rotundifolia* Buch! 196. no. 342 (not Linn.).—Herb. ann. Mad. reg. 1 and lower edge of 2; f. Roadsides, vineyards and waste ground chiefly at 1000 ft. above the sea. About S. Martinho and S. Antonio, Praya Formosa, and between Caniso and Porto Novo. May–July.—St. branched 1–3 ft. long very tough and almost woody at the base. Herbage very variable in degree of pubescence, but appearing mostly smooth and shining to the eye. L. dark dull green, nearly smooth above, more pubescent beneath. Petioles distinctly hairy at their junction with the l., smoother downwards. Pedic. not longer than the pet. nearly or quite smooth. Fl. handsome large and numerous or
produced copiously all over the pl. about an inch in length and more in breadth. Br. quite distinct or separate very variable in shape and breadth, all sometimes ovate or oval sometimes elliptical or lanceolate, often in the same fl. either ovate or narrow-lanceolate. Pet. bright purplish rose or deep full pink, wedgeshaped, their claw with a large tuft or thick fringe of hairs on each side.

Differs from *M. sylvestris* L. in its smaller size, more procumbent or diffuse or even prostrate habit, smooth petioles and pedicels, obtusely and fewer (only 5-) lobed 1., larger brighter or richer and deeper coloured fl. which are also rarely more than 3 together, shorter pedic. (scarcely the length of the fl.), longer pet., narrow and more distant outer sep., larger fr. and thickly pubescent immarginate distinctly cancellated carpels. The fl. are of a fuller richer colour; not however brighter though perhaps deeper pink than as represented in *M. sylvestris* L. EB. t. 671, yet not deep red or "sanguineous" as in the original Linnaean spec. or as in the pl. described by Koch, p. 142: of which however the Madeiran pl. can be considered merely a less robust pale-flowered state or var.

In the Banks. Herb. there are only two Madeiran specimens of *Malva*; both collected in Madeira by Banks and Sol., one marked by Solander himself *M. mauritiana* L., the other *M. rotundifolia* L. The first of these is in its present state quite indeterminable, though there is nothing against its being correctly named: the 2nd, after long and careful examination I am quite satisfied is also exactly the same pl., possessing none of the really distinctive characters of *M. rotundifolia* L., though it is undoubtedly the original type of *M. rotundifolia* of Von Buch's list of Madeiran pl. It has indeed the pet. only 3 times the length of the cal. in the only remaining imperfectly expanded fl.; but on the other hand the sep. close in over the fr., as in *M. mauritiana* L., instead of standing erect or lying open as in *M. rotundifolia* L. The 3 involucral bracts are lanceolate and distant from each other. The fr. is densely strigose-pubescent or hirsute instead of softly and shortly velvety, with the surface of the carpels obviously rugose across or irregularly cancellated beneath the close-set short whitish stiff pubescence; but their edges are not toothed or raised. Lastly, the central disk is small, instead of large as in the true *M. rotundifolia* L. (EB. t. 1092): a pl. not existing so far as I have observed in Madeira, though included in Holl's List; which contains however neither *M. parviflora* nor *M. mauritiana* L.
12. MALVACEÆ.

3. MODIOLA Mœnch.

(Haynea Rchb. not Schum. or Willd.)

††1. M. CAROLINIANA L.

Hispid; st. stiff and woody, prostrate, creeping; l. palmate 5-7-lobed, lobes deeply toothed or cut, smooth above; pedic. axillary solitary erect longer than the petiole; pet. entire; fr. and cal. hirsute-strigose.—Malva caroliniana Linn. Herb. ! Cav. Diss. 2. 58. t. 15. f. 1; DC. i. 435; Spr. iii. 92.—Herb. ann. Mad. reg. 1; r. Waste ground immediately below the terrace-wall of the Quinta do Valle near Funchal; formerly abundant, but the locality by late alterations and enclosures seems now to be destroyed. March, April.—An inconspicuous pl. with st. 1-2 ft. long, creeping amongst grass and rooting for a part of their length, the ends only a little ascending, straight or regularly flexuose, thin and gr. but stiff and woody, the pl. however being not only decidedly annual but of very brief duration. Herbage bright gr. Lower l. less, upper more divided, lowermost undivided crenate. Stip. ovate. Pedic. hispid. Br. or invol. sep. linear-lanceolate. Sep. rugosely or granulate-strigose, in fr. erect not closed. Fl. small but pretty, ½ in. in diam.; pet. pale dull scarlet with a dark lunate mark at the base, their claw greenish y. Fr. blackish of 20-22 partially 2-celled carpels, the upper cell bursting widely open, the lower indehiscent.

4. SIDA L.

††1. S. CARPINIFOLIA L. fil.

A low shrub clothed with forked or cruciform adpressed hairs; branches compressed or flattened upwards; l. ovate or ovate-oblong unevenly and coarsely or somewhat doubly serrate; stip. linear acuminate erect; pedunc. axillary 1-4-flowered mostly solitary very short much shorter than the petioles; fr. hirsute at top, of 8-11 carpels each with 2 short horns at the outer upper angle of the back and a single longer recurved awn at the inner angle.—S. carpinifolia L. fil. Cav. Diss. 1. 21; 5. 274. t. 134. f. 1; and S. planicaulis 1. 24. t. 3. f. 11. S. carpinifolia and S. carpioides DC. i. 461. S. carpinifolia WB. i. 37. Malva subhastata Holl's List (not Cavanilles).—Shr. per. Mad. reg. 1; r. Roadsides and waste ground amongst gardens and vineyards abundantly in the western suburbs of Funchal, beginning from the now desecrated and dismantled church and convent of S. Francisco; in the garden of which it was found by Masson in 1776, and sent to Dr. Solander with the remark, "called Tea by the inhabitants, and cultivated in their gardens" (Sol. MSS.): the former part of the observation applying however rather to the following sp. at the present day, and the latter
part to neither. The pl. appears to be confined to the above locality. In fl. throughout the year.—An insignificant little shr. not above 12-18 in. high with few straight straggling tough and stiffish branches sprinkled like the whole pl. with rather long shining whitish or tawny golden very close-pressed starry 4-rayed or forked hairs, one fork or pair of the rays directed upwards, the other downwards, like a St. Andrew’s cross or hourglass. L. bright full gr. broadish 1-1½ or 2 in. long and ¾-1 or ¾ in. broad, the lower ovate broader and shorter, the upper oblong-lanceolate narrower and longer. Fl. small bright uniform golden y. the lower mostly solitary but the uppermost often 2-4 together in little heads or short upright rac. The fr. of this Madeiran pl., on which S. carpinifolia L. fil. was originally founded, agrees accurately with DeCandolle’s description of that of his S. carpinooides.

A glance at Cavanilles’ figure (t. 21. f. 3) of his Malva subhastata sufficiently explains Herr Holl’s mistake and verifies his syn. The leaves indeed of M. subhastata in the above fig. much resemble in shape those of S. carpinifolia L.

Probably introduced into Madeira from Brazil, where it is one of the commonest weeds.

†2. S. RHOMBIFOLIA L. Cha Ingleza.

A low shr. free from hairs but clothed with very short and close mealy-looking starry pubescence; l. shortly petioled lanceolate or narrow-oblong serrate, thickly pubescent and pale or glaucous-hoary beneath, smoother above; stip. linear-setaceous erect; pedunc. 1-flowered axillary solitary, aggregate at the ends of the branches, elongated about as long as the leaves and distinctly jointed; fr. smooth, carpels 7-12, 1-2-rostrate. Var.:


b. canariensis; carpels 2-rostrate.—S. rhombifolia (L.) Cav. Diss. 1. 23. t. 3. f. 12 and S. alba 22. t. 3. f. 8 (not Linn.). S. canariensis (W.) and S. rhombifolia (L.) a (not β ex icon. cit. Cav.) DC. i. 462; Spr. iii. 111.—Mad. reg. 1; r.

Shr. per. Mad. Roadsides and dry waste ground in hot sunny places everywhere along the S. coast chiefly. Throughout the year.—A small shr. with slender stiff straight often elongated simple rounded branches 1-2 ft. long very tough and strong or wiry, hence used occasionally for making small brooms or besoms. Whole plant appearing smooth or merely powdery, but really more or less densely starry-pubescent in all its parts. L. dull gr., more or less whitish or greyish beneath, 1-2 in.
long, \(\frac{1}{4}-\frac{1}{2}\) in. broad, wedgeshaped and entire towards the base. Fl. small buff or ochre-y. Ped. very variable in length but mostly rather shorter than the L though sometimes longer especially in luxuriant pl. Fr. small hard and dry. Carpels mostly 10, and by far most commonly 1-rostrate; rarely and perhaps only in pl. growing in poor scanty soil and in the hot dry summer or aut. months birostrate. In the summer of 1845 the carpels of all the pl. in the paths or walks of my own vineyard, which had always borne before, as in subsequent years they again bore, 1-rostrate carpels, produced almost uniformly birostrate carpels. Thus \(\alpha\) and \(\beta\) are rather two forms or states than properly varieties. In Madeira, however (as also in the Canaries apparently from Webb's account), \(\alpha\) is assuredly the normal state; \(\beta\) occurring only here and there occasionally.

This is the pl. generally called "Cha Ingleza" or English Tea-pl. by the Portuguese at present. It is however rarely if ever used in any way.


Inclining to shrubby, all over more or less hoary with very short and close velvety starry pubescence; L. soft finely velvety heartshaped ovate-lanceolate or subobtuse, somewhat lobed irregularly and unequally repand-crenate; stip. linear reflexed; ped. erect mostly longer than the petioles jointed near the fl.; sep. ovate acute; cor. spreading; fr. large of 12-15 scabrous stellately-hispid acute notawned carpels about the length of the sep. — *Abutilon indicum* Wight and Arn. Prodr. Fl. Ind. Or. i. 56. *Sida indica* (L.) and *S. populifolia* (Lam.) DC. i. 471 and 470; Spr. iii. 119.

\(\beta.\) *populifolia*; 1. more or less acuminate; W. and A. l. c.; *S. populifolia* (Lam.) Cav. Diss. l. 32. t: 7. f. 9; 5. 275. t. 128. f. 2; DC. l. c.; Spr. l. c. *S. Abutilon* Holl's List (not Linn.). — skr. ann. rarely per. Mad. reg. 1; r. Waste ground amongst vineyards in the neighbourhood of Funchal occasionally, especially about the Quinta do Valle. July—Nov.—St. erect; branches 1-3 ft. long straight and stiff but weak and slender and decumbent or spreading horizontally and trailing, often dusky purplish or violet, hard and woody although the pl. is of scarcely ever more than ann. or bien. duration. L. poplar-like, 1-2 in. long, blunt at the tip, pale gr. inclining more or less to grey or hoary. Fl. rather large and handsome, the size of a shilling, buff or ochre-y. Fr. large and handsome from the neat regular arrangement of the dry papery or bladdery carpels. Pedunc. very variable in length, often not much longer but never shorter than the petioles.
Seeds black beautifully scabrous with pale raised points, rounded at the back.

†††Order XIII. AURANTIACEÆ.

The Orange Family.

Fl. regular. Cal. urceolate or campanulate 3-5-toothed marcescent persistent. Pet. 3-5 or 8 imbricate in the bud. Stam. as many as or multiples of the pet., their fil. more or less combined in sets or free, flattened downwards; anthers erect. Torus a fleshy hypogynous ring or disk to which the pet. and stam. are affixed. Ov. 5-many-celled free surrounded by the annular torus; style 1; stigma thick capitate. Fr. an orange, with a spongy often separable rind and 1-many-celled 1-many-seeded pulp composed of distinct separable juicy vesicles. Seeds affixed to the axis 1-many in each cell or carpel, without albumen; chalaza and raphe distinct. Embryo straight; cot. thick and fleshy 2-auricled at the base; plumule distinct.—Trees or shrubs abounding with aromatic fragrant volatile oil-glands. L. alternate pinnate, but often by abortion of the side-lfts. 1-leaved. Fl. generally white with thick fleshy pet. Fr. mostly edible.—The *Aurantiaceae* form too marked a feature in the botanical aspect of Madeira to be here omitted. And having had constant and long-continued opportunities of observing them growing in all the luxuriance of native pl., I have been enabled to form conclusions with some confidence as to the true limits of the sp.

†††1. CITRUS. Cal. urceolate 3-5-toothed. Pet. 5-8. Stam. 20-60, fil. flattened dilated downwards and more or less united or 1-polyadelphous. Fr. 7-12-celled, cells many-seeded vesicular-pulpy. Integument of seeds coriaceous. Cot. with very short auricles.—Petioles winged with a single terminal lft.

†††1. CITRUS L. Orange and Lemon.


Subarboreous armed or thorny; branches stout firm rigid armed with long spines; petioles short thick simple or very narrowly marginate, 1. broadly oblong obtuse serrate and when young with the young shoots and fl.-buds purplish or violet; fl. many in a cluster; fr. large more or less oblong with a very thick hard rind and pale pulp.—Lour. Fl. Coch. ii. 465, var. 1; Brot. ii. 281, 2, var. 4; DC. i. 539; Presl 183; Risso Hist.
Nat. de l'Eur. Mérid. i. 442.—Shr. per. Mad. reg. 1, cult. in a few gardens in and about Funchal. Fl. and fr. irregularly throughout the year.—The Madeiran form or var. is a low irregularly growing tree or shr. from 5 to 10 ft. high, with no very distinct st. or head, and straggling short thick straight, but somewhat stunted, branches. L. dark-gr. stiff and coriaceous, of the form and size of those of the common Guava (Psidium pyriferum L.) or Cherry Laurel (Prunus Lauro-cerasus L.); constantly very different from those of any other of its genus. Fl. like those of the Lemon, but many in a cluster. Fr. pale y. large neither umbonate nor mamillate but with the style usually persistent; its rind very thick and fragrant, sometimes rugged, generally smooth and even, with very little slightly acid pulp.—Madeira is justly famous for the excellence and cheapness of its candied citron.

††2. C. LIMONIUM L.

Arboresous armed or thorny; branches lax or diffuse elongate; petioles slightly winged or marginate; I. ovate-oblong acuminated or acute toothed; young shoots and fl.-buds purplish or violet; fl. solitary or only 2-3 together; fr. mostly oblong or oval rarely globose, always more or less umbonate or mamillate; rind hard and often thick; pulp pale.—C. Limonum and C. Limetta DC. i. 539. C. Limonium and C. Limetta Presl 184 and 187.—The principal Mad. var. are:

a. vulgaris; Engl. Lemon; Port. Limão (the tree, Limoira); Fr. Citron; Ital. Limone; Sicil. Lumiuni; Germ. Limone.

A tree 20-30 ft. high with long loosely spreading branches; foliage rather light gr.; 1. acuminate; fr. rather large umbonate pale y. with a thickish often roughish rind and very acid pulp. —C. Limonum DC. i. c.; Risso i. 423. C. Limonium Presl 1. c.—Tr. per. Mad. reg. 1, 2, cult. ccc. In gardens about Funchal, &c., everywhere below 2000 ft. Fl. and fr. Oct.-May.

β. dulcis; Engl. Sweet Lemon; Port. Limão doce, Lima, Lima de cheiro; Sicil. Lumiuni duci.

A small tree or shr.; fr. globose mamillated, pale y.; rind thin, pulp sweet insipid.—C. medica var. 2, Brot. ii. 281. C. Limetta DC. i. c. C. Limetta a. dulcis Presl 187. C. lumia Risso Hist. i. 414.—Small tr. or shr. per. Mad. reg. 1, cult. r. In a few gardens about Funchal. Fl. and fr. Oct.-May.—Habit altogether of a, and with similar petioles and fl., but with 1. acute, not acuminate. Fr. pale y. size of an ordinary orange, the knob or nipple at top surrounded by a flat or hollow space. Rind smelling more or less like Bergamot (Monarda fistulosa L.).
Citrus.

C. acida; Engl. the W. I. Lime; Port. Lima de Gallinha.

Habit of a and β; fr. small globose even, mammillated, pale y.; rind thin, pulp very acid.—C. acida Roxb. C. medica var. 2, C. Limon Lour. ii. 465.—Small tree or shr. Mad. reg. 1, cult. rrr. In one or two gardens at Funchal.—Fr. 1-1½ in. diam.

C. Perottia Risso i. 418 seems to differ from this only in its pear-shaped fr.

+++ 3. C. Aurantium L.

Arboresous armed or thorny; branches close crowded forming usually a compact round bushy head; petioles broadly winged; l. ovate-oblong or elliptic acute or acuminate; fl. numerous in thick clusters subracemose pure white; fr. globose more or less flattened at the poles; rind soft more or less acrid or bitter adhering to the more or less high-coloured pulp.—Desf. ii. 215; Brodt. ii. 282. C. Aurantium and C. vulgaris DC. i. 539; Presl 188. C. Aurantium and C. Bigaradia Risso Hist. i. 349 and 378.—Principal Madeiran varr.: a. aurea; Engl. Orange or common Orange; Port. Laranja (the tr. Laranjeira); Fr. and Germ. Orange; Ital. Arancia or Melarancia; Sicil. Aranciu.

A tree 20-40 ft. high with thick very dark-gr. foliage; fr. flattened at the poles golden or reddish-y.; rind even, mostly thickish, rather bitter, pulp sweet.—C. Aurantium Lour. ii. 466; DC., Presl, Risso, ll. cc.—Tr. per. Mad. reg. 1, 2, cult. ccc; PS. reg. 1, 2, rr. In gardens in Madeira everywhere; in the north often attaining a height of 60 ft. Fl. Febr.-April. Fr. Aug.-April.—The oranges of the north of the island (Santa Anna, S. Jorge, S. Vicente, Porto da Cruz, &c.), and of these more particularly a sort called Laranja de embigo, are much better than those of the south, and are less infested with the maggots or larvae of the destructive Orange-fly (Ceratitis citripperd Macl. Zool. Journ. iv. 482. t. 15) and other Tephritid or cognate Diptera.—Several subvarieties and monstrosities are cultivated occasionally, such as the Shaddock (C. decumana L.), the Maltese, St. Michael, the Double orange, the Forbidden fruit, &c.

β. Bigaradia; Engl. Seville or Bitter Orange; Port. Laranja azeda; Fr. Bigarade; Germ. Pomeranze.

A tr. 20-30 ft. high; fr. as in a, but with a very bitter rind and pulp.—C. vulgaris DC., Presl, ll. cc.; C. Bigaradia Risso l. c.—Tr. per. Mad. reg. 1, 2; cult. c. Gardens and vineyards here and there general, but much less abundant than a. Fl. April, May. Fr. Jan., Febr.—Fr. used for making marmalade and vinegar; sold very cheap, often at 20d. per hundred.
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13. AURANTIACEÆ.

+++4. C. NOBILIS Lour.

Unarmed; petioles simple or narrowly marginate not winged; 1. lanceolate or elliptic acuminate mostly quite entire; fl. pure white; fr. much depressed and concave at the poles; rind soft not at all bitter or acrid, easily separating from the sweet high-coloured pulp.—Lour. Fl. Coch. 466; DC. i. 540. C. Aurantium var. Mandarimum Risso i. 378. Var.

3. tangerina; Engl. Tangerine Orange; Port. Laranja Tangerina.

A dwarfish shr. of delicate habit and foliage with slender crowded branches forming a loose light head; fr. small remarkably concave or umbilicate at the poles with the axis very short, more or less strongly torulose or ribbed at the base, rind very thin.—C. nobilis β minor Bot. Reg. t. 211. Shrub. per. Mad. reg. 1; cult. ½. Gardens in and about Funchal chiefly; introd. from Lisbon. Fl. March-May. Fr. Dec.-Febr.—A small elegant dwarf shr. not above 4 or 5 ft. high of a delicate habit with small 1. and fl. slender graceful tressy branches and light-gr. foliage. L. narrow, acuminate, the tip retuse. Fl. in all stages pure white small and delicate highly fragrant 2-3 in a cluster, subternate; pet. dotted with gr.; stam. 15, in 4 or 5 sets. Fr. rather small 1½-2 in. diam., axis not more than half the transverse diam., deeply hollow at the poles, usually ribbed like a melon at the base, the ribs disappearing upwards; deep red-lead colour with a somewhat rank strong fragrance like common Orange-flowers and Bergamot (Monarda fistulosa L.). Rind singularly thin and fragile, separating cleanly and very easily from the pulp, of a tender almost granular substance, and without the usual leathery or spongy inner lining, abounding with volatile oil and coarsely dotted with large conspicuous oil-glands. Pulp composed of rather large sacs or vesicles, deep full orange or red-lead colour, sweet but neither very juicy nor high-flavoured, though highly fragrant and much esteemed by many for its Bergamot-like aroma, and still more perhaps for its elegance, the cells or carpels, which are very small narrow and numerous, often 10-12, being separable as neatly and easily from each other as from the rind. In the middle of the fr. is a large vacant space left by the recession of the edges of the carp., and only partly filled with soft white cottoly fibres. Seeds numerous and large; cot. greenish, not white as usual.—Raised from seeds it maintains constantly and steadily its peculiar characters. Grafted on a common Orange (C. Aurantium a.) stock, it becomes altogether larger (15 ft. high) and more robust, with rather darker foliage and larger fr., remaining otherwise unchanged. For use, this is the best mode of treatment; for seedling pl. are not only longer in coming into bearing, but their fr. is smaller, and the crop is more scanty and precarious.
It is however, speaking generally, an early, regular and abundant bearer: a tr. not above 4 or 5 ft. high yielding two or three score of fr.; and it is moreover particularly exempt from blight whether of Insects or Fungi.—The large-fruited var. *a. major* (Andr. Bot. Rep. t. 608), with fr. sometimes 5 in. in diam., is the famous Mandarin Orange of China. It does not occur in Madeira.

Order XIV. HYPERICACEÆ.

The St. John’s Wort Family.

Sep. 4 or 5 distinct or partly connected mostly persistent often unequal glandular-dotted, imbricate in the bud. Pet. 4 or 5 often glandular-dotted, twisted in the bud. Stam. mostly indefinite numerous and polyadelphous or united in 3–5 sets or bundles; fil. filiform; anth. bilocular versatile. Styles 2–5. Carpels 2–5. Fr. capsular rarely fleshy 2–5-celled 2–5-valved. Seeds minute numerous; embryo straight mostly exalbuminous. —L. without stip. entire mostly opposite and sprinkled with pellicid dots. Fl. mostly y. and cymose.

1. HYPERICUM. Sep. 5 often unequal and more or less united at the base. Pet. 5. Stam. many polyadelphous at the base. Styles 3–5. Caps. more or less completely 3–5-celled. Fl. always y.

1. HYPERICUM L.

St. John’s Wort.


Smooth; branches round horizontal or declining; 1. regularly 2-ranked in one plane ovate-oblong, at first acute, then obtuse, heart-shaped ampelicaul or sessile pellucid-reticulate not dotted; cymes few-fl. ; ped. short 2-bracteate; sep. very entire oblond-lanceolate somewhat acute much shorter than the cor. presently reflexed; styles 3–4.—DC. i. 544. *H. erectum* Buchl. 196. no. 324. *Androscemum Webbianum* Spach in Ann. Sci. ser. 2. v. 362; WB. ! i. 50, 51. t. 4 E.—Shr. per. Mad. reg. 2, 3; ccc. —Rocks everywhere chiefly above 1000 ft. Sum.–Aut., but at almost all seasons.—Shr. 2–4 ft. high, the branches reddish or cinnamon-brown sparingly divided elongated declining or loosely spreading horizontally with handsome regularly distichous foliage. L. large 1–2 in. long, 1–1½ in. broad very entire slightly glaucous beneath. Fl. rather large but in small bunches. Sep. very unequal and entire slightly punctate 3 or 4 times shorter than the deciduous pet.
Styles elongated filiform, as long as the stam., united only at the base.

It is remarkable that although *H. grandifolium* is common in the Canaries, yet neither the Canarian *H. canariense* L. nor the equally closely allied Azorian *H. foliosum* Ait. (distinguished by its crowded 4-ranked finely dotted rather smaller l., &c.) are found in Madeira.


2. *H. floribundum* Ait.

Smooth; branches round upright; l. in four rows crowded elliptic-lanceolate or pointed at both ends sessile thickly but faintly dotted; cymes rather numerous thinly flowered; sep. irregularly or minutely serrulate or ciliate shortly ovate or lanceolate acute or acuminate very much shorter than the cor.; styles 3.—Ait! Hort. Kew. iii. 104; Buch! 196. no. 325; DC. i. 544? *Webbia floribunda* Spach in Ann. Sci. ser. 2. v. 356; WB! i. 47. t. 4 B.—Shr. per. Mad. reg. 2; cc. Dry sunny rocks above and near Funchal, Rib. de Joaõ Gomez, Palmeira, &c., at Ponta de Sol, and in the North at Santa Anna, Rib. de S. Jorge, &c, where it is sometimes called “Corno de Cabra.” July–Oct.—A small bushy shrub 2–3 ft. high branched proliferously, with stiff erect straight virgate branches leafy only upwards. L. crowded somewhat narrow-lanceolate 1–1½ or 2 in. long, ½–¾ or ¾ in. broad rather pale or y.-gr. Pedic. slightly compressed and dilated upwards. Sep. ovate acute or even sometimes acuminate, unequal, alternately longer or narrower and more lanceolate or acuminate, the shorter more especially very minutely ciliate or faintly serrulate, 4 or 5 times shorter than the cor. Fl. middle-sized bright golden-y. in thickly crowded bunches. Pet. persistent concave or cucullate. Styles as long as or longer than the stam. Seeds fungose reticulate.—DC’s description seems at least partly (“calyce obtuso” and “fol. impunctatis”) to belong to something else, possibly to *Webbia canariensis* WB., or to *W. platysepala* Spach. The present is however the true pl. of the Hort. Kew. by comparison with the original types in BH.


Smooth; branches round upright; l. two-ranked crowded elliptic-lanceolate pointed at both ends sessile thickly and distinctly pellucid-dotted and serrulate with black glands; fl. crowded in short compact close cymes; br. and sep. lanceolate acute closely serrulate with large black glands; styles 3.—Ait! Hort. Kew. iii. 107; Buch! 196. no. 330; DC. i. 551; WB! i. 44. t. 3.—Shr. per. Mad. reg. 2, 3, but chiefly 2; cc. Rocks in ravines...
almost everywhere; Rib. de Santa Luzia, dos Cayados, da Metade, Rib. Frio, Curral das Romeiras, das Freiras, Ponta de Pargo, &c., Santa Anna, &c. April–July.—Shr. 3–4 ft. high with stiff but somewhat weak and curved straggling or spreading naked pale yellowish or reddish branches proliferous and leafy only towards their ends; the quite young shoots clothed with a short white cottony or mealy down. L. thickly crowded upwards, somewhat broadly elliptic-lanceolate mostly sessile, the lower sometimes shortly stalked, bright y.-gr. shining as if varnished, 1–1½ in. long, ¾–1 in. broad. L. br. and sep. thickly fringed or serrulate with prominent black glands. Fl.-buds and pet. reddish outside varnished-shining. Sep. slightly unequal alternately narrower and more lanceolate. Fl. not large rather pale dull y. Pet. persistent flat scarcely twice the length of sep. sprinkled especially along their edges with a few black glands or dots. Styles as long as stam.—Bourgeois's specimen under this name in the BH. (Pl. Exs. Can. no. 246) is by some mischance or accident merely H. perforatum L.


4. H. PERFOLIATUM L.

Smooth; st. ascending erect compressed and faintly 2-edged; l. ovate or ovate-oblong obtuse subcordate half-amplexicaul thickly pellucid-dotted and more or less sprinkled with a few black glands either all over or towards or at the edge, quite smooth and slightly glaucous beneath; cyme close many-flowered; sep. and br. lanceolate or ovate-lanceolate acute or acuminate copiously dotted with sessile black glands and fringed or ciliate-serrulate with either short simple cilia or stalked black glands; pet. and anth. copiously dotted with black glands.—Linn. ! Herb.; Syst. Nat. (ed. 12) ii. 510; Willd. iii. 1462. H. ciliatum Lam. Enc. iv. 170, 171; DC. i. 552; Presl 193. H. dentatum Lois. Fl. Gall. 499, (ed. 2) ii. 169. t. 17; DC. l. c. H. montanum Buch! 196. no. 329 (not Linn.).—Herb. per. Mad. reg. 2; rrr. Curral das Romeiras, bank on the left side of the road descending from the Mount Church a little before coming to the first bridge at the bottom. In Chestnut woods at S. Vicente on the road to the Paul. May, June.—Very slightly and fugaciously glaucous. St. several stoutish often as thick as a small quill simple very stiff suffrutescent at the base 1–2 ft. high, compressed and with a prominent line or edge on each side alternately between the internodes which become gradually longer upwards. L. entire (not toothed as in Lois. t. 17) subcoriaceous, the lower smaller narrower and closer together, the upper larger broader and more remote, ¼–1½ in. long, ½–1 in. broad, the uppermost shortest and broadest, beneath slightly glaucous and with the nerves or
veins quite smooth, not minutely furry or mealy-puberulous as in true *H. montanum* L.; the upper l. especially more or less black-dotted towards the edges, the dots rather large, sometimes confined to a single row at the edge, always sessile in Madeira, but in Sicilian spec. in HH. and in Cretan in BH. occasionally stalked and fringing the l. Fl. middle-sized sub-sessile in a close crowded not large forked cyme. Fringe of sep. much shorter than half their breadth. Styles not exceeding the stamens.


Smooth; st. ascending stiffly erect round below, compressed and faintly 2-edged upwards, simple straight slender wiry suffrutescent at the base; l. linear-oblong very obtuse or retuse with revolute margins erect half-amplexicaul without pellucid dots but with a marginal row of black glands and a few also sprinkled over the surface at the tip beneath; cyme terminal rather lax; fl. and fr. rather large; sep. lanceolate or ovate-lanceolate subequal subtuse in the bud, subacute afterwards, thickly dotted and slightly fringed or serrulate with black glands; pet. edged and sprinkled with the same, anth. more sparingly so; styles longer than stam. twice as long as ovary.—

*H. Linearifolium* Vahl Symb. Bot. i. 65; Lam. Enc. iv. 180; Brot. ii. 321. *H. linearifolium* Willd. iii. 1470; DC. i. 552; Loisel. Fl. Gall. (ed. 2) ii. 168. *H. linearifolium* EBS. t. 2651; Bab. 60. *H. angustifolium* Buch! 196. no. 328; Lowe! Primit. 35 (not Lam.). *H. subtleum* Lowe! Hook. J. of Bot. i. 43; Novit. ! 548, App. xii.—Herb. per. Mad. reg. 3 (upper part); 

Whole surface of the Paul da Serra; summit of Pico Grande and about the Boca das Torrinhas and adjacent peaks at the top of the Lombo Grande; very abundant, but scarcely found eastward of the Curral das Freiras or Pico Ruivo and the Torrinhas. July, Aug.—St. 6-18 in. high several or numerous, at first ascending, then very erect and straight. L. small narrow ½-1 in. long, 1-2½ lines broad stiff or thickish and coriaceous, the upper very rarely in luxuriant large pl. with here and there one or two pellucid dots. Fl. conspicuous ⅓ or ⅔ in. diam. rather pale bright y. a little inclining to buff, reddish outside especially in bud. Sep. nearly or quite equal. Styles 3 divergent much longer than the ov., shorter than the caps. Seeds oblong elegantly crenate-striate lengthways.—In Jersey specimens (St. Catherine’s Bay, Aug. 1851, Stevens) in HH., the st. though round below are obscurely 2-edged upwards. In a large luxuriant Asturian spec. from Durieu also in HH., the st. is round nearly throughout, as I have also occasionally found it in robust luxuriant pl. up the Lombo Grande in Madeira. Hence all difficulty regarding the identity of Vahl’s pl. on the ground of his describing the st. as “teres,” may be considered at an end.
Lamarck 1. c. says of the st. "caule ancipiti" in his specific char., and yet has "tiges cylindriques" in his descr. The sep. he calls "obtuses ou à peine pointues," which is sufficiently correct.


Smooth; st. ascending erect 2-edged much branched at the base; l. oblong or elliptic thickly pellucid-dotted and thinly sprinkled with a few black dots beneath, not reticulate; cyme large close many-fl.; sep. erect narrow-lanceolate very acuminate twice as long as ovary black-dotted; pet. obliquely oblong and with anth. copiously black-dotted; styles divergent longer than stam. or not shorter than ovary.—Brot. ii. 322; EB. t. 295; Buch! 196. no. 326; DC. i. 549; Sm. E. Fl. iii. 325; Presl 192; WB. i. 43, 44; Koch 146; Bab. 60.

7. **H. angustifolium** Bab. 1. c. (scarcely of Koch); l. narrow linear-oblong or elliptic copiously pellucid-dotted.—Herb. per. Mad. reg. 2, 3; ccc. Banks, mountain-pastures, ravines, &c., everywhere, chiefly from 1000 to 4000 ft. May-Sept.—St. 2-3 ft. long stiff but mostly spreading and declining or decumbent at the base, somewhat bushy downwards with numerous thickly leafy slender side-branches and longer prostrate weak and almost filiform finely leaved shoots at the base. Foliage dark or full gr. L. distinctly acute; only their principal nerves pellucid. Fl. rather large and handsome bright golden-y. in dense ample cymes. Sep. either quite entire or indistinctly subserulate upwards. Black glands of pet. chiefly at the edge, but not so always on the l. Styles at least twice as long as the ovary.

7. **H. humifusum** L.

Smooth; st. numerous prostrate or procumbent subcespitose slender filiform slightly 2-edged; l. oval-oblong minutely pellucid-dotted, the edges black-dotted beneath; fl. loosely cymose; sep. large leafy broadly oblong or ovate quite entire unequal twice as long as ovary; styles very short.—Brot. ii. 323; Buch! 196. no. 327; EB. t. 1226; DC. i. 549; Sm. E. Fl. iii. 326; Koch 146; Bab. 60.—Herb. per. Mad. reg. 1, 2, 3; ccc. Banks, ravines and mountain-pastures everywhere from 500 to 6000 ft. May-Sept.—A small low much-branched and leafy pl. 3-6 in. high with very slender wiry st. often forming dense mats or tufts. L. small oval or elliptic more or less obl. more or less obtuse. Fl. rather small. Sep. with sometimes a few stalked black glands at the edge. Stam. 15-20. Styles shorter than the ovary.

8. **H. quadrangulum** L.

Smooth; st. very erect and straight 4-angular, angles slightly
winged, sparingly and shortly branched upwards; 1. decussate oblong or elliptic-oval thickly and minutely pellucid-dotted, the margins beneath black-dotted in a row near the edge; cyme large leafy open or spreading; sep. erect equal narrow-lanceolate very acuminate quite entire black-dotted; pet. lanceolate sparingly black-dotted, anth. copiously so; styles divergent shorter than the stam. not much longer than the ovary.—ÉB. t. 370; Sm. E. Fl. iii. 324; Bab. 60; DC. i. 548 (var. a), \(H. \text{quadrangulare} \) Brot. ii. 322. \(H. \text{tetrapterum} \) (Fr.) Koch 147; —Herb. per. Mad. reg. 2, 3; c Mountain-dells and steep banks in moist or shady spots here and there; general but not abundant. Rib. Frio, R. da Metade, R. de Machico, &c. In the North in ravines above Santa Anna; cliffs above the Passa d’Arêa by the road, &c. July—Oct.—Rather light gr. St. 1–2 ft. high with short remote leafy opposite side-branches. L. 6–9 lines long, 3–4 lines broad, rather small but larger than in \(H. \text{perforatum} \) L. often thinly and obscurely sprinkled beneath with a few black dots besides the marginal row; the lower obtuse, upper acute. Fl. rather pale or lemon-y., reddish in the bud.—This sp. is not included in Von Buch’s Madeiran List. Solander in his MS. List of Madeiran pl. has an “\(H. \text{ovatum} \) Masson: Hab. in declivibus rupium:” but no \(H. \text{quadrangulum} \). And in the Banks. Herb. no Madeiran specimen exists of either pl. It can only therefore be surmised that possibly by \(H. \text{ovatum} \), \(H. \text{quadrangulum} \) L. might be intended and the name afterwards suppressed by Solander on discovering its identity with the Linnajan sp.; for he has left no record of the char. of his \(H. \text{ovatum} \).—The Azorian \(H. \text{decipiens} \) Wats, by a specimen in HH. from “S. Michael, 1846,” appears not to differ essentially from the present sp.

**Order XV. AMPELIDACEÆ.**

The Vine Family.

Cal. small entire or minutely 4–5-toothed. Pet. 4–5 alternate with sep. inserted outside a disk or torus, valvate in the bud, in fl. often separating at their base and cohering at the tips like a calytra. Stam. 4–5 opposite the pet., inserted outside the torus. Ovary free 2–6-celled; ovules erect; style 1 very short, stigma capitata. Fr. a grape i. e. pulpy and globose like a berry, but not adherent to or coated by the cal. Seeds bony with a horny albumen and erect embryo.—Climbing shrubs or trees with acid watery juices. Lower 1. opposite, upper alternate. Fl. small greenish in racemes or thyrses, and like the tendrils often opposite the 1.

1. **VITIS.** Cal. indistinctly 5-toothed. Pet. 5 often cohering at the tips and separating below, forming a calytra.
Stam. 5. Ov. 2-celled, each cell with 2 ovules. Fr. juicy, properly 2-celled and 4-seeded, but cells and ovules mostly more or less obliterated or abortive.

1. VITIS.

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††1. V. vinifera L. The Vine. Vinha or Videira.

L. roundish heart-shaped 5-lobed and coarsely toothed.—Brot. i. 300; DC. i. 633; Presl 199; Koch 150.—Shr. or arb. Mad. reg. 1, 2; PS. reg. 1; ccc. Sunny slopes and hill-sides, from the sea up to a height of 2500 ft. everywhere cult., in the South on trellises, in the North on trees; here and there spontaneous. Fl. April–June; fr. Aug.–Oct.—Fl. very fragrant like Mignonette (Reseda odorata L.). Var. (principal only):

a. 1. less deeply lobed and toothed.

A. fr. globose.

a. fr. black. — Tinta, Negra molle, Negrinho, Bastardo, Marôto, Perral, Castellâo, &c.

b. fr. white, i. e. greenish-y.—Sercial, Lestraô, Cara de Moça, Bastardo branco, Sabra, &c.

B. fr. oval or oblong.

b. fr. white or greenish-y.—Verdelho, Bual or Boal, Baboço, &c.

β. 1. deeply lobed and toothed, lobes subacuminate (Malvazia or Malmsey Vines).

A. fr. globose.

b. fr. white or greenish-y. or tawny.—Malvazia, M. de cheira, M. baboza, M. roxa, M. da ribeira, &c.

B. fr. oval or oblong.

a. fr. black, fleshy.—Alicante, &c.

Though any attempt at a full or detailed account of Madeiran Wines would be beyond the scope or province of this work, some notice of the produce of a pl. so influential on the natural features and condition, physical and social, of the island may be perhaps expected.—The wine which is generally called Madeira, or commercially “London Particular,” is composed of an indiscriminate mixture of the above subvarieties of a; the Verdelho grape predominating. The wines called Malvazia or Malmsey, Sercial, Tinta, Bual and Verdelho are made each from the peculiar grape so called without admixture, and are about twice the price of the London Particular or ordinary Madeira. Malmsey
or Malvazia is noted for its sweetness and richness; Tinta (a red wine) for its Portwine-like astringency, Bual and Verdelho (both dry white wines) each for their peculiar high aromas. But Sercial when old and fully ripe—for before 10 or 15 years, even in Madeira, it is too austere and crude for drinking—is perhaps the very finest of dry cordial wines, combining great strength and aroma with the utmost creaminess or softness, without the least trace of either sweetness or acidity. The Sercial Vine is said to have been brought from Hockheim. The fr. though saccharine is so austere that it affects disagreeably the throat when eaten in any quantity.—Tinta owes its Portwine colour and astringency chiefly to the infusion of a certain portion of the grape-skins in the must during fermentation. In the course of 5 or 6 years in Madeira, 15 or 20 in England, it loses in great measure its peculiarities, becoming pale, like common Madeira.—Although these are the chief wines known in commerce, almost every separate vineyard produces a sort appreciably different from its next neighbour: a difference analogous to that of home-made bread or beer in different houses of the same town or village. The strongest wines are made on the S. coast; those of the N., with few exceptions, being much inferior, are generally distilled into Alcohol or Brandy. Malmsey is grown on the warmest sunniest slopes on or beneath the cliffs chiefly to the W. of Funchal close to the sea, as under the Cabo Giraó (Fazenda dos Padres), Paul do Mar, Jardim do Mar, &c. But the principal district for the other wines of finest quality is the Estreita, a vast mountain amphitheatre, formed chiefly by the E. slope of the Cabo Giraó, beginning about a league to the W. of Funchal, and reaching up to a height of from 1500 to 2000 ft. above the sea. The wines of Porto da Cruz, Ponta Delgada, and a few other places on the N. coast are also very excellent: some of the Tinta or red wines of the former district possessing much of the Hermitage character on the spot, although too delicate to bear transport without injury even across the island.—Madeiran grapes in general, though very sweet, have not much flavour comparatively with English hothouse grapes, and are too mucilaginous or fleshy and leathery or thick-skinned to be very good eating. Those of the N. are more juicy, but smaller and with still less flavour.—The Vine is said to have been first introduced
from Cyprus according to Cadamosto (Bowd. Exc. 103), and Candia, i.e. Crete, according to Cordeyro (Hist. Insul. 79) shortly before 1445; and it supplanted gradually the Sugar-cane, which had previously formed the staple produce of the island. It is trained in the S. of the island on trellises 3 or 4 ft. high of cane (*Arundo Donax* L.), and in the N. up chestnut or laurel trees called Balseiros. The ravages of the *Oidium* have however now completely changed again the face of the country. Its first appearance was in the summer of 1852. In 1855 I found the vines almost universally destroyed and rooted up; and supplanted in the S. chiefly by the Sugar-cane, and in the N. by crops of Maize or Indian Corn.

Order XVI. GERANIACEÆ.

The Geranium or Cranesbill Family.

Sep. 5 persistent more or less unequal, the upper one often spurred at the base; imbricated in the bud. Pet. 5 with claws alternate, twisted in the bud. Stam. monadelphous at the base 2 or 3 times as many as the pet., some often regularly abortive. Ov. 5-celled, ovules 2, pendulous. Styles 5 cohering round an elongated axis. Fr. of 5 one-seeded carpels cohering round the long beak-like produced axis or torus, each terminated by its hardened elongated style, which when dry curls elastically upwards separating from the axis and carrying up with it the carpel. Seeds solitary large filling the carp. without albumen; embryo curved folded; cot. leafy plaited convolute.—Herbs or succulent shrubs with acid juices often aromatic. L. stipulate either opposite or alternate with opposite fl.-stalks.

1. **GERANIUM**. Sep. 5, none spurred. Pet. 5. Stam. 10 monadelphous, alternately larger and with glands at their base. Carp. plain and rounded at top; the long finally recurved or revolute awn smooth inside.

2. **ERODIUM**. Sep. 5, none spurred. Pet. 5. Stam. monadelphous, 5 fertile with glands at the base, 5 sterile without glands, with broader fl. Carp. with 2 lateral scars or depressions at top; the long finally curled-up and spirally twisted awn bearded inside.

3. **PELARGONIUM**. Sep. 5, the uppermost produced at the base into a nectariferous spur adnate to the fl.-stalk. Pet. 5. Stam. 10 monadelphous, 7 fertile, 3 generally sterile. Awns of carp. finally curled-up and twisted spirally, bearded inside.
1. *GERANIUM* L.

Cranesbill.

*Batrachioiides* Koch. Root strong fusiform simple or branched, forming at the crown a low scaly knob or caudex.


Root more or less caudescent at the crown; st. and leafstalks annual herbaceous more or less pubescent; l. smooth shining peltate palmately 5-partite, the 5 lobes or segments bipinnatipartite; panicle corymbose broad ample repeatedly forked many-flowered compound, ped. 2-flowered forked and with the pedic. and sep. glandulose-hairy; pet. obovate very entire 3-4 times the length of the awned sep., their claw short smooth; carp. smooth varicosely veined; seeds quite even.—BM. t. 206; DC. i. 640; Spr. iii. 71; WB. i. 20. *G. palmatum*, Cav. Diss. 4. 216. t. 84. f. 2. *G. levigatum* Buch. 196. no. 335.—Herb. per. Mad. reg. 2, 3; &c. &c. Wooded ravines on shady or moist rocks and banks everywhere, R. de Santa Luzia, R. Frio, R. de S. Jorge, R. de Janella, &c. &c. March–Sept.—Fl.–st. ann, fork-branched upwards, 1-3 ft. high one or more from the more or less elevated short stem-like root-stock which is rugged and scaly with the remains of former st. and l. L. a peculiar bright shining gr., the root-l. with stalks often a foot long or more and large leafy stipules clothing the root-stock at their base; the limb 8-10 in. diam.; somewhat succulent, very smooth. Panicle level-topped, large and spreading, its divisions thickly clothed with purple glandular spreading hairs. Fl. crowded large and handsome 1-1½ in. diam. bright rose-purple the throat darker. Claw of pet. divergently 2-ribbed inside. Fil. equal very fine and long, dark purple persistent. Fr. small in proportion its beak short smooth, style pubescent. Whole pl. scentless. Varies much in smoothness.—One of the chief ornaments in woods and ravines of the rocks and banks, which it profusely clothes in many places, and enlivens with its bright gr. lucid foliage and fine rose-purple fl. varying in intensity of colour and often pale, but never white. The pl. continue flowering in long succession through the summer; and here and there indeed at almost all seasons.

**Columbinum** Koch. Root ann. slender simple or branched; ped. 2-flowered.

† Carp. rugose or wrinkled but mostly smooth; seeds even.


Villoose-hairy; st. ascending spreading and diffuse; l. membranous thin and flaccid subpedate ternate or quinate, the 3-5 lobes or segm. unequal stalked bipinnatipartite; pedic. forked
GERANIUM.

erecto-patent; pet. obovate or obcuneate entire 3-rayed twice the length of the closed awned villose or shaggy equably 10-angular cal.; claw linear quite smooth; carp. simply keeled varicosely wrinkled chiefly upwards.—Desf. ii. 104; Cav. Diss. 4. 215. t. 86. f. 1; EB. t. 1486; Sm. E. Fl. iii. 235, 6; WB. i. 21 (excl. var. β); Koch 155.

β. maritimum Bab. (ed. 4) 65; carp. quite smooth with 1–3 very strong transverse wrinkles or plaits at top.—G. Robertianum DC. i. 644 (excl. var. β).—Herb. ann. Mad. reg. 2, 3; ccc. Thickets and shady banks in ravines everywhere; R. de Santa Luzia, R. Frio, S. Vicente, &c. Spr., Sum.—A strong or rank foxy-smelling pi. sprinkled all over, especially the cal., with fine soft white hairs, and tinged more or less in all parts with bright red. St. often 1–2 ft. long and diffusely trailing hairy villose. L. membranous thin and flaccid hairy somewhat shining but of a dark lurid or dull hoary gr. turning bright red in decay; the middle lobe or segm. mostly a little produced. Cal. shaggy, thickly clothed with long white hairs. Fl. rather large and handsome though much smaller than in G. anemonefolium, bright purplish-rose; the pet. and claw together about half an in. long, their limb marked with 3 pale radiating lines. Carp. quite smooth, never “downy” as in the English pi. a. described by Sm. and Bab. and as sometimes in the Canarian pi. according to WB. i. 22, though I find them quite smooth in Bourgeau’s Can. specimens, no. 663, both in BH. and HH. Beak stout rather long quite smooth, the style pubescent. Seeds quite even.


Smoothish or but slightly hairy not at all villose; st. erect or slightly spreading often nearly or quite smooth; 1. somewhat stiff and succulent or fleshy subpedate ternate or quinate, the 3–5 lobes or segm. subequal stalked bipinnatifid, the subdivisions distinct and mostly narrowish; pedic. forked erecto-patent; pet. obovate or oblong-oval nearly or quite entire 2-rayed not much longer than the closed awned hairy or pubescent but not villose subpentangular cal., claw linear quite smooth; carp. smooth simply keeled strongly varicosely wrinkled especially upwards.—Herb. ann. Mad. reg. 1, 2, 3; ccc. Spr., Sum.—Var.:

β. nemoralis; smoother, l. membranous with broader more leafy subdivisions.—Common on rocky shady banks in woods and ravines chiefly above 2000 ft., growing often intermixed with G. Robertianum β; Rib. de Santa Luzia near the Waterfall; bank above the Fountain in Rib. Frio along with G. Robertianum β. and G. lucidum L. May–July.

A smaller less straggling more upright bushy shorter-branched pl. less powerfully fetid than G. Robertianum β, but with the same kind of rank smell, and altogether less hairy, even in a. In drying it adheres much less to the paper, and is much less flaccid and membranous. In decay especially it is equally apt to acquire a bright red tinge. St. succulent shining only slightly hairy, often nearly or quite smooth. L. sprinkled with a few short hairs, much smaller and stiffer than in G. Robertianum β, with the middle lobe or segm. less produced, and usually with altogether more distinct and somewhat finer narrower divisions, smoother and normally more shining and succulent or firm; for β is a state merely due to altitude or situation. Fl. small and inconspicuous, the size of those of G. lucidum L., their pet. and claw together 3–4 lines long, not much exceeding the sep., pink or rose with 2 darker rays. Cal. pubescent rather than hairy, sometimes nearly or quite smooth, never shaggy or villose, with 10 unequal ribs or angles, but only pentagonal, 5 being alternately less prominent. Carp. smooth wrinkled and seeds quite even, exactly as in G. Robertianum β. Beak stout but rather shorter than in the pl. just named, quite smooth; style pubescent.—I have observed this pl. in Madeira many years without finding any variation in the above characters or intermediate states between it and G. Robertianum β, although the two are found continually growing intermixed. Few pl. in fact are either more constant in their differences or more easily discriminated. And in confirmation of this view it may be noted, that whilst in higher shady spots G. Robertianum β retains all its hairiness, G. purpureum Vill. growing by its side becomes on the contrary smoother.

4. G. LUCIDUM L.

Nearly or quite smooth succulent shining; st. diffuse subcespitose ascending; l. roundish-reniform 5–7-fid, lobes obtusely inciso-crenate; pedic. forked erecto-patent; pet. obovate or spathulate entire 2-rayed not much longer than the large pyramidal strongly and sharply winged 5-angular cal. which is transversely clathrate or wrinkled across between the prominent winged angles; claw long linear pubescent inside; carp. shortly glandular-pubescent upwards or at top, 3–5-keeled and reticulately wrinkled across.—Desf. ii. 104, 5; Cav. Diss. 4. 214. t. 80. f. 2; Brot. ii. 72; EB. t. 75; DC. i. 644; Sm. E. Fl. iii. 236, 7; Presl
GERANIUM.

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207; Koch 154; Bab. 64.—Herb. ann. Mad. reg. 3; r. Rocky shady banks in ravines; Rib. Frio above the fountain and the bridge; R. de Santa Luzia near the waterfall; Serra d’Agoa along the Caminho Central between Pico Grande and the Encumeado. April–July.—Root long slender simple. Whole plant peculiarly shining and smooth sprinkled only here and there with a few short hairs, brittle and succulent, very apt to become bright red, much branched diffusely, knotty at the joints. Cal. large pale gr., with 5 winged angles, strongly clathrate across between the angles. Sep. rather cuspidate than either awned or mucronate. Fl. small but pretty; limb of pet. bright pink or rose with 2 deeper-col. radiating lines, claw white hairy inside but not ciliate at the edges. Carp. 3–5-ribbed lengthways, the ribs granulate or rugose; beak short smooth slender, style finely pubescent. Seeds even. Cal. after fl. tightly closed, in fr. loose, finally spreading.

5. G. MOLLE L.

Hairy-pubescent; st. diffusely spreading or decumbent; l. mostly alternate roundish-reniform deeply 7–9-fid, the segments wedge-shaped rather deeply trifid; pedunc. solitary short regularly opposite the l.; pedic. forked strongly declining in fr.; pet. deeply bifid longer than the cal., claw very short ciliate on each side; carp. smooth closely wrinkled across obliquely all over, simply keeled.—Cav. Diss. 4. 203. t. 83. f. 3; Desf. ii. 102; Brot. ii. 72; EB. t. 778; DC. i. 643; Sm. E. Fl. iii. 237; WB. i. 21; Koch 154; Bab. 64.—Herb. ann. Mad. reg. 1, 2, 3, c; PS. reg. 2; §. Roadsides and waste ground about Funchal, Camacha, &c.; Boca das Torrinhas, up the Lombo Grande in the Curral das Freiras, about 5000 ft. above the sea. PS. roadside at Camacha. Febr.–July.—Slightly hoary-green softly pubescent. St. clothed with longer, l. with shorter hairs; the lower l. on long stalks and sometimes opposite in pairs; the upper always alternate. Ped. shorter than the l. Fl. small cup-shaped ½ in. diam. Pet. with claw ½ in. long, from ½ longer to not quite twice the length of cal., bright deep reddish-purple. Sep. very shortly mucronulate not awned. Cal. not distinctly angular. Carp. quite smooth closely and finely wrinkled; beak very short and all over pubescent like the short style. Seeds smooth to the naked eye, but under a moderate lens very finely but distinctly reticulate-rugulose; forming in some sort a transition between the preceding and following sp.

†† Carp. even but mostly hairy; seeds distinctly reticulate or punctate.

6. G. ROSTRIFOLIUM L.

Softly villose-pubescent grey or hoary; st. diffusely spreading
or procumbent; l. all opposite in pairs reniform 5-7-fid, the segm. shallow broadly and coarsely but not deeply cut and toothed; ped. solitary short; pedic. forked strongly deflexed or declining in fr.; pet. oblong-cuneate or spathulate obtuse entire or undivided, a little longer than the awned cal., claw not ciliate, slightly hairy inside and outside at the base; sep. shortly awned; carp. even pubescent clothed with short spreading hairs.—Cav. Diss. 4.214, 215. t. 93. f. 2; Desf. ii. 101; Broth. ii. 72; EB. t. 157; Buch 396, no. 338 (var. fol. profundius incisis, laciniiis angustioribus); DC. i. 643; Sm. E. Fl. iii. 240; WB. i. 21; Koch 154; Bab. 64.—Herb. anm. Mad. reg. 1, 2, 3, ccc; PS. reg. 2, 3; SD. 2; rr. Roadsides, waste ground, vineyards, and beds of ravines everywhere. In PS. at Camacha, top of Pico de Castello, &c. Febr.—July.—At once distinguishable from G. molle L. by its pale greyish foliage pale pink or flesh-col. fl. and opposite 1. St. scarcely a foot long, often with the leaf-stalks reddish, diffuse or even prostrate, with longer hairs mixed with short close pubescence. L. softly pubescent flaccid and very quickly withering; the lower on long stalks; all in pairs, one 1. smaller than the other. Ped. shorter than the 1. Fl. small inconspicuous pale rose-pink or flesh-colour. Beak moderately long, and with the style downy. Carp. large somewhat bladdery. Seeds strongly and elegantly netted all over regularly like a honeycomb.

7. G. dissectum L.

Adpresso-pubescent; st. diffuse straggling; l. opposite in pairs, deeply 5-7-partite, segm. of the lower many-, of the upper 3-fid, the laciniae narrow linear; ped. short; pedic. forked, declining in fr.; pet. obcordate not longer than the awned sep., claw ciliate on each side; carp. even pubescent clothed with short erect hairs. —Cav. Diss. 4. 199. t. 78. f. 2; Desf. ii. 102, 103; Broth. ii. 73; EB. t. 755; Buch 196. no. 337; DC. i. 643; Sm. E. Fl. iii. 241; WB. i. 21; Koch 154; Bab. 64.—Herb. anm. Mad. reg. 1, 2, 3, c; PS. reg. 2, 3, 4; SD. 2; rr. Borders of cornfields, grassy banks in ravines, mountain pastures, &c., everywhere. Above the Praya Formosa; Rib. d’Escalas, R. de Santa Luzia at the waterfall; Cerca at S. Antonio da Serra, &c. PS. at Camacha; summits of Pico Branco and P. Juliana, &c. Febr.—July.—St. 1-2 ft. long slender weak and straggling clothed like the petioles with short deflexed adpressed pubescence. L. deeply and rather finely cut almost to the base into many linear divisions, firm stiffish closely adpresso-pubescent but not hoary. Ped. shorter than the L. Fl. dark red or bluish-purple but small and inconspicuous, not exceeding the cal. Beak stout of moderate length thickly clothed with spreading glandular hairs; style short and finely pubescent. Carp. rather large and bladdery. Seeds strongly and distinctly netted like the last.
2. *Erodium* Herit.

**Storksbill.**

*Cicutaria* Webb. L. divided pinnatifid or pinnate. Cot.-leaves crenate or lobate.


More or less pubescent; st. prostrate or procumbent; l. pinnate, lfts. distinct not quite sessile shortly stalked oval or ovate unequally cut and serrate scarcely lobate; stip. broad oval; ped. many-fl.; pet. nearly equal a little longer than the cal., claw very short smooth not ciliate; 5 fertile fil. dilated and 1-toothed on each side at the base; carp. obliquely 1-ribbed at top below the furrow, or with the lower as well as upper margin of the groove below the scar raised and prominent; beak moderate slender minutely adpresso-pubescent.—Cav. Diss. 4. 227. t. 94. f. 1; EB. t. 902; DC. i. 647; Sm. E. Fl. iii. 230; WB. i. 23; Koch 156; Bab. 65. *Geranium moschatum* (L.) Desf. ii. 106; Broth. 74.—Herb. ann. Mad. reg. 1, 2, cec; PS. reg. 2, 3, c. Roadsides and waste ground everywhere; Mad. about Funchal, Camacha, Ponta de Pargo, &c.; PS. at Camacha and up Pico de Castello. Nov.—June.—A rather coarse weedy pl. with a strong musky smell and light gr. soft flaccid foliage; st. in roads and paths quite prostrate, amongst other herbage more rank and procumbent or diffuse, 4–12 in. long; rather stout and succulent. Root strong fleshy whitish fusiform. L. 3–12 in. long pinnate with rather large and remote lfts. Ped. 4–10-fl. nearly smooth or slightly viscid-pubescent. Fl. small purplish-rose; sep. acute or acuminate scarcely awned; pet. about ⅓rd longer than the sep. very entire narrow-oblong or elliptic im- maculate 3-nerved nearly or quite equal; claw a little darker-col. very short. Fertile fil. with a short membranous narrow wing or border downwards dilated at the base abruptly into a tooth on each side. Barren fil. petal-like lanceolate acuminate. Carp. with the lower margin of the smooth furrow or groove below the large oval hollow pit-like scar on each side the base of the beak at top sharply raised and prominent like the upper margin, forming a single oblique rib on each side under the groove. Beak ⅓ in. long, 5 times as long as the sep.

2. *E. cicatuum* (L.) Herit.

Hairy or hirsute; st. prostrate or procumbent; l. pinnate, lfts. sessile pinnatifid or deeply pinnatifid and cut; stip. narrow lanceolate; ped. mostly many-fl.; pet. unequal longer than the cal., claw ciliate on each side; stam. smooth, fil. all simple dilated and rounded at the base not toothed smooth; carp. not distinctly ribbed at top, the lower edge or margin of the smooth
concentric furrows below the 2 hollow scars at the base of the beak being subobsolete instead of sharp and prominent; beak moderate slender minutely adpresso-pubescent. — DC. i. 646; EB. t. 1768; Sm. E. Fl. ill. 229; Presl 209; WB. i. 22; Koch 155; Bab. 65. Geranium cicutarium (L.) Brot. ii. 75, 6.

Geranium cicutarium DC. i. 647; y. WB. i. 1 c. Ger. bipinnatum Cav. Diss. 5. t. 126. f. 3. G. cicutarium A. bipinnatum Desf. ii. 106; strigosely hirsute; 1. bipinnatipartite, lfts. deeply and finely divided, with short narrow segm.; ped. 2-4-fl.; fl. slightly ringent, pet. 2, twice the length of cal.

Subv. 1, rosea; fl. pink, 2 upper pet. with a pale spot at the base. — Herb. ann. Mad. reg. 3; §. Open grassy mountain pastures scarcely below 2500 ft.; between the bridge in Rib. d'Escalas and the Poço de Neve, and to the eastward between R. d'Escalas and Pico da Silva; ascent of the Pico das Abobaras beyond Camacha plentifully; Boca das Torrinhas at the top of the Lombo Grande in the Curral das Freiras, &c. March-July. — Root strong fleshy fusiform whitish. Pl. for some time stemless though flowering; then throwing out several prostrate rarely branched st. 2-6 or even 12 in. long, tinged like the petioles and ped. with red and clothed with coarse shaggy white hairs. Whole pl. slightly fetid like G. Robertianum. Foliage dark gr. often reddish. L. opposite in pairs hispid finely divided, bipinnatifid or bipinnate with narrow deeply cut divisions; lower primary pinnae or lfts. remote; rachis or midrib distinct or naked as in E. moschatum L. Pedic. in fr. declining or deflexed. Fl. elegant rather large conspicuous bright pink or rose. Sep. shortly awned or mucronate. Pet. ovoblate-oblong entire twice the length of the sep. the 2 upper smaller; each of the 3 lower with 3 dark lines or nerves at the base; claw in all copiously ciliate. Sterile fl. half the length of fertile, lanceolate membranous large, petal- or chaff-like. Glands at base of 5 fertile stam. notched, dark red. Anthers rose or purple darker than the pet. Stigmas purple rather long. Carp. narrow-oblong, attenuated downwards, clothed all over with short erecto-patent hairs below the obsolete lower edge or margin of the smooth furrows or grooves under the 2 deep pit-like scars at top. Beak 1½ inch long 4 or 5 times the length of sep. and with the style clothed with short white strigose close-pressed pubescence; its valves lined with yellow or tawn silky hairs. — Pet. very caducous and fugacious, always falling before noon. Cotyledon-1. undivided 3-5-lobed.

Subv. 2, albiflora; fl. pure white. Herb. ann. PS. reg. 3; i. Roadside, Camacha, under Pico de Castello; north slope of Pico de Cabrito near the Ninho de Guincho. April, May. — Differs from the Madeiran pl. in no respect except the pure white fl.
Erodium.

On its first appearance in March this plant is stemless with a central 2-flowered ped., flat-spreading leaves, and fl. larger than afterwards: excepting the more finely divided lfts. resembling (though not the same as) var. a. praecox DC. (Ger. praecox Cav. Diss. 5. 272. t. 126. f. 2). It soon sends out several branches, which are at first quite prostrate. Later in the season luxuriant robust pl. with diffuse ascending branches often a ft. long, almost assume the form of Ger. Charophyllum Cav. Diss. 4. 226. t. 95. f. 1 (Erodium cicutarium γ. DC.), but with which they are certainly not identical. These 2 states or stages of the sp. (the stemless and luxuriant) are however doubtless the pl. intended by Erodium cicutarium α. and β. WB. i. c., excluding the references to Cavanilles.

3. E. Botrys (Cavan.) Bertol. Agulheta.

Hispid or strigose; st. ascending diffuse or spreading, and with the petioles thickly clothed with reflexed bristles; l. oblong obtuse subcordate, the lower undivided sinuate or sinuate-lobate crenate with shallow very obtuse lobes and teeth, the upper more deeply and finely divided or bipinnatifid, sharply cut and toothed with narrow linear segments; stip. ovate; ped. 2-4-fld.; pedic. in fr. strongly reflexed; pet. unequal ½, a little longer than the always close-pressed sep., claw slightly pubescent not ciliate; stam. smooth, fil. all simple dilated downwards not toothed at the base smooth; carp. obliquely 3-4-ribbed on each side at top below the furrow; beak very large about 8 times the length of sep. finely pubescent.—DC. i. 647; Spr. iii. 34; WB. i. 23. Geranium Botrys Cav. Diss. 4. 218. t. 90. f. 2; Broth. ii. 74. Ger. strigosum Buch! 196. no. 334. Ger. eiconum var. Desf. ii. 113.—Herb. ann. Mad. reg. 2, 3, ccc; PS. reg. 3. §. Sunny banks, mountain pastures and hills everywhere, but scarcely below 500 ft. PS. on N. side of Pico d'Anna Ferreira. Jan.-June.—Foliage rather dull greyish or bluish, dark gr. Root strong fusiform. St. several ascending more or less erect diffusely spreading stout 2-12 in. high mostly reddish on upper side clothed with copious short coarse harsh white cartilaginous deflexed bristles. Cot.- and root-l. lying flat to the ground undivided 3-4-crenate or lobate about 2 in. long and 1 in. broad, the upper more deeply cut or gashed nearly to the midrib: all somewhat rigid or stiffish and adpressedly hispid principally on the nerves, opposite, dark gr. and shining with a dull leaden lustre. Ped. mostly 2-fl. stout reddish and with pedic. and cal. often finely viscosa-pubescent. Fl. rather large and conspicuous somewhat ringent; pet. not more than ⅕ rd longer than the mucronate or shortly awned sep. pale rose-purple, with
5 dark veins or lines, 3 only reaching up the limb, immaculate obovate-oblong entire or merely a little erose at the edges, the 2 upper rather smaller. Barren fil. lanceolate acuminate mem-
branous or petal-like; fertile not much longer. Anthers black.
Stigmas short bright gr. Carp. narrow-oblong strigose below the 3 or 4 oblique ribs at top on each side beneath the smooth groove or furrow. Beak enormously and singularly large in proportion, 3-4 in. long slender and finely acuminate slightly angular minutely pubescent.—Pl. extremely variable in size and luxuriance rarely exceeding or even attaining a ft. in height; often dwarfed down to a single st. an in. or two high, when the enormous length of the beak becomes peculiarly striking. Seed-l. undivided indistinctly 5-lobed with very shallow notches Cavanilles' figure is from a pl. with immature half-grown fr. having the beak only 1½ in. long; but is otherwise highly cha­racteristic of the Madeiran pl.

** Malacoidea** Webb. L. scarcely divided, 3-5-lobate; cot­leaves entire.


Softly pubescent somewhat grey or hoary; st. prostrate or pro­cumbent; l. cordate obtuse toothed or crenate slightly and very obtusely lobed all undivided, the uppermost oblong; stip. large ovate membranous; ped. 4-6-ft.; pedic. in fr. strongly reflexed; cal. in fr. loosely erect not close-pressed; pet. equal a little longer than the shortly awned sep.; claw ciliate; fil. smooth lanceolate rounded and simple (not toothed) at the base; carp. obliquely 1-ribbed at top below the groove or with the lower edge as well as upper margin of the groove sharply raised and prominent; beak 3-4 times the length of cal. rather long and slender smooth.—Buch 196. no. 333?; DC. i. 648; Presl 210; WB. i. 24; Koch 156. *Ger. malacoides* (L.) Cav. Diss. 4. 220. t. 91. f. 1; Desf. ii. 107, 8; Broth. ii. 74.—Mad. reg. 1, 2, ecc ; PS. reg. 1, 2, rr. Roadsides and waste ground in sunny places about Funchal, the Gorgulho Fort, Praya, the Piedade near Canical, &c. chiefly below 500 ft. and near the sea. PS. near the S.W. point (Ponta de Malhado) and in the Serra Dentro. Nov.—May.—Whole pl. more or less pubescent, pale dull greyish-gr., though sometimes in shady places scarcely perceptibly hoary, with soft flaccid foliage. St. diffusely prostrate long and trailing 1-2 ft. long, the ends ascending, sparingly branched, light shining gr. pubescent especially beneath in a thick downy line. L. little more than an inch long and ¾ in. broad, ovate or ovate-oblong, the lower as broad as long, the upper more oblong, all un­divided slightly shallow-lobed and toothed. Stip. and br. large conspicuous dry pale brown. Fl. small inconspicuous. Sep. shortly awned hairy-pubescent with strong dark gr. ribs or
nerves on a light ground. Pet. dull purple with mostly 2 small oblong darker spots at the base of each, oblong-oval obtuse entire, \( \frac{1}{3} \) in. long, \( \frac{1}{4} \) in. broad; the claw very short and distinctly ciliate. Fertile fil. winged purple; 5 sterile more broadly lanceolate petal- or chaff-like pale or colourless: all simple at the base and quite smooth. Carp. thickly eretostrigose with long white tawny hairs up to the raised rim-like lower margin of the smooth groove below the large hollow scar or pit at top: both scar and groove thickly sprinkled with shining sessile glands. Beak an inch long, nearly smooth minutely and slightly adpresso-subpuberulous chiefly upwards. Seeds smooth shining.—In drying the pet. turn bluish-purple. Whole pl. scentless, occasionally in luxuriant young states viscid. Pet. very fugacious mostly falling before noon. The carp., in the raised rim-like lower margin of the groove below the scar forming a single oblique rib on each side at top, exactly resemble those of \( E. moschatum \) (L.); and they are also equally attenuated downwards at the base into a kind of stalk.

Of 2 spec. in BH. on the same sheet, marked "Erodium malacoides—Ger. malacoides L. Madeira, Fr. Masson," the smaller may possibly be rightly so called, but the larger is certainly the next sp. \( E. chium \) L. Von Buch's synonym is therefore doubtful, since he only enumerates one of the 2 species.

5. \( E. chium \) (L.) Willd.

Shining and moderately pubescent; st. diffuse or procumbent, l. shining and often nearly smooth above, cordate obtuse toothed deeply and very obtusely pinnatifoliate subtripartite, the upper tripartite; stip. short broadly ovate membranous, ped. many-fl.; pedic. in fr. declining or deflexed; cal. in fr. close-pressed; pet. unequal longer than the long awned sep.; claw ciliate; fil. hairy and ciliate downwards simple at the base; carp. simple not ribbed at top and without any groove at all below the 2 small round pits or scars at the base of the beak which is 6 times the length of cal., long slender, finely adpresso-pubescent.—DC. i. 647; Spr. iii. 33. \( Ger. chium \) (L.) Cav. Diss. 4. 221. t. 92. f. 1.—Herb. am. Mad. reg. 1, r; PS. reg. 1, 2, cc (called Alfinéte); SD. reg. 2, r. Madeira, Brazen-head outside the hummock at top, and roadside at the top of the descent into the Porto Novo ravine on the road from Funchal to Santa Cruz. In PS. common in waste ground, especially under walls on the borders of cornfields, quite taking the place of the Madeiran \( E. malacoides \) (L.). In SD. near and at the top of the island.—Herbage of a bright light shining gr. smoother or at least appearing so than in \( E. malacoides \) (L.) with brighter-coloured more conspicuous pink fl. St. more erect, yet weak and diffuse or straggling, 1–3 ft.
long. L. larger 2 or 3 in. long and nearly as broad, deeply cut into 3 main lobes, each of the side ones 2-3, the middle rather longer and less deeply 3-lobed; the uppermost distinctly tri-partite. Ped. 4-fl. and upwards. Stip. pale brown dry and scarious. Sep. always close-pressed thickly hairy, with strong green nerves or ribs on a pale transparent filmy ground; own half their length. Fl. small but conspicuous and pretty. Pet. pale but bright pure rose, immaculate, 3-nerved, just longer than the sep. with their awns, unequal, ¾, the 2 upper broader and oval, the 3 lower narrower and oblong or elliptic; claw very short abrupt pubescent inside and strongly ciliate with deflexed rather long hairs. Fertile fil. winged and dilated downwards; 5 sterile ovate or broadly lanceolate acute petal-like pink or rose-colour, all hairy or shortly ciliate downwards and simple or not toothed at the base. Glands at base of fertile stam. notched bright gr. Stigmas dull dark rose. Carp. thickly but finely pubescent with short close-pressed white silky hairs, without any grooves at all below the small round scars at the top and consequently without any rib. They are also shorter and plumper, broader above and less narrowed below, than in E. malacoides L. Beak 1½ in. long, slightly pubescent.—Pet. very fugacious, falling mostly before noon. A very elegant and ornamental rock-work pi. in gardens near the sea in England, which it enlivens by its bright gr. foliage and pink abundant fl. opening in long succession.—It is curious that E. chium L. is as common and E. malacoides L. as rare in PS. as E. malacoides L. is common and E. chium L. rare in Madeira.

3. PELARGONIUM Herit.
Garden Geraniums. Malvas.

* Herbaceous.

††1. P. ALCHEMILLOIDES Willd.
"St. diffuse villose; l. cordate 5-lobed palmate; ped. few-fl., pet. nearly equal, stigmas sessile."—DC. i. 660. Geranium alchemilloides (L.) Cav. Diss. 4. t. 98. f. 1.—Herb. per. Mad. reg. 1, 2; r. A mere outcast of gardens about Funchal here and there; as on the brink and down the rocky E. cliff of the Rib. de S. Joao a little way above the Peak Fort over against the Achada, &c. Spr.—Greyish or slightly hoary scentless. L. orbicular. Ped. long slender 4-6-fl. Fl. small pale y. or whitish. Pet. narrow.

** Shrubby.

††2. P. INQUINANS (L.) Ait. Malvas.
Velvety-pubescent; st. and branches erect stiff thickish succulent; l. orbicular-reniform very obtusely crenate-lobed light
PELARGONIUM.

uniform gr. slightly shining softly velvety, ped. many-fl.; pet. obovate-wedgeshaped unequal uniform red.—DC. i. 659; Spr. iii. 58. Ger. inquinans (L.) Cav. Diss. 4. 243. t. 106. f. 2. “Dill. Hort. Elth. t. 125. f. 151.”—Shr. per. Mad. reg. 1; cc. Sea-cliffs for about a mile out of Funchal to the E. along the Caniso road, and elsewhere amongst thickets of Cactus everywhere on the S. coast and for some distance up the Ravines, completely naturalized. Throughout the whole year.—A low shr. 1–3 ft. high with thick short stiff fleshy or juicy gr. branches. L. 3 or 4 in. diam. thickish softly tomentose light grass-gr. but usually with a reddish tint, being powdered with the fine red tufa-dust of the soil which clings tenaciously to their velvety surface, staining the fingers when rubbed or handled. Fl. bright scarlet, throat or claw of pet. white. Pet. ⅔, the 2 upper rather smaller; 2 of the 7 fertile stam. very short.—L. with an acid not aromatic scent when rubbed or bruised, unpleasant to some people; not staining the fingers except by their dustiness; varying in summer more, in winter less, densely velvety or tomentose.—P. Bentinekianum DC. i. 664. of English gardens, and very frequent in those of Madeira, scarcely differs except in its somewhat thicker more tomentose or greyish L., and larger more brilliant intense-scarlet fl. In cold or wet winters I have seen it pass completely into the wild or naturalized pl. above described.

+++P. GRAVEOLENS Ait. Malvas.

“L. palmately 7-lobed, 1. oblong obtuse toothed with the margins revolute, umbels many-fl. subcapitate, spur twice as short as the cal.”—DC. i. 678; “Herit. Ger. t. 17.” G. terebinthinaceum Cav. Diss. 4. 250. t. 114. f. 1.—Shr. per. Mad. reg. 1, 2; ccc. Used everywhere in ornamental clipped hedges about gardens and Quintas. The Mount, Camacha, Palheiro, S. Antonio, Machico, &c. &c. Throughout the year. St. 1–3 ft. high diffuse but stiff and bushy, scarcely succulent. L. softly and thickly pubescent pale gr. Fl. in thick crowded tufts uniform pale dull pink not handsome. Pl. with a strong disagreeable though subaromatic scent.

+++P. GLUTINOSUM Ait. Malvas.

“L. cordate hastate-5-angular toothed viscose smoothish, umbels 2–4-fl., spur a little longer than the cal.”—DC. i. 679; BM. t. 143. Ger. viscoseum Cav. Diss. 4. 246. t. 108. f. 1.—Shr. per. Mad. reg. 1, 2; ccc. A frequent outcast of gardens and used for hedges everywhere about country houses.—St. diffusely spreading 2–4 ft. long. L. large sinuate like oak-leaves highly glutinous or viscous, dark gr. with a darker blackish waved broad zone. Fl. large and handsome more or less pale pink or rose, the 2 upper pet. larger and broader, spotted, and streaked with dark purple. Pl. with a strong but to many
people not altogether disagreeable scent, something like that of a tan-yard, but combined with a pleasant aroma.

Several other sp. of shrubby garden *Pelargonia* are very common or occasionally almost semi-naturalized. But the two preceding are the most generally or abundantly diffused.

Order XVII. LINACEÆ.

The Flax Family.

Sep. 5 or 4 persistent imbricate. Cor. regular. Pet. 5 or 4 fugacious clawed twisted in the bud, sometimes cohering. Stam. 5 or 4 alternate with the pet., with intermediate teeth (abortive stam.), from a hypogynous ring or disk. Ov. 5-4-celled. Stigmas 5 or 4 capitale. Caps. tipped with the hardened remains of the styles, imperfectly 10- or 8-celled, i. e. each of the 5 or 4 complete cells more or less completely subdivided by a spurious partial dissepiment. Seeds 1 in each spurious cell compressed pendulous with little or no albumen. Embryo straight.—L. alternate without stipules veinless, entire.


1. *Linum L.*

Flax.

* Edge of sep. glandular-ciliate. Fl. yellow.

1. *L. gallicum* L.

Herbaceous smooth; st. single mostly simple erect; 1. linear-lanceolate minutely serrulate-scabrous at the edge; panicle loose corymbose, its branches angular quite smooth; sep. lanceolate glandular-ciliate downwards, attenuated upwards into a sharp roughish point, half as long again as the caps.; pedic. in fr. a little longer or a little shorter than the cal.—Brot. i. 483; Buch 196. no. 350; Presl 169; WB. i. 27; Koch 138. *L. gallicum* ß. *medium* DC. i. 423. *L. aureum* Waldst. and Kit. ii. t. 177 (not DC.).—Herb. ann. Mad. reg. 1, 2, 3; cce. Sunny hill-sides and mountain pastures everywhere; neighbourhood of Funchal at the top of rocks between the Valles Quinta and R. de Joaõ Gomez; Curral das Romeiras; at Camacha, Prazeres, &c. May–Sept.—A small delicate inconspicuous pl. from 2–10 in. high. St. sometimes but rarely branched from the base, otherwise simple erect straight slender
or filiform. Fl. very small golden-y. in a loose capillary corymbose panicle. Pet. about \( \frac{3}{4} \)rd longer than the finely acuminate or subulate-pointed sep., very obtuse or truncate, erose or uneven at the edge, cohering laterally by the middle of their claw and thus all falling together. Styles 5. Branches of panicle not downy in the axils as in *L. corymbiferum* Rchb. (*L. aureum* DC. not Waldst. and Kit.). Pedic. in fr. longer than the cal. only in the earlier or lower primary first-opening fl.; in the later or secondary upper fl. they are shorter.

2. *L. strictum* L.

Herbaceous smooth; st. single or several from the base simple stiffly erect thickly corymbose at top and leafy; l. crowded stiff linear-lanceolate very sebaceous and minutely ciliate-serrulate at the edges; panicle dense corymbose leafy; sep. lanceolate sharply acuminate or produced into a long rough glan-dular-ciliate or serrulate point, twice as long as the caps.; pedic. in fr. much shorter than the cal.—Desf. i. 278; Brot. i. 464; DC. i. 424; Spr. i. 964; Presl 169?; WB. i. 26; Koch 138.—Herb. ann. Mad. reg. 1, r; PS. reg. 1, 2, c. Cornfields and sunny waste ground near the sea in a calcareous sandy soil; in Madeira scarcely except about the Fossil-bed at the Piedade near Canical; in PS. general, Rib. de Cochino, towards the Fonte d'Areia, &c. April–June.—A remarkably stiff rigid leafy pl. 2–10 in. high, the st. very erect and leafy. Panicle forked proliferously, thickly leafy and bushy or crowded, with densely aggregate very shortly stalked golden-y. very small fl. almost buried in the l.; sep. membranous below, their long produced rough stiff point herbaceous; in fr. pale whitish and stiffly membranous or horny downwards; pet. acute shorter or not longer than the long-pointed conspicuous sep. Caps. globose slightly pointed, smooth inside.


Shrubby smooth; root creeping; l. alternate elliptic pointed at each end, fl. bracteated trigynous.—BM. t. 1100; DC. i. 425. —Shr. per. Mad. reg. 1, cult. cc; subnat. r. On terrace-walls and waste ground here and there in or about Funchal, and a very common ornament of gardens. Oct.–June.—Roots sending up turions or suckers. St. 1–2 ft. high dark gr. like the l. which are 1–2 in. long and nearly sessile. Fl. very large and handsome 2 in. diam. bright golden-y. produced in vast pro-fusion and in long succession throughout the winter or spring months.

** Edge of sep. not glandular. Fl. blue.


Herbaceous smooth; st. numerous procumbent; l. linear-
lanceolate; panicle few-fl. corymbose; sep. ovate or ovate-lanceolate acuminate pointed nearly as long as the ripe caps., the inner slightly ciliate; pet. twice as long as cal.; caps. downy or mealy within.—EB. t. 381; DC. i. 426; Sm. E. Fl. ii. 119; WB. i. 27; Koch i. 139; Bab. 66. L. agrestes Brot. i. 481. L. angustifolium Br. DC. i. c. L. perenne Buch. 196. no. 349 (not Linn.).—Herb. ann. Mad. reg. 1, 2, c; PS. reg. 1, 2, c. Roadides, waste ground and borders of cornfields everywhere, chiefly above 500 ft. March–June.—Root tap-shaped simple white, decidedly and constantly only annual in Madeira though soon becoming thickened and woody at the crown and assuming quite a perennial appearance. Primary st. erect 2 or 3 in. high not flowering, of very short duration. From its base spring at first 1 or 2 then subsequently from 3 or 4 to 10 or 12 slender st. 5 or 6 in. to a ft. long, spreading on all sides close to the ground, their ends ascending or erect, woody and suffrutescent downwards, sparingly branched upwards and few-fl. L. small 3-nerved crowded and imbricated upwards, close-pressed, slightly glaucous. Ped. prolificous; pedic. erect in fr. Fl. rather large but a little smaller than in common Flax, pale lilac-blue; pet. twice as long as sep., ½ in. long, half as broad, obtuse wedge-shaped, entire in Madeiran specimens; styles 5; fil. dilated downwards, without intermediate teeth or rudiments of abortive stam. Sep. 3–5- or even 7-nerved at the base, their edges membranous and slightly ciliate-serrulate. Caps. globose abruptly sharp-pointed, a little longer than the cal.; its larger dissepi­ments very slightly downy or rather mealy.


Herbaceous smooth; st. single erect; l. lanceolate; panicle lax corymbose; pet. 3 times as long as cal.; sep. ovate acuminate pointed ciliolate nearly as long as the caps. which is smooth within.—Desf. i. 277; Brot. i. 481; EB. t. 1357; DC. i. 423; Sm. E. Fl. ii. 118; Presl 170; Koch 140; Bab. 66.—Herb. ann. Mad. reg. 2, cult. cc; reg. 1, 2, subnat. c. Generally cultiv. as a crop, especially in the north at S. Anna, S. Vicente, &c.; and here and there springing spontaneously, as towards the Praya W. of Funchal, &c. Dec.–June.—St. solitary slender erect 1–1½ ft. high corymbosely branched upwards, of a peculiar light pleasant gr. Fl. large conspicuous, blue with darker veins. Pet. crenate.

A great proportion of the linen used in Madeira is spun and woven by the country-people with flax prepared from their own crops; and it is of excellent quality and very durable.
2. Radiola Gm.

Flax-seed.

1. R. MILLEGRANA Sm.

Hort. Kew. (ed. 2) i. 282; EB. t. 893; Sm. E. Fl. i. 243; Spr. i. 498. R. linoides (Gm.) DC. i. 428; Koch 141. R. vulgaris serpytiloflora Dill. in Ray’s Syn. 345. t. 15. f. 3. Linum Radiola Linn., Brotn. i. 455.—Mad. reg. 2; cc. Mountain pastures general; rocky ridge between the Quinta do Valle and Rib. de Joao Gomez; grassy hills up the Caminho do Meio and about Camacha, &c. April-June.—A minute inconspicuous delicate little pl. of short duration, 1 or 2 in. high, erect and smooth, bushy and regularly forked or branched dichotomously from the base, branches filiform or capillary stiff corymbose. L. opposite entire very small sessile ovate. Fl. white very minute and numerous stalked solitary from the forks of the st. and at the ends of the branches. Sep. sharply and deeply trifid.

Order XVIII. OXALIDACEAE.

The Wood-sorrel Family.

Fl. regular. Sep. 5 equal persistent imbricate in bud. Pet. 5 equal clawed often cohering at the base twisted in bud. Stam. 10 monadelphous in 2 rows, the 5 inner opposite the pet. longer than the 5 outer. Ov. 5-celled; ovules 1 or more in each cell; styles 5, stigmas capitate. Caps. 5-lobed 5-celled 5–10-valved or fleshy. Seeds not numerous 1 or more in each cell often with an elastic fleshy epidermis (arillus Endl.). Embryo straight in a fleshy albumen.—Pl. with acid juices, often stemless. L. mostly trifoliate.

1. Oxalis. Fr. an oblong or cylindric 5-angular 5-celled 5-valved caps.

1. Oxalis L.

*Branched; ped. axillary; lfts. ternate.

1. O. CORNICULATA L. Bosch De Pastor.

Pubescent; root fibrous without turions or tubers; st. diffuse with procumbent often rooting branches; lfts. obcordate; stip. oblong-lanceolate adnate to the petioles; ped. 2–5-fld. shorter than the leaves; pedic. in fr. reflexed; caps. narrow-oblung; seeds transversely ribbed.—Brot. ii. 223; BB. 1726; Buch 196. no. 339; DC. i. 692; Sm. E. Fl. ii. 324; Presl 212; Spr. ii. 429; WB. i. 25; Koch 157; Bab. 68. O. pusilla Salisb. in Linn. Trans. ii. 243. t. 23. f. 5.—Herb. ann. Mad. reg. 1, 2, 3; cce. Roadsides, waste and cultiv. ground everywhere; one of the
commonest weeds in gardens and vineyards. Throughout the year.—Truly ann. propagating only by seeds. St. 4-12 in. long reddish or purplish. Fl. small mostly 2 or 3 in little umbels, y., the throat with a reddish spot on each pet. Stam. distinctly monadelphous downwards. Styles the length of the longer stam. Caps. large in proportion. The pl. is used for rubbing out stains of iron-rust &c. from linen.

** Stemless; ped. from the root many-fld. umbellate; lfts. ternate.

††2. O. Martiana Zucc.

Root solitary scaly producing turions; pl. shining somewhat hairy-pubescent; lfts. broad ample widely obcordate deeply notched almost 2-lobed plain-coloured ciliate somewhat hairy all over chiefly beneath; scapes pubescent umbellate slightly branched rather numerous finely scarcely longer than the 1.; umbel lax compound loosely branched; pedic. lax drooping slender flexuose or reflexed; sep. a little obtuse with 2 callous spots at the tip; pet. narrow ligulate-wedgeshaped distinct; styles halfway between the longer and shorter stam.—Zucc. Mon. p. 20; Nachtr. p. 27; BM. 3938. O. urbica Hil. Fl. Bras. Merid. i. 126; Spr. Cur. post. iv. 185. "O. floribunda Link and Ott. Abbild. Gew. t. 10" (ex Zucc.).

β. bipunctata; scapes and pedic. hairy, fl. pale v. or lilac.—O. bipunctata Graham in BM. 2781, opt.—Herb. per. Mad. reg. 1; r. A weed in vineyards and gardens about Funchal here and there, as about the Quinta do Valle, &c. Nov.-May chiefly. Remarkable for its very large lfts. about 1½ in. long and broad, of a lucid bright full gr. on both sides. Scape about 6 in. long. Umbel loose with long fl.-stalks often compound. Fl. not large, about the size of those of O. Acetosella L.—Root merely ann. but propagated perennially from year to year by successive turions or tubers.

††3. O. Cernua Thunb.

Root simple fusiform scaly at the crown and turion-bearing; pl. sometimes slightly caulescent smoothish; lfts. deeply obcordate or bilobed slightly ciliate smooth above, dark-spotted or blotched; scapes umbellate many-fl.d. longer than the 1.; umbel simple crowded close; pedic. drooping or reflexed very unequal, some elongated.—DC. i. 696; Spr. ii. 426. O. caprina Curt. (not Linn.) BM. t. 237 (with single fl.).

β. pleniflora; fl. double.—Herb. per. Mad. reg. 1; §. Roadsides, vineyards and gardens about Funchal in many places; Caminho dos Saltos a little above the "Deanery," &c. Nov.-May.—Root simple fusiform fleshy white reddish or purplish upwards annual propagating from year to year by numerous
19. TROPÆOLACEÆ.

The Nasturtium or Indian-Cress Family.

Fl. perfect irregular. Sep. 5 coloured persistent ½, spurred, slightly imbricate in the bud. Pet. 5 alternate with the sep.
unequal ½ often clawed sometimes abortive folded together and convolute in the bud. Stam. 8–10 free inserted on the recept. yet almost perigynous. Ov. mostly 3-celled 3-lobed rarely 2–5-celled 2–5-lobed; ovules 1 in each cell; style 1, stigmas 3 or 2. Fr. not bursting, spongy dry or baccate; carp. mostly 3 attached to the base of the style, 1-celled 1-seeded. Seeds large without albumen. Embry. large with thick finally con- ferruminate cot. eared at their base and a short radicle next the hilum.—Smooth trailing pl. with showy fl. and a pungent cress-like flavour, of a juicy tender substance and quickly withering. L. alternate without stipules. Fl.–st. axillary solitary.

††1. Tropæolum. Cal. 5-partite, lobes equal, the upper spurred. Pet. 5 unequal, the 3 lower smaller or abortive. Stam. 8 wholly distinct or free. Fr. spongy or corky of 3 (by abortion 1 or 2) indehiscent 1-seeded kidney-shaped carp. ribbed and rounded at the back.

1. Tropæolum L.


L. peltate orbicular slightly 5–7–9-lobed or angular, the nerves not produced beyond the edge; pet. 5 obtuse.—BM. t. 23; Brot. ii. 15; DC. i. 683; Spr. ii. 226.—Herb. ann. or per. Mad. reg. 1, 2; f. PS. reg. 2; r. Waste ground and bramble hedges amongst gardens and vineyards about Funchal, and quite naturalized in the north along the sea-coast road between Ponta Delgada and S. Vicente, and at the latter place. PS. in a thicket by the half-built church of N. S. de Graça. April–Sept. but at almost all seasons.—Whole pl. smooth juicy and succulent with long trailing fleshy brittle st. L. glaucescent, throwing off water like drops of quicksilver. Fl. large orange more or less approaching to red, streaked with deep blood-red, and so together with their shape suggesting to Linnaeus the name of Trophy-flower.

Order XX. Rutaceæ.

The Rue Family.

Fl. perfect regular. Cal. 3–5-partite persistent imbricate in the bud. Pet. 4 or 5 alternate distinct with short claws inserted at the base of a short gynophore or glandular stalk or cup-shaped disk which is either free or united to the cal., twisted or twisted-imbricate in the bud. Stam. as many or 2 or 3 times as many as the pet., inserted with them, mostly hypogynous, sometimes perigynous. Ov. either stalked or sessile on the longer or shorter gynophore, deeply 2–5-lobed, 2–3–5-celled; ovules 2–4
rarely fewer in each cell; styles as many as the lobes or cells from their lower angles, separate downwards, united upwards; stigma simple 3-5-angular. Fr. a capsule with carp. more or less united bursting inwardly. Seeds few single or in pairs in each carp. with or without albumen; radicle superior.—Mostly strong-smelling pl. sprinkled with pellucid resinous dots or glands. L. without stipules often pellucid-dotted and compound. Fl. corymbose y. or w.

1. Ruta. Cal. 4-, rarely 3- or 5-partite. Pet. as many, clawed concave or spoon-shaped. Stam. twice as many. Nectariferous pores or glands on the gymnophore as many as the stam. Ov. with as many lobes or grooves as the sep.—Strong-smelling glaucous pl. Fl. y. the central one generally pentamerous.

1. Ruta L.

Rue.


St. flexuose leafy; l. nearly or quite sessile 2-3-pinnate 2-3 times as long as broad, in outline rather short broadly oblong or oval, the middle pinnae being the longest; lfts. narrow oblong or elliptic obtuse, wedgeshaped downwards; branches of cyme and pedic. quite smooth; br. leafy rather large cordate or ovate; pet. fringed contracting abruptly into the claw; lobes of caps. remote acuminate.—DC. i. 710; Spr. ii. 320; Presl 215; RIB. 8. t. 780. f. 1063; RFG. 5. t. 157. f. 4815; Koch 159; WB. i. 13, 14; Seub. Fl. Az. 47. R. graveolens Buch 196. no. 346; Holl's List (not Linn.). R. angustifolia Lowe in Hook. J. of Bot. i. 42 (not Pers.).—Suffr. per. Mad. reg. 1, cc; PS. reg. 3, ½; GD. reg. 2, c. Sunny hill-sides and rocky places near the sea or with a maritime exposure general in Madeira, as at the Brazen Head, the Piedade and other parts of Ponta S. Lourenço. In PS. up Pico de Baxo and P. de Conselho sparingly. March-June.—A low shr. about 1 ft. high, glaucous or greyish very strongly fetid and intensely bitter. L. crowded upwards, with narrow spathulate or cuneate distinct lfts.; lowest pair of pinnae stipulary or set close to the st. Fl. rather conspicuous greenish-y. Br. large compared with those of R. angustifolia Pers., to which I formerly referred this pl.

Order XXI. Pittosporaceæ.

The Pitch-seed Family.

Fl. perfect regular. Sep. 5 or 4 deciduous imbricate in bud. Pet. 5 or 4 slightly clawed and cohering by the claws imbric-
cated in the bud. Stam. 5 distinct alternate. Ov. free 2-5-celled, cells with many ovules; style 1; stigmas 2-5. Fr. a capsule or berry, with 2-5 many-seeded cells and more or less complete dissepiments; dehiscence loculicidal. Seeds numerous, bathed in a viscid resinous juice. Embryo minute in a fleshy albumen; radicle long slender; cot. short indistinct.—Small mostly resinous tr. or shr. L. simple alternate coriaceous without stip. Fl. white or yellowish, rarely blue.


1. Pittosporum Sol.

1. P. coriaceum Ait. Moquem, or Moquino.

Arborescent; l. coriaceous obovate-oblong or spathulate mostly obtuse quite smooth and entire; fl. in terminal subumbellate racemes or racemose panicles; br. ped. pedic. and sep. rusty-pubescent.—Sol. ! in Hort. Kew. ed. 1. iii. 488; Vahl Symb. ii. 43; Andr. Bot. Rep. t. 151; Lodd. Bot. Cab. t. 569; DC. i. 346; Spr. i. 791; WB. ii. 139, 140.—Arb. per. Mad. reg. 2, 3; rr. High rocks and remote inaccessible cliffs in ravines in the north; Seisal, 1855, Sr J. M. Moniz, growing in large quantity at a place called As Fontes and Rib. das Fontes, 1857, Mr. N. H. Mason, who has also observed a single tree in Rib. da Metade and two in Rib. Frio on almost inaccessible rocks. Young pl. in the grounds of Jas. Bean, Esq. at Camacha are said to have come from the Serra of Porto da Cruz: other full-grown trees are in the Quinta da Cova at the Mount. May, June.—A small tree from 15 to 25 ft. high with a straight trunk 4-6 in. diam. or as thick as the arm or thigh and a close or bushy somewhat pyramidal or oblong head of very dark gr. not shining foliage. Bark light ash-colour smooth and even. Wood white and close-grained but of no particular use. Branchlets proliferous in terminal bunches or umbels stiff and strong naked downwards. L. collected thickly towards the ends of the branches stiff and rigid, dark gr. above, pale beneath; when young light gr. and furry or velvety-pubescent on their upper surface only with the petioles, both becoming presently quite smooth and shining; the nerves indistinct or inconspicuous; the margins thin pellucid quite entire slightly revolute at least in the dried pl., the l. otherwise, especially while young, rather peculiarly flat, in shape oblong attenuated downwards into the short flattened petiole subacute whilst young, afterwards more or less obtuse and spathulate 2-4 in. long and 1-2 in. broad. L.-buds short ovate imbricated with dark brown scales which are persistent at the base of the shoots for a year or
PITTOSPORUM.

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two. Fl. in several aggregate somewhat branched or com- pound mostly drooping or nodding rac. or racemose panicles, from large terminal imbricated buds, bell-shaped elegant and highly fragrant like a mixture of Orange and Barberry fl., cream-coloured or yellowish-white, smaller but somewhat like a bunch of snowdrops. Racemes short sometimes simple but mostly branched at the base and with several terminal fl. or umbellate, often slightly drooping sometimes erect, 1-2 in. long. Pedic. ½ in. long bracteate both at the base and often higher up. Br. oblong membranous; those of the lower fl. reflexed green and leafy deciduous; of the upper smaller narrower or linear-oblong and more permanent. Rachis of rac. pedic. br. and cal. all more or less clothed or fringed with close ferruginous velvety pubescence. Sep. ovate-oblong rather obtuse not quite half the length of the tube-like straight part of the campanulate cor. Pet. nearly ½ in. long of a thickish leathery substance slightly pubescent outside, their claw or lower half straight, limb obtuse recurved or curling back. Stam. not reaching beyond the throat; fil. thick smooth white; anth. erect oblong. Ov. oblong pubescent, attenuated upwards into the thickish style which is scarcely longer than the stam. and crowned by the abrupt subcapitate gr. stigmas.—From Quinta da Cova trees trans­planted from their native rocks.—Caps. (from Masson's orig. Mad. spec. in BH.) large, ¾ in. long and nearly as broad, roundish-ovate or oval, apiculate with the short hardened base of the style, rusty-brown, curiously vermiculato-verruculate or sinu­sto-rugulose, only 2-valved in the specimen; but this is fre­quently the case by abortion in other species.

The Portuguese name Moquino is doubtless a mistake or mis­nomer for Mocã or Mocano, which at Seisal is properly the name of Visnea Mocanera L. fil.—a discovery due to the accu­rately discriminating eye of Sr. J. M. Moniz, who in the summer of 1856 first found and distinguished the last-named pl. grow­ing on its native rocks at Seisal, from Catha or Celastrus cas­sinoides Herit., which it very much resembles: thus at once clearing away all confusion about two sorts of Moquino or Mocano in Madeira, of which I had some evidence, and making the interesting addition to the indigenous Madeiran Flora of another properly Canarian tree. On the other hand, it may be doubted whether Pittosporum coriaceum Ait. is really an indi­genous Canarian pl., though described as such by Webb; M. Bourgeau, formerly Mr. Webb's Canarian collector, assuring me that he had not been able to discover it in any of the islands, though he had often searched in the exact spot in Teneriffe
indicated by Webb as that in which he had himself once only met with it. The description moreover in the Phytographia Canariensis, though in the main correct, is at variance in some few points with the true pl., and may have been therefore possibly drawn up from Madeiran specimens of the latter which were given to him by me in 1828, combined with something really different, though similar, gathered by himself afterwards in Teneriffe, perhaps in an imperfect state.
A MANUAL FLORA
OF
MADEIRA.

PART II.

Subclass II. CALYCIIFLORÆ.

Stamens more or less united with the pet. to the sep., and inserted on the latter around or above the ovary (i.e. more or less perigynous).

Order XXII. CELASTRACEÆ.
The Spindle-tree Family.

Fl. regular. Estivation imbricate. Sep. 4–5. Pet. 4–5 alternate with the sep. inserted on the edge of a fleshy hypogynous disk lining the base of the cal., rarely abortive. Stam. 4–5 alternate with the pet. and opposite the sep. inserted on the disk and subperigynous. Ov. free more or less immersed in and connected with the disk, 2–5-celled, cells 1–many-seeded; ovules erect. Fr. either a 2–5-celled caps. bursting loculicidally, or a drupe. Seeds mostly arillate; albumen fleshy; embryo straight axile; radicle short; cot. flat leafy.—Small tr. or shr. with alternate simple l. and small deciduous stip. Fl. inconspicuous small scentless.

Tribe EUONYMEÆ.

Fr. capsular bursting loculicidally.

1. CATHA. Cal. small 5-toothed. Pet. 5. Stam. 5 inserted beneath the edge of a 5-crenate fleshy disk. Stigma 3-fid. Ovary adnate to the disk; ovules naked, at first exarillate. Caps. 3-celled. Seed naked; the aril (arillode) incomplete embracing its base only.

1. CATHA Forsk.

1. C. DRYANDRI Lowe.

Without spines, wholly smooth, erect, thickly bushy and leafy; l. rather small, coriaceous, shining, ovate-oblong or elliptic, pointed or obtuse, irregularly obscurely and remotely
serrulate; pedunc. very short, mostly simple and 1-fl., aggregate on short axillary spurs.—_Celastrus umbellatus_ Dryander! in BH.; Buch! 198. no. 424.—Shr. per. Mad. reg. 1; ½. Rocks in ravines for about a mile from the sea. Sea-cliffs a little out of Funchal to the eastward along the Caniso road, and rocks at the edges of the first ravine. Up the Rib. de _Sta._ Luzia nearly to the origin of the Levada on the S. Roque side; and rocks on the W. side of the Palmeira, &c. In similar situations near Camera de Lobos, in the Soccorridos ravine, at Paul do Mar, &c.; and in the north at the Arco de S. Jorge, S. Vicente at the edge of the cliffs above the cemetery, and along the coast towards Seixa at the first waterfall, and again at the descent into the Rib. do Inferno. Dec., Jan.—A low bushy close-branched thickly leafy shrub, 3 or 4 ft. high, with strong stout st. and branches covered with a smooth brownish ash-coloured bark, the younger branches straight and reddish. Foliage evergreen, like that of a _Phillyrea_. L. shortly petioled, solitary and alternate only on the young shoots, clustered on the spurs and older branches from the development of numerous secondary leaf-buds; very variable in size and shape, 1-2 in. long and ½-1 in. broad, more or less lanceolate-oblong, often blunt or even spatulate, but mostly more or less attenuated at each end, very irregularly and sparingly serrulate, rarely entire. Inflorescence depauperately or abortively cymose. Fl. small, ¼ in. diam., pale greenish-yellow, scentless, mostly solitary each on its own proper ped., produced abundantly on the short woody side-spurs from the axils of the leaves; each ped. from ¼ to ½ in. long, jointed halfway or more upwards, with from 1-3 minute discoloured bractlets below the joint, bearing very rarely more than one fl., but sometimes producing from the joint 3 or more, each on its own proper pedic. and so far approximating to the cymose inflorescence of the allied Tenerian _C. cassinoides_ (Héril.). Sep. short ovate obtuse. Pet. ovate somewhat thick or fleshy, opening like a star. Stam. scarcely more than half the length of pet. Fil. somewhat crimson, all parts of the fl. having a tendency to become reddish. Ov. large. Style short. Stigma nearly sessile trifid crimson. Fr. growing very fast and soon acquiring its full size, but not ripening till May, large and conspicuous, ½-nearly ¾ in. diam., pale yellowish, globose, subangular, 3-celled, mostly only 2-seeded, one cell being abortive, bursting wide open from the top halfway downwards before it fully ripens and disclosing the 3 large cells, with a single erect rather large oval shining light chestnut-brown seed in 2 of the 3 cells, each seed supported at the base, as in a little shallow cup, by the arilode, which is beautifully white, like spermaceti. As the fr. ripens the valves become strongly and stiffly reflexed, and so, by corrugation, closely and elegantly striated.
The Tenerifan Celastrus (Catha) cassinoides Herit. is a distinct sp. with more lax straggling branches, larger broader l. and cymose-panicled fl. Dryander long ago in his MS. in BH. had well distinguished the two, calling the Tenerife pl. C. laxus, and the Mad. C. umbellatus. But they were presently confounded by Héritier, from whom a letter to Dr. Dryander is still extant in BH. containing the words, “Votre laxus et umbellatus sont mon cassinoides.” His diagnosis and figure have been taken, however, altogether from the Tenerifan laxus, with the exception of the inflorescence in the plate, which seems to have been added subsequently, in an evidently slovenly and careless manner, to accommodate his figure to his view of its identity with the smaller-leaved Mad. umbellatus of Dryander: his union of this latter to the Tenerifan pl. having been apparently an afterthought. At all events C. cassinoides Hérit. Sert. Angl. 6. t. 10 mainly belongs to the Tenerifan pi.; unfortunately superseding, by right of prior publication, Dryander’s excellent MS. name of laxus.

To take up, however, Dryander’s other MS. unpublished name of umbellatus for the Mad. pl. would be undesirable, the epithet being founded on an erroneous view of the inflorescence, and, in fact, rather applicable to the Tenerifan than to the Madeiran pl. The latter therefore requiring a new specific name, will most appropriately bear that of its exact and learned first discriminator, by whose acumen it was long ago ably distinguished from the Tenerifan pl. with which Héritier afterwards confounded it. And the two sp. will stand thus:

1. C. cassinoides Hérit.; fol. sparsis v. subterminalibus late ovalibus obtusis; fl. cymoso-paniculatis, cymis lateralibus axillaris pedunculatis.—Celastrus cassinoides Hérit. Sert. Angl. 6. t. 10. C. laxus Dryander! MS. in BH.

Hab. in Ins. Tenerifa, rr.

2. C. Dryandri Lowe; foliosa dumosa fol. angustae oblongis v. elliptico-ovatis; fl. aggregato-axillaris, ped. unifloris raro 3-pauci-floris vix sc. abortive subcymosis.—Celastrus umbellatus Dryand.! MS. in BH.; Buch! 198. no. 424.

Hab. in Mad. reg. 1.

Order XXIII. RHAMNACEÆ.

The Buckthorn Family.

Fl. regular. Sep. 5–4 deciduous, valvate in estivation. Pet. 5–4 alternate with the sep. inserted in the throat of the cal.
sometimes 0. Stam. 5-4 opposite the pet. and alternate with the sep., inserted with the pet. Ov. free or adnate downwards with the cal., surrounded by a glandular disk, mostly 3-, rarely 2-4-celled; cells 1-seeded, ovules erect. Fr. fleshy and berry-like 2-4-celled and seeded, or dry and capsular splitting into three. Seeds solitary in each cell erect without an aril; albumen fleshy or 0; embryo straight long; radicle short; cot. flat. —Tr. or shr. often spiny, with alternate simple 1. and small stip. Fl. greenish small scentless.

1. **Rhamnus.** Cal. 4-5-cleft, its base persistent and adnate to the fr. Pet. inserted with the stam. on the edge of the cal.-tube. Fr. fleshy berry-like, 2-4-celled, 2-4-seeded.

1. **Rhamnus L.**

Buckthorn.

*Alaternus* Tournef., DC. Unarmed, branches alternate, leaves evergreen coriaceous, style 2-3-fid.

1. **R. glandulosa** Ait. *Sanguino.*

L. broadly oval or oblong-oval obtusely serrulate, the axils of the 2 or 3 lowest veins glandular-bullate or blistered; fl. hermaphrodite in short erect few-fid. axillary racemes; fr. smooth shining.—Ait. Hort. Kew. (ed. 1) l. 265; Vent. Malm. t. 34; Buch 198. no. 423; DC. ii. 23; Spr. i. 769; WB. i. ii. 132. —Tr. per. Mad. reg. 2; rr. Rib. do Seixal, plentifully in the thicket on each side of the road nearly at the bottom of the Volta or descent from the Cruzinhos to the Chaô da Ribeira, a little before crossing the dry bed of the torrent: about the Furada along the Levada between the Lamaceiros and Rib. Frio. In gardens occasionally, at the Palmeira, the Mount, Camacha, &c. cult. Fl. March, April; fr. June.—A small tree 15-25 ft. high with a straight trunk 4 or 5 in. diam. covered with a greyish bark, with a pyramidal or bushy head of shining dark gr. foliage. Young shoots, leaves and petioles sub-pubescent. L. when adult smooth and shining, 1½-3 in. long, 1-2 in. broad, obtuse or slightly pointed, always rounded at the base, shortly stalked, stiff and rigid, becoming often almost boat-shaped with the edges strongly recurved, evenly and bluntly serrulate, with mostly 2 or 3 rarely 4 little wart-like blots towards the base, convex above, opening beneath by a minute pit or pore and hairy within, one in each axil of the 2-4 lower nerves. Stip. narrow small deciduous. Fl. small, rather bright y.-gr., in short stiff bunches scarcely longer than the petioles in the axils of the upper l.; rachis and pedic. angular short and thick velvety-pubescent. Sep. and pet. rather thick
and leathery. Berries subternate globose ⅛ in. diam. smooth shining purplish-black fleshy, of a fine sap-gr. within.

Condalia coriacea Reich. in Holl’s List, omitting the synonyms, is assuredly Heberdenia or Ardisia excelsa Ait. The mistake doubtless arose from some imperfect spec. of the latter, communicated by myself to Herr Holl, and carelessly ticketed “Rhamnus integrifolius DC.”

** Frangula Tournef., DC. ** Unarmed, branches alternate, l. deciduous membranous with straight oblique parallel nerves, style undivided, stigma capitate, seeds with a prominent scar.


L. broadly elliptic abruptly acuminate entire smooth and nearly smooth, when young with their petioles the pedic. and cal. pubescent; fl. hermaphrodite, pedic. axillary aggregate subternate; fr. puberulous.—Hérit. Sert. Angl. 4. t. 8; Ait. Hort. Kew. (ed. 1) i. 265; DC. ii. 26; Spr. i. 768; BM. t. 2663; Seub. Fl. Az. 47.—Tr. per. Mad. but not found lately wild; reg. 2, cult. rr. In a few gardens; Quinta da Cova at the Mount with other rare unquestionably native trees, e.g. Pittosporum coriaceum Ait., Rhamnus glandulosa Ait., Taxus baccata L., Juniperus Oxycedrus L., Ilex Perado Ait., &c. May–July.—A low wide-spreading tree from 20 to 30 ft. high, with long straggling declining naked branches sparingly divided, leafy only towards their ends, which are thick, strong, rugged with the scars of the former l. and covered with dark reddish-brown bark. L. deciduous large 4–7 in. long, 2½–3½ in. broad, for some time spreading, then stiffly and strongly reflexed, of a bright shining lively gr. turning red in decay, minutely pubescent at the edges and on the nerves beneath in all stages; when young rufous-downy all over like the rather long petioles; primary lateral nerves opposite, from 12–15 pairs, equidistant, regularly and exactly parallel. Petioles slender about an inch long. Stip. small linear-lanceolate pubescent, withering and dry or rigid, but neither spinous nor deciduous. Fl. small inconspicuous pale yellowish axillary 3–5 together; pedic. ¼ in. long and with the cal. downy. Upper side of petioles pubescent and cal. often bright red. Cal. 5-cleft about halfway down. Pet. small scale-like vaulted, pale y. like the inside of cal., each closing over an anther. Style short truncate and slightly bifid. Berries globose juicy ⅜–⅜ in. diam. bright and shining but sprinkled with short y. hairs, passing from bright reddish-purple as they ripen into purplish-black; the lower ripening before the upper fl. expand; internally 2-celled, the cells hard separable but united by a fleshy partition. Each cell
contains a single oblong flattened seed staining the fingers with a y. juice, furnished with a remarkably turgid prominent scar or umbilicus.

No part of the pl. is spinous. The berries have a sweetish but nauseous slightly bitter taste without astringency.

In the island of Flores, one of the Azores, the tree is called Sanguinho d’Ovelha, or Sheep’s Buckthorn, from the use of the l. at certain seasons of the year for fodder.

The discovery by Professor Heer of an undoubted leaf (as I consider it) of R. latifolia amongst the fossil plants of S. Jorge establishes the fact of this tree having been truly indigenous to Madeira; and though it is now seen only here and there in or about pleasure-grounds or gardens, I have warrant for believing it to have disappeared but very recently from the existing native Flora, if it be not indeed still actually lurking in some remote deep glen or on some inaccessible crag. In almost all the Azorian islands, according to Seubert, it is common, though in the form only of a “large shrub.” Its introduction thence to Madeira is, however, an exceedingly improbable hypothesis, from the absence of all direct intercourse between the islands, and of any useful or ornamental properties in the tree itself. The Quinta da Cova tr. were believed by Mr. Wardrop, the late proprietor and original planter of the grounds, to have been brought to him some fifty years ago, with the other native tr. above enumerated, from the Serra by a countryman. It has, however, hitherto escaped the observation of all Madeiran botanists in its native haunts.

†Order XXIV. TEREBINTHACEÆ.

The Turpentine-tree Family.

Fl. regular often imperfect small mostly unisexual. Cal. small persistent 3–7– mostly 5-toothed. Pet. as many as sep. or 0, imbricated in bud. Stam. 3–5 or 6–10, rarely more, alternate with the pet., inserted on or outside the fleshy annular disk or torus which is sometimes inconspicuous. Ov. mostly single 1-celled free; ovule solitary. Styles 1–4 simple. Fr. mostly drupaceous indehiscent. Seed without albumen; radicle curved; cot. thick and fleshy or leafy.—Tr. or shr. with resinous often acrid and poisonous juices, and alternate often compound leaves without dots or stip. The Mango, Cashew-nut, Pistacia, Mastic, Japan and other Varnish-trees belong to this Family, of which no example is found in New Holland!
The fossil leaf-impression called by Prof. Heer *Pistacia Phe-acum* Heer, can scarcely from its dotted surface have belonged to any Terebinthaceous pl.; nor do I see in what essential point it differs from the prints of leaves referred by him to *Myrtus communis* L.

†Tribe *SUMACHINEÆ*.

The Sumach Tribe.

Cot. leafy, radicle bent down upon their suture (*pleurorhizal*).


†1. *R. CORIARIA*, L. *Sumagre*.

L. pinnate with an odd terminal lft. hairy-pubescent; petiole simple slightly margined upwards; lfts. 5–7 pairs elliptic-oblong obtuse coarsely serrate.—Desf. i. 266; Brot. i. 475; Spr. i. 936; Buch 198. no. 420; DC. ii. 67; WB. i. ii. 125.—Shr. per. Mad. reg. 1, 2; cc. Sunny, rocky or stony places by roadsides and in waste ground amongst cultivation, everywhere. Aut.—A low shr. with short stiff woody scarcely branched st. about a ft. high covered with a light ashy bark. L. 4 or 5 in. long; lfts. shining dark gr. above, villose and pale beneath. Panicle terminal thyrs-like. Fr. densely crowded dry hard villose blackish-purple. The pl. is used by the country people for tanning leather.

Order XXV. *LEGUMINOSÆ*.

The Pea and Bean Family.

Fl. mostly perfect irregular, sometimes imperfect, sometimes regular. Cal. inferior. Sep. 5 more or less combined, the odd one outside or inferior. Cor. mostly papilionaceous, sometimes regular, rarely 0; pet. 5–0 inserted into the base of cal. mostly unequal or papilionaceous with the odd pet. (standard) inside or superior, sometimes equal. Stam. mostly 10 perigynous rarely hypogynous, monadelphous or diadelphous (9:1), rarely triadelphous, sometimes distinct. Ov. superior free 1-celled; style and stigma simple from the upper or ventral seed-bearing suture of the mostly solitary 1-celled rarely 2–5-celled carpel. Fr. a legume (pod) or very rarely drupe. Embryo mostly without albumen or endosperm, rarely straight mostly curved and pleurorhizal or bent down upon the edge of the cot. which are
either fleshy or leafy, **aerial** (rising above ground), or **subterranean** (remaining underground) in germination.—L. alternate mostly compound, pinnate or ternate, with stip. general and partial. Pedic. mostly jointed on the ped.

**SUBORDER I. PAPILIONACEÆ.**

Fl. irregular *papilionaceous*. Pet. clawed imbricate in bud, the upper one external, the 2 lower combined into a keel. Stam. *perigynous* nearly equal, their fil. variously combined. Embryo curved pleurorrhizal.

**Tribe I. GENISTÆ.**

The Broom Tribe.

Stam. *completely monadelphous*. Ovules 2 or more. Fl. *racemose* (the rac. terminal or opposite the l.), or axillary.—Shr. or herb. erect not climbing or twisting. L. simple or digitate with 3 or more lfts., rarely pinnate. Cot. *aerial* leafy.

††1. **LUPINUS.** Cal. deeply 2-lipped mostly 2-bractleted. Keel beaked acuminate. Sides of standard strongly reflexed. Anth. 5 small precocious, 5 large oblong later-ripe. Stigma bearded. Pod large compressed *coriaceous*.—Herb. or *suffruticose*. L. simple or digitate with 5–15 rarely 3 lfts. Stip. adnate to petiole. Fl. in erect spikes or rac. blue, w. or y. Cal. often with 2 caducous bractlets at the base. Cot. *thick* fleshy.

††2. **ULEX.** Cal. very deeply 2-lipped almost 2-sepalous or bivalve, always 2-bractleted at the base. Pod small turgy few-seeded.—Shr. *spinoso* apparently leafless; l. *spinescent*. Fl. *axillary* y.


4. **GENISTA.** Cal. ¾-lipped, 3 lower sep. sometimes connate. Style subulate ascending. Stigma sublateral inwardly, oblique. Pod flat.—Shr. unarmed or spinose. L. simple or 3-foliate. Fl. *racemose* y.

5. **ADENOCARPUS.** Like Genista but pod and often cal. glandulose.—Shr. unarmed, branches *divaricate*. L. with 3 mostly small lfts. Fl. *racemose* y.

6. **ONONIS.** Cal. *campanulate* 5-fid persistent spreading in fr.
Keel beaked acuminate. Pod short turgid.—Suffr. or herb. more or less glandular-pubescent. Lfts. 3 denticulate. Fl. racemose or axillary, pink, w. or y.

7. ANTHYLLIS. Cal. tubular inflated 5-toothed or subbilabiate $\frac{3}{4}$, persistent, bladdery in fr. Keel not beaked. Pod short rounded inclosed in the cal.—Herb. or suffrut. L. odd-pinnate. Fl. y. w. or pink, racemose but mostly congested into close crowded heads.

Tribe II. **PSORALEÆ.**

The Psoralea Tribe.

Stam. diadelphous $\frac{9}{1}$ or only halfway monadelphous. Ovule single.—Suffr. or herb. not climbing or twisting, often warty-glandular and strong-scented. L. various always without stipels. Fl. axillary solitary or densely racemose in heads, bluish, w. or lilac. Pod short indehiscent 1-seeded. Cot. aerial leafy.

8. **PSORALEA.** The only Madeiran genus. (Cal. 5-fid persistent, its tube villose or glandulose. Pod glandulose.)

Tribe III. **TRIFOLIEÆ.**

The Trefoil or Clover Tribe.

Stam. diadelphous 9$\frac{1}{2}$. Ovules 2 or more.—Herb. St. not climbing or twisting. L. with 3 very rarely 5 lfts. never stipelled; lfts. mostly denticulated by the numerous excurrent nerves. Fl. in axillary or spuriously terminal rac. forming often short compact heads, purple, r., p., w. or rarely y. Cot. aerial leafy.

9. **TRIFOLIUM.** Cal. 3$\frac{1}{2}$-toothed. Pet. slightly combined persistent withering. Fil. somewhat dilated upwards. Pod straight small mostly inclosed in the cal. subindehiscent 1-4-seeded.—Fl. mostly numerous in dense congested rac. or heads, purple, r., p., w., or sometimes y.

10. **MELILOTUS.** Cal. 5-toothed. Pet. distinct deciduous. Pod ovoid or globose small but not inclosed in the cal. 1-2-seeded. Seeds ovoid.—Fl. in long somewhat lax rac. y. or rarely w.

11. **MEDICAGO.** Cal. 5-toothed. Pet. distinct deciduous. Pod spirally curled, rarely falcate or reniform, large exserted from the cal. Seeds reniform.

Tribe IV. **LOTEÆ.**

The Bird’s-foot Trefoil Tribe.

Fl. umbellate mostly y. rarely p. or w. Lfts. 3 entire, their nerves not excurrent. The rest as in Trifolieæ.
12. **Lotus.** Cal. campanulate 5-toothed. Keel beaked acuminate. **Style simple subulate.** Pod straight linear spuriously lomentaceous or many-celled, many-seeded.—Herb. or suffr. Fl. y.

13. **Pedrosia.** Cal. campanulate 5-partite. **Style bifid or toothed beneath.** The rest as in *Lotus.*

† † † Tribe V. **GALEGEÆ.**

The Goat's-Rue Tribe.


† † † 14. **Robinia.** Cal. short campanulate 3-toothed. Standard rounded large reflexed. Stam. diadelphous. Pod flat margined at the upper edge bivalve.—Tr. or shr. with often prickly stip. L. odd-pinnate, lfts. stipellate. Fl. handsome w. or rose in drooping axillary rac.

**Tribe VI. HEDYSAREÆ.**

The Saintfoin Tribe.

Pod jointed, separating when ripe transversely into 1-seeded indehiscent joints or cells.—Cot. aerial leafy. Habit various. L. mostly odd-pinnate, sometimes 3-foliate, rarely simple. Fl. umbellate or racemose.

* Fl. umbellate. L. odd-pinnate.

15. **Arthrolorium.** Cal. tubular. Keel obtuse. Pod curved very slender subcylindrical, joints scarcely contracted at each end.—Herb. smooth. Fl. small y. in axillary stalked bractless umbels. (Belongs probably to *Lotus.*)

16. **Ornithopus.** Cal. tubular. Keel obtuse. Pod compressed; joints equally contracted at each end.—Herb. pubescent. Fl. small in axillary stalked umbels bracteate (with an odd-pinnate l.) at top.

17. **Hippocrepis.** Cal. campanulate. Keel beaked acuminate. Pod compressed, the upper suture excised-sinuate, the joints crescent- or horse-shoe-shaped. Seeds curved or crescent-shaped.—Herb. Fl. y. in axillary stalked bractless umbels.

** Fl. umbellate. L. simple.

18. **Scorpitus.** Cal. campanulate. Keel beaked acuminate. Pod spirally or circularly curved or revolute, longitudinally grooved, 3–6-jointed.—Herb. Fl. y. in axillary stalked bractless umbels.
Tribe VII. ASTRAGALEÆ.

The Milk-Vetch Tribe.

Stam. diadelphous 9/1. Pod more or less 2-celled longitudinally, continuous bivalve dehiscent.—Herb. or suffr. L. odd-pinnate. Fl. mostly racemose or capitate. Cot. aërial leafy.

19. BISERRULA. Cal. 5-fid. Keel obtuse. Pod 2-celled depressed flat, the valves compressed with a sinuate-toothed dorsal keel.—Herb. Fl. in racemose heads.

20. ASTRAGALUS. Cal. 5-toothed. Keel obtuse. Pod imperfectly 2-celled by the inflexed margin of the lower barren suture, the valves rounded and plain or even at the back.—Herb. or suffr. Fl. racemose or capitate, rarely axillary.

Tribe VIII. VICIEÆ.

The Vetch Tribe.

Stem. halfway monadelphous or diadelphous 9/1. Pod 1-celled continuous bivalve dehiscent.—Herb. St. mostly climbing with leaf-tendrils. L. even-pinnate (except sometimes in Cicer), the petiole produced into a tendril, awn or point. Infl. axillary; fl. racemose or by abortion solitary. Cot. thick fleshy, subterranean except in Faba. Primordial l. alternate.

21. CICER. Style smooth filiform. Pod inflated membranous 2-seeded. Seeds globose ovate gibbous beaked or pearshaped.—St. scarcely climbing. L. odd- or even-pinnate; lfts. many serrate. Fl. small w. grey or lilac.

22. ERVUM. Style filiform hairy or pubescent upwards, not bearded. Pod short oblong few-seeded. Seeds globose.—St. climbing with branched tendrils. Lfts. many small entire. Fl. small inconspicuous white, pale bluish-grey or lilac.

23. Vicia. Style filiform or subcompressed smooth or pubescent bearded mostly on the under or outer side with a more or less distinct pencil or tuft of hairs below the tip. Pod linear-oblong. Seeds several or many subglobose; hilum lateral.—St. climbing with branched tendrils. Lfts. many, rarely few, rather small. Fl. rather small conspicuous, often rose or purple, rarely v. or y.

24. FABA. Like Vicia, but pod large coriaceous, somewhat inflated, and spongy within. Seeds few compressed oblong; hilum terminal; cot. aërial.—St. erect not climbing. Tendrils simple or 0. Lfts. few large. Fl. greyish-w. and black. (Has some affinity with Lupinus in the pod and aërial cotyledons.)

25. LATHYRUS. Style dilated and flattened upwards, hairy or
pubescent on the upper or inner side.—St. climbing with branched tendrils winged. Lfts. very few, rarely more than 1 or 2 pairs, elongate and lanceolate, sometimes 0. Fl. mostly large conspicuous, often rose or purple.

††† Tribe IX. PHASEOLEÆ.

The Kidney-bean Tribe.

Stam. and pod as in Vicieæ. Stem mostly twining often suffruticose. L. without tendrils pinnate; lfts. mostly 3 or 1, stipelled. Infl. axillary rarely terminal; fl. normally racemose. Cot. thick fleshy mostly aerial. Primordial l. opposite.

†††26. PHASEOLUS. Cal. campanulate ⁴⁄₅-toothed, the upper teeth not longer than the lower. Keel curled or twisted spirally. Stigma oblique or lateral.—L. pinnately ternate, lfts. stipelled.


†††28. LABLABIA. Same as Dolichos, but 2 upper teeth of cal. combined into one, and pod roughly tubercled at the sutures.

†† Suborder II. CÆSALPINIACEÆ.

Fl. irregular, imperfectly or not papilionaceous. Pet. imbricate in bud, the upper one internal; sometimes partially or wholly wanting. Stam. only subperigynous, often almost or quite hypogynous distinct unequal, fil. all free. Embryo straight.

†† Tribe X. CASSIEÆ.

The Senna Tribe.

Fl. perfect subrosaceous rather than papilionaceous, pet. 5 unequal spreading. Pod bivalve mostly indehiscent sometimes pulpy.—Shr. or tr. Fl. in panicked or simple rac. conspicuous.

††29. CÆSALPINIA. Sep. 5 petal-like unequal, the lowest largest concave or boatshaped, connate downwards into a cupshaped persistent base. Pet. clawed, the upper one smallest. Stam. 10 all fertile, fil. villous-hairy. Pod plain unarmed compressed dry bivalve.—Mostly prickly climbing shr. L. evenly 2-pinnate. Fl. y. scentless.

††30. CASSIA. Sep. 5 distinct unequal deciduous. Pet. without claw. Stam. 10 rarely 5 unequal, the upper shorter,
uppermost abortive; anth. bursting at top often by 2 pores. Pod mostly indehiscent often pulpy and many-celled within. —Shr. unarmed not climbing. L. even-pinnate; petioles mostly with 1 or more glands; lfts. opposite in pairs. Fl. y. scentless.

†† Tribe XI. CERATONIEÆ. The Carob or Locust-tree Tribe.

Fl. imperfect polygamous or dioecious. Sep. pet. and stam. irregular. Pod indehiscent coriaceous mostly fleshy or pulpy within.—Tr. with abruptly pinnate l. Fl. racemose small inconspicuous. Pods generally large.

†††31. CERATONIA. Cal. 5-partite. Pet. 0. Stam. mostly 5 hypogynous. Pod thick narrow linear many-seeded spuriously many-celled with fleshy or pulpy transverse partitions.—Tr. unarmed. Lfts. coriaceous evergreen.

††††32. GLLEDITSCHIA. Sep. 3–5 equal, connate and cupshaped at the base. Pet. and stam. 3–5 perigynous. Pod indehiscent mostly pulpy within.—Tr. mostly spinose. L. deciduous. Fl. inconspicuous spicate gr.

†† Suborder III. MIMOSACEÆ.

Fl. regular mostly polygamous rarely all hermaphrodite. Sep. and pet. 4–5, valvate in bud, mostly more or less combined downwards. Stam. hypogynous definite or indefinite, free or monadelphous. Embryo straight.—L. even-pinnate or bipinnate. Fl. mostly in close heads or rac. Cot. leafy aërial.


††34. VACHELLIA. Like Acacia, but pod cylindrical or horn-shaped turgid indehiscent pulpy within, and seeds in a double row.

Suborder I. PAPILIONACEÆ.

Tribe I. Genisteæ.

†††1. LUPINUS L.


St. proliferously branched upwards; lfts. obovate-oblong villose beneath; fl. pale blue bractleted alternate or scattered in short abrupt rac.; upper lip of cal. entire, lower slightly 3-toothed; seeds smooth and even, large flat nearly orbicular, uniform pale yellowish flesh- or cream-col.—“Forsk. Descr.
120

25. LEGUMINOS.E.

131;" DC. ii. 407; Spr. Syst. iii. 227. L. prolifer Desr. in Lam. Dict. iii. 622; Brot. ii. 132; Biv. Bernh. Cent. 1ma 55.—Herb. ann. Mad. cult. reg. 1, 2, ccc. Sown universally as a crop; in fields for seed and fodder, in vineyards chiefly for manure to the vines. March, April.—St. erect 1-2 ft. high, stout and stiff, not branched till it has produced its terminal erect short blunt or truncate rac. of pale or rather dull blue fl.; then proliferously branched, the side shoots producing each a terminal rac. often overtopping the first, but not usually branching again. Foliage dull or greyish gr. softly villose and peculiarly flaccid or fast withering when gathered. Fl. scentless middle-sized very pale blue or lilac. Cal. with mostly a minute linear bractlet on each side at the notch between the upper and lower lip. Pod about 2 in. long, oblong, coarse and thick, velvety. Seeds large flat squarish-orbicular smooth and rather shining, pale flesh or cream-colour, about \( \frac{1}{2} \) in. (6-7 lines) diam. and 2 lines thick.

The seeds are used as an ingredient in Sopas. The whole pl. is cut or pulled green for fodder; and is often grown under the vines in order chiefly to be dug into the ground for their manure.

In the Canaries, especially in Grand Canary, the same sp., called Chocho, is even more extensively cult. than in Mad.; and the seeds, macerated for 24 hours in cold water, are much used for feeding cattle.

Intermediate between L. albus L. and L. varius L., and marked by Mr. Bentham in HH. as a var. of the former; but its proliferously branched and bushy habit with the short abrupt rac. of pale blue fl. constantly distinguish it. Webb unaccountably omits it altogether in his Canary Flora.

+++2. L. LUTEUS L. Yellow Sweet-scented Lupine.

St. branched upwards; lfts. lanceolate-oblong acute, all over softly pubescent; fl. y. bractleted in remotely whorled interrupted rac.; upper lip of cal. 2-partite, lower 3-toothed; seeds smooth and even, rather small flat squarish-orbicular white or cream-col. speckled with black.—BM. 140; Desf. ii. 153; Brot. ii. 134; DC. ii. 407; Spr. iii. 228; Fl. Gr. t. 686.—Herb. ann. Mad. cult. reg. 1 or lower part of 2; r. At the Boa Nova on the road from Funchal to the Palheiro, sown for fodder and seminaturalized in and about the garden and environs. Mar.-May.—Whole pl. softly pubescent with white silky hairs but scarcely grey or villose, about 2 ft. high sparingly and stragglingly or loosely branched upwards. Fl. conspicuous bright full y. approaching to orange, filling the air in Mad. with their perfume, which resembles that of the Wallfl. (Cheiranthus
Ulex.

Cheiri L.), in remote whorls of mostly 4 or 5 together, forming an erect terminal drawn-out rac. 3-6 in. long. Upper lip of cal. cleft nearly or quite down to the base; lower somewhat indistinctly 3-toothleted; bractlets distinct linear half as long as sep. Pods flat pubescent about 2 in. long, $\frac{1}{2}$ in. broad, 4- or 5-seeded, the seeds prominent, 3-4 lines diam., 2 thick.

††2. Ulex L.
Furze, Gorse, or Whin.

Branches spines and l. while young pubescent; primary spines strong elongate angular grooved or striated minutely scabrous; l. narrow ensiform acuminate pungent convex beneath, flattened above; fl. lateral, br. broadly ovate, cal. adpressedly villose-pubescent, the teeth minute and mostly indistinct or obsolete; wings as long as standard longer than keel.—EB. t. 743; DC. ii. 144; Sm. E. Fl. iii. 265; WB. i. ii. 30, 31; Koch i. 165; Bab. 72.—Shr. per. Mad., G. D. reg. 2, cc. Between the Palheiro and S. Antonio da Serra especially about Camacha; Serras of Porto da Cruz, Fayal, Sta. Anna, S. Jorge, &c., very abundantly, and perfectly naturalized. Introd. by the late Conde de Carvalhal about 50 years ago, and in 1826 almost confined to the neighbourhood of the Palheiro and Camacha, though now (1860) overspreading the open mountain-pasture region throughout almost the whole island, and superseding completely in many places the common Broom (Sarothamnus). Jan.–May.—A low densely bushy and thorny apparently leafless shr. 2-6 ft. high, of a uniform dark green, with thickly interwoven striated branches and long spines. L. small inconspicuous persistent linear ensiform flattened or a little concave above, cuspidate presently becoming rigid and spine-like. Spines branched near the base or halfway up, not longer than the flowers. Cal. br. adpressed, as broad as or broader than ped., thickly pubescent, ovate or cordate, short obtuse with a distinct keel or midrib pale brown, not deciduous. Fl. large, fragrant like Apricots, bright golden-y., thickly clustered towards the ends of the branches on short closely pubescent pedic. from both the primary and secondary spines. Cal. and edge of keel densely pubescent or villose. Pod flat short broadly oblong villose 2-8-seeded (mostly 3-4 or 5-6), bursting elastically in the sunshine. Hairs of sep. mostly brown or tawny towards their tips. Though the number of seeds is so variable, the ovules are almost always 8 or 9.

Used as in England for clipped fences, and occasionally as brushwood for firing. U. europaeus Brot. ii. 78 (the "Tojo" of Portugal), according to Webb l. c. and Iter Hisp. p. 48, is U.
australis Clem. (U. provincialis Lois.). The “Carqueja” of Portugal is the curious wing-stemmed Genista tridentata L.

†3. S. ARTHAMNUS Wimm.


Branches crowded fasciculate long gr. slender flexible strongly grooved and ribbed or angular; l. inconspicuous dark full gr.; lfts. small, the lower stalked ternate, upper simple sessile; fl. large 1 or 2 together at each axil towards the ends of the branches, forming long loose upright or slightly drooping leafy rac., distinctly stalked; pedic. rather long with 2 or 3 sessile simple lfts. at their base; keel strongly curved; style loosely circinate thickened or dilated below the tip, pubescent below the middle; pods loosely hairy at the edges.—S. scoparius Koch ed. 1. 155; Seub. Fl. Az. 48. no. 365; Bab. 73. S. vulgaris Wimm., Koch ed. 2. 166. Spartium scoparium L.; EB. t. 1399; Sm. E. Fl. iii. 261, 262; Buch ! 197. no. 384. Genista scoparia Lam.; Hook. Fl. Scot. i. 211; Spr. iii. 221; Holl’s List in J. of Bot. i. 20. Cytisus scoparius Link; DC. ii. 154.—Shr. per. Mad. reg. 2, 3, ccc; PS. r; GD. £. Mountains above 1000 ft. in Mad. everywhere forming extensive thickets sometimes higher than the head of a man on horseback, either alone or mixed with Vaccinium, Laurels, &c. In PS. about the half-built church of N. S. de Graca; in GD. at the head of the central valley. March–July.—A dark gr. apparently leafless shr. usually from 6 to 10 ft. high with long slender somewhat drooping strongly angular flexible tough smooth gr. branches and small inconspicuous l., the lower ternate, uppermost simple; lfts. obovate or lanceolate dark gr. pubescent. Fl. large and handsome golden-y. axillary at the sides of the branches below their ends, solitary or in pairs on stalks ¼–⅓ in. long; pet. diffuse with stam. and style exserted; the standard distinctly notched. Pods flat blackish-brown clothed with long loose hairs at the edges; bursting elastically with a crackling report in hot sunshine, the valves twisting spirally. Seeds dark olive shining. The whole pl. turns dark brown or black in drying.

Sown extensively in the mountains or the purpose of being either cut down for firing, or burnt on the spot, every 5–7 years, to fertilize the ground, and cause it to produce a single crop of corn or potatoes. The twigs and more slender branches are also used commonly as withs for binding bundles of faggots, brushwood, fern, &c.; and numbers of the country-people, especially young girls and children, within reach of Funchal, gain a scanty and hard-earned livelihood by bringing daily into town,
often from great distances, bundles of "Giesta" to be used for heating ovens, &c.

Doubtless originally introduced into Mad., though proved by an old spec. in the BH. to have been existing there nearly 100 years ago, and now diffused so extensively, both by culture and self-propagation, as to appear perfectly indigenous: flooding the mountain-sides for miles with seas of golden blossoms in the spring and early summer. It is remarkable that this well-known pl., though found in the Azores, as in Mad., has not occurred to either Webb or myself in any one of the Canary Islands. Nor is its presence in them positively proved by Von Buch's alleged smooth-podded state of it (Sar. scoparius var. glabratus = Cytisus glabratus Link, WB. ii. 59), "confined to one small spot at the aqueduct above Orotava" in Tenerife: this pl. being possibly something altogether different, perhaps Sar. arboreus (Desf.), and at all events merely of local or chance occurrence from temporary cultivation. Brotero also omits it altogether in his Flora Lusit. as indigenous to Portugal. It may therefore be presumed to have been introduced into Mad. from either England or Scotland.

The fine and delicate basket-work peculiar to Madeira is manufactured from the slender peeled twigs of the present pl.

Since writing the above, I have received from my zealous and able botanical friend Sir Moniz, examples of a very remarkable and I believe hitherto unnoticed var. \( \beta, \) albiflora, with pure w. fl. They were gathered by him in June last (1861) at the Rabacal. Except in the col. of the fl., I can detect no difference whatever from the ordinary y.-fl. Mad. pl. It remains to be ascertained whether this singular albino var., which must have originated on the spot from the common y.-fl. sort, can be propagated regularly or otherwise by seed. In a former letter (Nov. 2, 1860) Sir Moniz speaks of it as having been described to him by its first observer, Sir Cunha, as a single pl.

4. GENISTA L.


* Unarmed; l. all ternate.

1. G. MADERENSIS Webb.
Unarmed dark gr. leafy; branches stout stiff and woody
straggling ascending ribbed rugged and knobbed upwards, the young flowering shoots with their petioles and rac. silky-villoses or shaggy with soft brown or fulvous ascending hairs; knobs (pulvini) strong and prominent; 1. all ternate and very distinctly stalked; stip. small distinct conspicuous ovate-acuminata persistent villose; lfts, oblong obovate or lanceolate acute very distinctly awned or mucronate adpressedly silky-pubescent, with their margin and the prominent strong midrib beneath, like the petioles and stip., silky-villoses; rac. cymose-panicled terminal erect very short and abrupt or truncate rather few-fld. scarcely overtopping the 1., leafy at the base; rachis pedic. br. and cal. fulvous-villoses; lower lip of cal. indistinctly 3-cleft.—

*Teline* madereensis* W.B. i ii. 37. *Genista canariensis* Buch! 197. no. 385 (not Linn.). *Cytisus candicans* Holl's List! J. of Bot. i. 21 (not Lam., Linn., &c.). *Genista candicans* Webb It. Hisp. 50 in part only (not Linn.).—Shr. per. Mad. reg. 3, J. Perpendicular shady sides of rocks and steep wooded banks in most of the principal ravines. Rib. Frio by the road a little beyond the cottages; along the Levada at the Lamasceiros, &c., June, July.—A rather tall robust and somewhat sparingly branched shr. or sometimes almost tr. 5–15 or 20 ft. high with stout ascending straggling thickish naked branches bushy and leafy only towards their ends and below the 1. angular ribbed and knotty with sharp projecting knobs or spurs formed by the old prominent pulvini of the 1. Stip. small 1–2 lines long narrowly ovate finely acuminate or linear-lanceolate becoming hardened and persistent with the enlarged woody pulvini. L. crowded; petioles as long as or longer than the lfts. which are often nearly or quite equal ¼–½ in. long and about half as broad, dark gr. and often nearly smooth or naked above, always acute with a strong prominent midrib beneath produced into a distinct projecting awn-like point. Fl.-branchlets short leafy, forming thick crowded cymose panicules at the ends of the branches. Rac. 6–12 fl., 1–4 in. long, short and as it were premorse or abruptly truncate, not produced beyond the 1. Fl. large and handsome conspicuous slightly fragrant bright y. Rachis, pedic., br. and cal. densely fulvous-villoses. Br. distinct long linear, as long as cal.-tube. Upper lip of cal. cloven halfway down into 2 ovate-triangular divergent teeth; lower lip a little longer and narrower obscurely 3-cleft at the tip, the 3 divisions linear connivent or closely parallel, and sometimes partially or quite combined into one. Standard roundish smooth or only a little pubescent outside about the notch at top. Keel densely silky-pubescent. Wings quite smooth longer than the keel. Stigma oblique inwards. Pods short about an in. long 2–3 lines broad flat compressed subvillose 4–7-seeded, one or more seeds usually abortive and the pods irregular in shape. Seeds dark olive-black flattened shining.—Pubescence of the young or flowering shoots,
stip., petioles, rachis, pedic. and calyx becoming in summer almost woolly, long and brown or fulvous during inflorescence. At other seasons, and especially in winter, it is comparatively short and silvery-white.

A most beautiful shr., occasionally almost tr., when in fl. and covered with its copious bunches of conspicuous fragrant golden fl. collected into large thick masses of crowded cymose panicles all over the pl.

At the Passo d'Area between S. Vicente and P'ta Delgada occurs a form or var. of this sp. with larger lfts. and more slender acuminate or pyramidal 10-15-fld. rac. (like those of G. Paivae) produced beyond the l.; and S' Moniz has met with a similar still more developed state of this form up the Rib. Grande de S. Jorge near the fossil-leaf-bed, as well as in the Arco de S. Jorge and at S. Vicente. Both seem however to be mere modifications, from excess of shade or moisture, of the normal state, with which in other points they perfectly accord. In particular the lfts. are lanceolate acute and distinctly aristate-mucronate, the lower lip of cal. is more or less 3-cleft, and in a spec. from S' Moniz of the Rib. de S. Jorge pl., though neither in the rest nor in my own from the Passo d'Area, the villosity of the rac. is distinctly though somewhat pale fulvescent.


Unarmed silvery-greysih leafy; branches erect stiff virgate strongly ribbed but not rugged or knobbed, those of the present year with the petioles and rac. hoary with very short close-pressed shining silky silvery-white pubescence; knobs (palvini) and stip. obsolete, the latter very short minute and inconspicuous; l. all ternate distinctly stalked; lfts. shortly and broadly obovate bluntly rounded or retuse at top and not at all or very indistinctly or minately mucronate, clothed all over equally like the petioles and young branches with short close-pressed silky pubescence; rac. terminal erect produced beyond the l. subelongate slender narrowly pyramidal or oblong leafless 10-15-fld., in fl. obtuse; rachis, pedic., cal., keel and pods hoary with very short close-pressed silky-white or grey pubescence; lower lip of cal. quite entire.—Shr. per. Mad. reg. 1, r; G. D. reg. 1, rr. Sea-cliffs at P'ta do Pargo, ascending from the beach, and at Fajaa d'Ovelha; also at E. side of G. D. April–June.—A bushy leafy shr. 3 or 4 ft. high, of a more or less hoary silvery colour, with close thick-set branches and small crowded l. upwards. Branches erect straight slender ribbed or striated and angular, but without the prominent knobs and indurated distinct
stip. of *G. maderensis*, and in all states at all seasons finely silvery-pubescent instead of occasionally being tawny-woolly. L. crowded their petioles rather shorter than the lfts. which are slightly unequal ½-¾ in. long and more than half as broad. Rac. produced distinctly beyond the l. 1–2 in. long narrow and slender, at first pointed or acuminate, but presently obtuse, with the fl. individually smaller and somewhat paler as well as more compact or oblong than in *G. maderensis* Webb, often distichous or secund. Cal. ⅞ equally cleft but not quite halfway down into only 3 nearly equal equidistant triangular-ovate pointed teeth, the usual lower 3 being perfectly united or combined into a single one precisely similar to but slightly more acuminate or longer than the upper pair. Standard broadly rounded, as broad as long, altogether smooth. Wings as long as standard oblong wholly smooth. Keel finely silky all over, its exposed part oblong obtusely rounded at tip, very nearly as long as wings or standard. Style long slender subulate except quite at base, smooth ascending towards the end. Stigma minutely capitate slightly oblique. Pods (immature) densely silky compressed flat 4–6-seeded.

The simply 3-toothed cal. caused by the complete junction into one of the 3 usual divisions of the lower lip, at once distinguishes this *Genista* from *G. maderensis* (Webb), *G. (Teline) Spachiana* Webb! BM. t. 4195, and from a Canarian pl. collected by Bourgeois marked in HH. *G. (Teline) discolor* Webb MS.

So elegant and distinct a sp. is no more than a just tribute therefore in the Flora of Mad. to the distinguished zeal and energy displayed in behalf especially of Madeiran and Canarian botany by my excellent friend and correspondent the Barão do Castello de Paiva, to whose persevering ardour and discrimination I am indebted for at least two highly interesting recent additions, viz. *Scirpus maritimus* L. and the curious little *Soliva stolonifera* (Brot.), to the Mad. Flora.

** Unarmed; l. all simple.

3. *G. virgata* (Ait.). Piorno or Giesta de Piorno.

Unarmed much branched more or less silky-pubescent and hoary; branches virgate fascicled or crowded slender elongated drooping or pendulous striated and angular; l. all simple sessile lanceolate or elliptic sometimes obovate, mucronulate silky-villose; stip. very minute or obsolete; fl. subcapitate in very short few-fld. erect terminal corymbose rac. or little heads; rachis pedic. cal. standard and keel silky-pubescent; pods hoary-pubescent.—DC. ii. 149. *Spartium virgatum* Ait!
Adenocarpus

Hort. Kew. (ed. 2) iv. 255; Buch! 197. no. 383; BM. 2265; Spr. iii. 176.—Shr. per. Mad. reg. 2, 3; &c. Dry sunny rocks and cliffs everywhere chiefly from 1000–4000 ft. but descending as low as 200 or 300 ft. Neighbourhood of Funchal up the W. side of the Rib. de João Gomes, &c.; beyond Camera de Lobos by the road, and top of Cabo Girão. Very plentiful about the Pico Grande along the Caminho Central; sea-cliffs at P° de Pargo, &c. March–July.—A shr. from 6–8 ft. high with much the habit as to its modes of growth of Common Broom (Sarothamnus scoparius L.) i. e. apparently naked or with small inconspicuous l., but with more slender almost filiform crowded flexible drooping tufted switchy tresslike or brushlike branchlets and of a pale hoary or greyish silky lustre instead of dark dull gr. L. small very variable in size and shape, the upper simply acute or acuminate, the lower bluntly obovate and mucronate, the midrib inconspicuous and but slightly excurrent, 1/4 or 5 in. long, 5/12 in. broad. Fl. slightly fragrant smaller less conspicuous and more lemon-y. at first than in G. maderensis Webb, afterwards more golden, and often turning rich orange-brown as they wither; aggregate in little heads of 2–4 together at the end of the branchlets and forming dense corymbose masses. Cal. silky-pubescent, 2 upper sep. triangular-ovate acute, 3 lower linear-lanceolate sometimes united into a single ovate one. Br. inconspicuous minute much shorter than cal.-tube linear silky-pubescent. Standard and keel silky-pubescent. Wings smooth. Stigma oblique inwards. Pods 1/2–scarcely 1 in. long; 2–3 lines broad, silky-hairy 3–5-seeded very flat acute or apiculate, often waved or sinuate at the margins, and strangulate or constricted between the prominent oval not much flattened shining black seeds, of which seldom more than 2 or 3 come to maturity.

The tough flexible branches and branchlets are used occasionally as withs for binding bundles, &c.

5. Adenocarpus DC.

1. A. divaricatus (Hér.): Codeço or Codeso.

Branches pale or whitish divaricate stiff straight slender, tapering and puberulous upwards; l. fasciculate, dark gr., lfts. smooth and even above, puberulous and pitted or pulvulose beneath, small mostly conduplicate; rac. terminal lax elongated, often compound or branched below and forming a loose pyramidal-oblong panicle; the lower fl. subremote, the upper crowded; pedic. longer than the very unequally 2-lipped tubular-glandulose cal.—Cytisus divaricatus Hér.! Stirp. 184; Ait! Hort. Kew. (ed. 1) iii. 50 (not Sibth. Fl. Gr. t. 704). C. parvifolius Lam. Enc. Méth. ii. 248 (excl. syn.). “C. complicatus DC. Fl. Fr.” (not Brot.). C. glutinosus Sol.! MSS.
25. Leguminosae.

in BH. ; Buch ! 197. no. 395. Adenocarpus parvifolius and A. intermedius DC. Prodr. ii. 158. A. parvifolius Spr. iii. 226; Holl's List ! J. of Bot. i. 21. A. complicatus Gay!—Shr. per. Mad. reg. 2, r. Sunny hillsides about 2 miles out of Funchal up the Caminho do Meio both to the right and left of the road, abundantly, forming sometimes thickets. June—Dec.—A peculiar-looking shr. 2-5 ft. high with remarkably straight stiffly divericate or erecto-patent interlacing taper branches of a singularly pale or whitish straw-colour, gr. only towards their tips whilst young, and in great part naked, with remote tufts or little crowded bundles of remarkably small dark gr. 1. Branches stiff round slender tapering upwards, shining and smooth downwards, finely striate, minutely papillose and furry-puberulous upwards, especially whilst young; the side-shoots occasionally almost pungent or spinescent. L. aggregate in little distinct tufts on very short furry-pubescent petioles; lfts. 3 obovate-oblong or lanceolate, obtuse, 3-5 lines long and 1-3 broad, nearly or quite smooth above, furry-pubescent and scabrous beneath, almost always folded together lengthways and with the margins involute. Fl. bright lemon- y. scentless rather large and handsome, about the size of those of Genista virgata L., in terminal erect naked rac. at the ends of the main and short upper side-branchlets of the year, thus forming loose thyrsiform pyramidal or oblong panicles. Main rac. often branched or compound at the base; otherwise slender elongate 3-6 or 7 in. long with the lower fl. remote, the upper more crowded; side-rac. short 2-4- or 5-fld. Cal. strongly 2-lipped; lips very unequal, the 3 lower sep. pendent, ½rd longer than the 2 upper: the whole thickly tubercled or muricate like the pods with short obtuse subcapitate glandular setae. Standard outwardly thickly pubescent or velvety; the rest of cor. smooth. Pods about an inch long, 2-2½ lines broad, compressed and flat, oblong, somewhat obtuse, all over hispid-muricate or papillose with short thick often capitate glands and slightly viscid; bursting elastically when ripe with considerable force in the hot sun, the valves twisting spirally in opposite directions. Seeds 5-10 very smooth and shining, at first dark greenish, then testaceous or reddish-brown mottled or speckled with black, flattened roundish-subtriangular or roundish-cordate, notched at the hilum.

In BH. there are 3 sheets of spec. belonging to this pl.: viz. 1, marked " Cytisus glutinosus MSS." with "divaricatus" written underneath, and at the back "Madera Fr. Masson 1776;" 2, " Cytisus glutinosus MSS." with "C. divaricatus" and "Adenocarpus" written underneath, and "Hort." at the back; 3, named as above, with "Herb. Miller" at the back. These 3 sheets therefore authenticate the syn. of Héritier and Aiton.
The single authentic original ex. in the Linn. Herb. of *Spartium complicatum* Linn. ! Sp. Pl. (ed. 1) i. 709, though closely resembling in habit and foliage the present pl., has the cal. simply pubescent and not glandulose. To this, under the name of *Adenocarpus complicatus* (L.!), belong probably the following syn.: *Cytisus complicatus* Brot. ii. 92 (excl. syn. *Cyt. parefotius* Lam.). *C. Hispanicus* Brot. ii. 91? (not Lam.). *C. divaricatus* B. “cal. pilosis nec glandulosis” BM. t. 1387. *Adenocarpus Telonensis* DC. Prodr. ii. 158. *Ad. complicatus*? Welwitsch! ex. desicc. Fl. Lusit. no. 781 in BH.

6. **ONONIS L.**

Rest-harrow.

§ *Natrix* Moench. Fl. and pods distinctly stalked; the stalk jointed upwards.

1. **O. RECLINATA L.**

Herbaceous annual softly glandular-villose erect bushy, lower branches ascending; l. ternate, uppermost simple, lfts. obovate-wedgeshaped serrate above the middle; stip. oval or ovate toothed; fl. axillary drooping in short leafy at first corymbose rac.; ped. 1-fld. jointed upwards solitary erect simple not armed or aristate naked scarcely or but a little shorter than the l., as long as the fl. and pods; pedic. short abruptly hooked above its junction with the ped. naked or without bractlets at its base; cor. mostly longer than cal.; 4 upper sep. leafy often more or less dilated upwards, lowest simple linear-acuminate or subulate; pod drooping linear-oblong turgid subcylindric hairy rather longer than the cal. 12-20-seeded; seeds small orbicular-reniform compressed deep-black finely granulate or rough with excessively minute and close-set raised points.—Brot. ii. 97; DC. ii. 162? WB.! ii. 27.—Herb. ann. Mad. reg. 1, r; PS. reg. 2, 4, r; ND. ½; GD. reg. 2, r; SD. reg. 2, r. March-July.—Whole pl. softly hairy and glandular-pubescent, sometimes but not often viscid, light-gr. 4–8 in. high. St. short perfectly round and slender always erect, the lower side-branches spreading or reclining, their ends ascending. L.-stalks ½ in. long; lfts. 3–5 lines long, 2–3 lines wide, rounded at the top, finely and distinctly serrulate above the middle, wedge-shaped and entire below. Fl. rather large and conspicuous, at first few and scattered, ultimately in lax short leafy rac.; ped. erect 3 or 4 lines long 1-fld., the pedic. abruptly bent down close above its junction with the ped., which is without either awn or bractlets at top. Standard always more or less deep rose-colour, wings and keel pale or whitish tipped with rose. Pod
4-5 or 6 lines long and 1-1¾ broad, densely pilose, pale brown or yellowish tipped with the long waved capillary style, scarcely or only a little longer than the persistent somewhat enlarged and spreading cal. Seeds 1¼ mill. in diam. roundish-reniform flat or compressed deeply and distinctly notched with the radicle very prominent; uniform plain black and elegantly and minutely granulate.—Var.:

a. tridentata Lowe (1838) Novit. p. 26 or 548; 4 upper sep. dilated upwards, mostly 3-toothed.—Subv. 1. Fl. rose-col. 0. dentata Sol! MSS. Prim. (Cam. Phil. Tr. iv.) 34. t. 4. O. reclinata a. Lowe i WB! (1840) 1. c. 28.—Abundant at top of the Ilheo da Cevada or dos Embarcadores on Pta S. Lourenço, Mad. Dry waste places by the road-side at Camaxa and rocky summits of Pico do Castello and P. d’Anna Ferreira in Porto S—ND. along the central rocky crest or ridge. GD. on tops of the highest peaks towards the south.—Subv. 2. Fl. pure white. GD. rr. on tops of highest peaks with subv. 1.


No dependence can be placed on the difference in the sep. of a and b, which vary through innumerable intermediate gradations from the dilated normally 3-toothed state to simple linear acuminate; a being however both in Mad. and the Canaries by far the most abundant form. O. pendula Desf. seems from his fig. and description to be only a large luxuriant state of this pl. with smooth lfts. grown in a damp rich soil or situation.

§§ Bugrana DC. Fl. and pods nearly or quite sessile; the stalk not jointed.

2. O. micrantha Lowe.

Herbaceous annual glandular-pubescent more or less viscid leafy; st. numerous procumbent or ascending; l. ternate, only a few of the uppermost simple; lfts. subcoriaceous nerved short broadly obovate or oval, closely evenly and sharply serrate; stip. large leafy ovate broadly amplexicaul more or less serrulate; fl. solitary erect subsessile in long leafy spikes, inconspicuous shorter than the l., cor. not longer than sep.; cal. campanulate
large leafy spreading and dilated after fl., equally 5-partite, the divisions linear- acuminate entire; pod erect turgid oval short compressed 2-seeded half the length of the enlarged cal.; seeds globular or ovoid strongly granulated marbled black and tawny-rufous.—Lowe Nov. p. 25 or 547. O. villosissima Desf. ii. 147, t. 192?; DC. ii. 163? O. Dehnardtii Ten. Fl. Nap. iv. 110?—Herb. ann. Mad. reg. 1, r; PS. reg. 1, 3, r; ND. rrr. Brazen Head; Pta S. Lourenço about the Piedade, and on the summit of the Ilheo dos Embardadores. April, May.—St. stoutish or robust very numerous 6-12 in. long cespitose branching from the crown of the long tough simple slender whitish root, and spreading all round in a flat thickly leafy tuft. Lfts. dark yellowish-green large 3-9 lines long, 2-5 broad, sometimes oblong-oval not twice as long as broad, firm subcoriaceous or stiffish, strongly many-ribbed or nerved, regularly sharply and finely toothed all round quite or nearly to the base; the teeth 8-12 on each side the midrib, strong sharply produced acuminate formed by the numerous strong excurrent nerves. Fl. small dull purple produced singly from each axil throughout nearly the whole length of the branches, the lower shortly pedicelled, upper quite sessile. Cal. large and leafy especially in seed, open bell-shaped with a very short tube and 5 equal ensiform or lanceolate-acuminate spreading or erecto-patent strongly 1-ribbed divisions, the 4 upper straight or subascendent approximate or laterally imbricate, the lower one remote and subdeclining or deflexed. Standard pale purple pubescent outside longer than the pale wings which are equal to the keel; the latter white tipped with purple. Pods light yellowish-brown very short and abrupt, 2 or 3 lines long and about half as broad. Seeds nearly or quite 2 mill. in diam. mottled or streaked with black on a pale- y. or chestnut ground, considerably larger and somewhat less finely or closely granulated than in O. reclinata L., subglobose very slightly or not at all compressed and not at all reniform, the radicle not being at all prominent.—In spec. gathered before the seeds were ripe, the latter are decidedly compressed and orbicular. Hence the term "compresso-rotundatis" in Novit. 547.

Two forms or var. may be distinguished:

a. densely viscose-pubescent; st. procumbent or prostrate; lfts. short broadly oval or obovate, 3-6 lines × 2-4; stip. sometimes indistinctly toothed.—Mad. rrr. Canical about the Piedade; Pta S. de S., cc.

β. smoother more robust or succulent and erect, st. ascending or decumbent; lfts. oblong-oval 3-9 lines × 2-5; stip. distinctly toothed.—Mad. r. Brazen Head, Pta S. Lourenço on the Ilheo dos Embardadores.—A mere luxuriant form of a, due to soil and situation.
The somewhat stout robust leafy habit, large leafy stem-clasping subserrulate stip., short broadly obovate or oval evenly and closely many-serrate subcoriaceous lfts., large leafy campanulate calyxes much dilated after flowering with broader leafy sep. often twice the length of the ripe pod., and especially the larger more strongly granulated streaked or mottled black and rufous-tawny seeds distinguish amply the present pl. from the true *O. serrata* Forsk., Webb!, &c., which I have gathered in the Canaries, and which is of an altogether more delicate habit, especially in st. and foliage, with smaller thin and membranous or flaccid narrow linear-oblong remotely deeply coarsely and irregularly toothed or cut lfts., 3 or 4 times as long as broad, with not more than 5 or 6 teeth, instead of 9 or 10, on each side the midrib, small inconspicuous entire stip., smaller scarcely leafy or dilated calyxes, with sep. scarcely longer than the pod, and plain tawny-\( y \), much more finely granulated globose seeds little more than half the size of those of *O. micrantha*. The latter pl. occurs at Gibraltar and on the island at Mogadore (var. \( \beta \)); but I never met with it in the Canaries, where it is replaced by the true *O. serrata* Forsk.

*O. parviflora* Brot. is a perfectly distinct y.-fl. sp.

*O. diffusa* Ten. differs in too many points to be safely identified with the present pl. Moris (Fl. Sard.) quotes it however along with *O. Dehnhardtii* Ten. under *O. serrata* Forsk., adding also *O. litoralis* Spr. Syst. (Curro Post.) iv. 2. 346.

Webb seems only to have known the true *O. serrata* Forsk.; and he also appends to it as syn. both *O. Dehnhardtii* and *O. litoralis* Spr.


Herbaceous annual; st. erect pale or whitish more or less hairy or woolly; l. ternate, lfts. oval obovate or oblong sharply serrate; stip. half-oval entire; fl. in hard close terminal ovate or ellipsoidal elongated leafy heads or spikes variegated gr. and w. by the prominent acuminate or cuspidate fringed sep. and enlarged hardened scariose whitish imbricated br. or 1-3-leaved stip. of the upper l. closely embracing and concealing the cal-\( t \)ube.—Brot. ii. 97; DC. ii. 163; Spr. iii. 179; WB.! ii. 29.—Herb. ann. Mad. reg. 1, \( \frac{5}{4} \); PS. reg. 2, 3, 4, ccc. ND. \( \frac{5}{4} \); GD. ccc; SD. 0. Dry barren hillsides and borders of cornfields to the E. of Funchal along the Caniço road about S. Gonçalo, the Neves, Caniço, Machico, &c.; in PS. and the GD. everywhere. April–June.—A much larger and stouter pl. than either of the
ANTHYLLIS. 133

preceding. St. erect much branched from the base, 1-3 ft. high straight and stiff with many long weak wide-spreading lower side-branches at the base, of a peculiar white or pale-y. colour. Foliage dark gr. harsh, not viscid, scentless. Fl. sessile inconspicuous nearly concealed by the fl. 1. and their white hardened chaffy scale-like close-pressed dilated stip.; cal. tubular; cor. pale purple scarcely longer than the sep. which are equal lanceolate-cuspidate fringed many-nerved or striate gr. leafy with a pale or whitish scarios base and tube. Pods light brown sessile erect small flat broadly ovate or oval with a very abruptly hooked short beak or point, pubescent upwards, 2-3 lines long, $\frac{1}{2}$-2 broad, not longer than and quite concealed by the broadly ovate cuspidate leafy many-nerved sep. Seeds 3 or 4 rather small (li millim. diam.) dark brown or black flat or compressed orbicular indistinctly notched, with a slightly prominent radicle coiled round a central hollow on each side; strongly muriculato-granulate.

7. ANHYLLIS L.

1. A. LEMANNIANA Lowe.

St. suffrutescent downwards, diffuse or decumbent, clothed with close-pressed silky hairs; 1. pinnate with an odd one, lfts. about 10 elliptic-oblong silky-hairy beneath unequal, the lowest smaller, the end odd one not larger than the middle lfts.; heads of fl. mostly double or in pairs bracteate, br. ligulate; cal. very hairy a little inflated oblong pale primrose or lemon-y., cor. cream-col. more or less tinged with pale rose or flesh-col. turning lemon-y. in drying, with the tip dark blackish crimson or atropurpureous; pod semi-oval 1-seeded.—Hook. J. of Bot. viii. 291.—Herb. or Shr per. Mad. reg. 3, 4, rr. Highest central rocky crags and peaks of the island, scarcely or only accidentally below 5000 ft.; Serra d’Agoa along the Caminho Central under Pico Grande, Webb, 1828; rocky peaks towards the Curral das Freiras, about the Pico do Areheiro, C. Lemann, 1837; a little way down the Voltas descending into the Curral das Freiras; Rib. da Metade, high up in the bed of the ravine, numerous fine pl. in fl., May 1857, Mr. N. H. Mason: but in both these two last localities it is merely an accidental straggler from the central heights above, i.e. the peaks about the Icehouse or Pico do Areheiro. I have myself observed it for several successive years flowering in all these localities except the last of all. May-July.—About a foot high branched forming a low bush or tuft of a rather pale greyish green scarcely hoary; st. slender suffrutescent at the base. L. 2-4 in. long; lfts. elliptic acute 3-7 lines long $\frac{1}{2}$-3 lines broad, above smooth full gr. silvery-hairy only at the edge, beneath silky-hairy scarcely silvery. Fl. in close heads on long slender erect or ascending ped. rather
small but very elegant, scentless, at first cream-col. faintly tinged with a pink or rose blush and tipped with dark crimson, the cal. pale primrose; in withering the narrow standard and wings become also pale primrose, and the tip of the keel turns atropurpureous or black. Heads generally geminate, the lower nearly sessile, the upper stalked.

The large heads of cream-col. or pale blush-pink crimson-tipped fl., turning as they wither into a delicate pale primrose or lemon-y., render this a very well-marked sp., although in other respects it has very much the habit of the common Europ. A. Vulneraria L. I still possess an excellent flowering spec. collected in the Serra d’Agoa in 1828 by my late friend Webb under the name of “A. montana L.” But Dr. Lemann first furnished me with living spec., although in too advanced a state of fl. for description, from the Icehouse Peak, in July 1837. It is however perfectly distinct as a sp. from either A. montana L. or the Spanish (not Canarian) A. Webbiana Hook. (BM. t. 3284); differing at first sight particularly from the latter in its truly suffrutescent habit.

Tribe II. Psoralee.

8. PSORALEA L.

1. P. BITUMINOSA L. Fedegosa.

Suffrutescent bituminous; 1. pinnately ternate, lfts. orate-lanceolate or lanceolate entire nearly or quite smooth, sometimes adpressedly pubescent chiefly beneath and at the edges, petioles and ped. closely and adpressedly pubescent; fl. in abrupt short crowded spikes or heads; sep. acuminate-awned.—Desf. ii. 191; Brot. ii. 100; Buch. 197. no. 400; Fl. Gr. t. 738; DC. ii. 219. P. bitumosa a, communis W.B.! ii. 92.—Shr. per. Mad. reg. 1, 2, ccc. PS. reg. 1, rr. In Mad. everywhere on dry rocks and banks; in PS. only near the SW. point. Throughout the year.—A small sparingly branched shr. usually 1-2 ft. high with somewhat stout and straggling firm or woody elongated branches leafy upwards. L. on rather long sometimes nearly smooth stalks. Lfts. dark gr. somewhat shining l-lj in. long, those of the lower 1. rounded-oval broader and shorter, of the upper oblong-lanceolate narrower and longer. Fl. in dense heads or clusters on long slender axillary ped. 2-4 times longer than the 1, pale greyish bl. or lilac, rather handsome. Ped. upwards, br. and nerves of cal. very dark blackish gr. Cal. shaggy with grey and black bristly hairs; sep. acuminate-subulate or produced into long awn-like points. Pod flat inde-
hiscent about half an inch long, the lower 1-seeded part not longer than the cal.-tube turgid tightly coating the seed, shaggy with erect grey and black bristles and dotted with black glands; the upper barren part or beak protruding \( \frac{1}{2} - \frac{1}{2} \) in. long slender acuminate very flat and thin straight and ensiform or slightly falcate naked pubescent at the edges, very pale brown. Seed single large ovoid compressed black shining closely adherent to the pod; hilum nearly equidistant from each end.

The whole pl. smells strongly of naphtha or bitumen.

+2. **P. Americana** L.

Suffrutescent bituminous; 1. pinnately ternate, lfts. rhomboidal or roundish-ovate repand-toothed, wedge-shaped and entire towards the base, nearly smooth glandular-dotted; petioles and ped. glandulose and more or less pubescent; fl. in pyramidal or oblong-pointed somewhat short and interrupted spikes or racemes; sep. simply acute.—Linn. “sp. 1075;” Spr. iii. 200. **P. dentata** DC. ii. 221.

3. cal. glandular and shaggy-villosé. DC. l. c. *P. americana* Buch! 197. no. 401. **P. dentata**, Holl’s List! in J. of Bot. i. 20.—shr. \( \frac{2}{2} \), per. Mad. reg. 1, r. Borders of cornfields and amongst corn in all the district between the Ribeiro Seco to the W. of Funchal and the Praia Formosa below 500 ft.; not seen elsewhere, and evidently merely naturalized. Throughout the year, but chiefly March–June.—Rootstock per. sending out every year numerous ann. though somewhat shrubby stiff and woody stout diffusely spreading or procumbent branches 1-2 ft. long, which are gr. striated and thickly sprinkled with y. or brown pellucid wart-like glands intermixed with a few hairs. Foliage rather large, dark shining gr. with a rank bituminous smell. Petioles long. Middle lft. stalked, larger than the other two which are about an inch in diam. Fl. rather small, spicate on long axillary ped., pale lilac. Spikes or rac. at length 2 or 3 in. long interrupted below, dense upwards. Br. ovate-lanceolate shorter than the striated glandulose and densely villose cal. Sep. linear-oblung. simply acute. Pod without beak 1-seeded indehiscent closely coating the seed altogether enclosed in the cal. shorter than the sep., 2 lines long, \( \frac{1}{4} \) broad, flat broadly oval densely muricato-glandulose or granulose, otherwise smooth, dark tawny-brown. Seed closely adherent to the pod oval flattened smooth tawny or yellowish-brown. **Hilum** nearer one end than the other.
Tribe III. *Trifolieae*.

9. *Trifolium* L.

Clover, Trefoil. Port. Trevo.

Sect. I. *Lagopoda* L. (*Lagopus, Phleastrum, Eutriphyllum* Ser. in DC.); throat of cal. in fr. not inflated, hairy, often closed with a pair of lip-like prominences or a raised hairy ring within.—Herbage hairy. Fl. without bractlets. Pod 1-2-seeded.

* *Lagopus* Ser. in DC. Fl. in elongated spikes or rac.

1. *T. angustifolium* L.

Silky-villose hoary; st. erect branched only at the base; lfts. narrow linear-lanceolate acuminate ciliate*; spikes hairy narrow-pyramidal or oblong-conical pointed stalked or leafless at the base solitary terminal harsh and rigid after fl.; cal. 10-ribbed glandular and villose-hairy, teeth setaceous or subulate scarcely longer than the cor., strongly nerved rigid subsinuose spreading and elongated after fl., the lowest longer than the 4 others.—Desf. ii. 198; Brot. ii. 106; Buch! 197. no. 406; Fl. Gr. t. 749; DC. ii. 189; Spr. iii. 212; WB. i. ii. 69; Seub. Fl. Azor. 49. no. 370; Koch 187.—Herb. ann. Mad. reg. 1, cc. PS. reg. 2, 3, cc. ND. §. GD. reg. 2, cc. Mad. to the W. and E. of Funchal near the sea everywhere; about Machico, the Piedade on Pn S. Lourenço, &c.; PS. along the N. coast at and beyond Camacha by roadsides in grassy spots, &c. March–May.—The largest except *T. pratense* L. of the Mad. Trefoils. St. several from the crown of the root, 6-12 in. high, erect straight simple. Whole pl. greyish, clothed with long white silky hairs. Lfts. \(\frac{3}{4}\)-\(\frac{1}{2}\) in. long, \(\frac{1}{2}\)-2 lines broad, much longer than the leafstalk. Stip. long and narrow acuminate or taper-pointed. Heads at first ovate, then elongate pyramidal acuminate, 1-3 in. long; fl. not large but rather deep rose-col. Throat of cal. closed after fl. by 2 opposite internal lip-like prominences, the teeth spreading, rather hard and pungent, copiously clothed like the 10-ribbed tube with long white silky hairs. Pods 1-seeded; seed ovoid, slightly compressed smooth bright y.; radicle not prominent.

2. *T. arvense* L. Hare’s-foot Trefoil.

Softly hairy hoary-grey; st. erect mostly branched from the base and bushy; lfts. linear-oblong or -obovate, retuse and mucronulate or slightly toothed at top; spikes oval then oblong

* With a superabundance of marked specific differences it does not seem worth while to overload the diagnoses of *Trifolium* with the less discriminative characters of the stipules.
or subcylindric obtuse, sometimes ovate, close very soft and grey or whitish-villose stalked solitary axillary and terminal; cal. very hairy, teeth setaceous or subulate feathery-ciliate nerveless longer than the cor., nearly equal, a little spreading but soft and otherwise unchanged after fl.—Desf. ii. 198; Broth. ii. 106; E.B. t. 944; H. Fl. Sc. i. 218; Sm. E. Fl. iii. 305, var. a; DC. i. 190, var. a; Spr. iii. 213; WEB. i. ii. 72; Koch 188, var. a.—Herb. ann. Mad. reg. 1, 2. PS. reg. 2, rrr. Waste rocky ground and beds of ravines here and there sparingly, about Funchal, Paul do Mar, S. Vicente, &c. March–June.—Generally from 3 to 6 in. high, mostly branched, often bushy, and always upright in Mad.; branches forked slender filiform, the main stem sometimes flexuose. Root small. Foliage grey, small and scanty; l. subsessile; upper lfts. long and narrow about half an inch long and 1–2 lines wide, lower shorter and broader. Stip. long and narrow acuminate or taper-pointed nervetd and membranous. Heads purplish-grey or hoary ½–3 inch long and ½–3 in. broad always obtuse, occasionally shortly ovate. Fl. very pale rose minute and inconspicuous concealed by the elegantly plumose or densely fringed reddish or purplish cal.-teeth which remain soft or flexible after fl. Throat of cal. simple but hairy. Seeds smooth “oval greenish-y., radicle not prominent” (Bab.).—A small rather inconspicuous pl. of short duration and scant foliage; but remarkable for its bushy upright habit and for the shape and peculiar softness and hoariness in all stages of the heads or spikes, from whence it has its English name.

** Fl. in short ovate oval or globose heads or umbels. (Phleastrum and Eutriphyllum Ser. in DC.)

3. T. Ligusticum Balb.

Hairy-pubescent dull smoky-gr.; st. erect, branches elongate diffuse procumbent or ascending; lfts. obovate retuse and sub-denticulate at top; heads oblong or ovate-oblong hairy stalked sometimes geminate; cal.-tube 10-ribbed hairy, teeth setaceous or awn-like subulate much longer than the cor. equal pilose soft and unchanged after fl.—DC. ii. 191; WEB. ii. 72; Seub. Fl. Azor. 49. no. 371. T. arrectisetum Brot. Phyt. Lusit. i. 152. t. 63. f. 1. “T. aristatum Link” (DC. and WEB.).—Herb. ann. Mad. reg. 3 (1 and 2 occasionally), 2. GD. reg. 2, cc. Dry rocky banks and mountain pastures in the Serra d’Agua, the Rabaçal, Rib. de S. Luzia, &c.; Curral das Freiras (E. side) (Dr. Lemann); up the Caminho do Meio near Funchal; at the Mount (S. Moniz); sea-cliffs! S. Vicente. GD. on tops of all the peaks and high rocky ridges abundant. June, July.—A small inconspicuous pl. of short duration, growing singly or detached here and there, softly hairy of a dull rather dark gr. Main st. erect, branches few or distant spreading from 2 or 3 to
8 or 10 in. long slender but firm dull violet or purple, the ends ascending. Lfts. softly hairy on both sides dull or dark smoky-gr. immaculate from ½ to ¾ in. long and half as broad, minutely toothed. Stip. broad at the base narrow upwards and produced into a long acuminate point nerved membranous. Heads on long or short ped. sometimes sessile with one or two l. at their base about 6 lines long and 3 or 4 lines broad sometimes in pairs of a dark dull greyish gr. tinged with purple, bristly with the long hairlike cal.-teeth but soft. Cal. unchanged after fl. except in becoming more hairy; tube pale gr. strongly 10-nerved its throat closed with a raised dark-gr. internal hairy rim or border; teeth twice the length of the tube spreading setaceous a little dilated at the base purplish or dark dull gr. not becoming rigid, the lowest scarcely longer than the rest. Cor. very small pale-pink or rose. Pod obovate 1-seeded. Seed obovate smooth y.; radicle prominent on one side.

This sp. often has the heads of fl. so distinctly oblong that it might well be placed in the preceding group * but for its close affinity in other points with the next succeeding sp.

4. T. LAPPACEUM L.

Foliage hairy-pubescent dark dull blackish gr.; st. erect with numerous cespitose elongated diffuse or prostrate side-branches from its base; lfts. villose-hairy obovate minutely sub-elliptical at top; heads hirsute hairy-webbed subglobose subsessile solitary terminal harsh rigid and spinose after fl.; cal.-tube 20-ribbed smooth, teeth triangular and 3-ribbed at the base produced into long bristly awns or subulate points fringed with long spreading hairs nearly or quite equal erect 2 or 3 times longer than the cal.-tube and a little exceeding the cor., after fl. spreading enlarged rigid somewhat horny and spinose.—Brot. ii. 104 (excl. var. Conimbriic.); Spr. iii. 214; DC. ii. 191; Fl. Gr. t. 746; Moris Sard. i. 482. t. 62. f. 1; Seub. Fl. Azor. 49. no. 372; WB. i. ii. 71; Koch 188.—Herb. ann. Mad. reg. 1, r. ND. ½; Fields or waste fallow ground near the fort at the E. end of the Praia, and a little out of Funchal to the E. along the Canico road. ND. near the ruined house. March-June.—St., sheath of stip. and cal.-tube nearly or quite smooth; lfts., free point of stip. and cal.-teeth softly hairy; petioles sprinkled more or less with hairs. Foliage a peculiar dark lurid or smoky blackish-gr. Main stem erect not above 5 or 6 in. high; side-branches prostrate or ascending, often a foot long or more, spreading widely all round on the ground, mostly straight and simple. Lfts. rather small and short, softly and copiously hairy, stip. long and narrow acuminate taper-pointed ribbed or striate. Heads rather large and nearly globose. Fl. white with a faint pink blush. Cal.-teeth after fl. hard and almost pungent, triangular
and very strongly 3- or 5-ribbed at the base, their long setaceous points fringed or clothed with long distinct spreading interlacing hairs: throat open but thickly fulvous-hairy. Pods always 1-seeded. Seed roundish-oval with the radicle a little protuberant on one side, yellowish-brown or tawny-

5. T. MARITIMUM Huds.

Whole pl. somewhat hairy dark full gr.; st. branched throughout diffuse or procumbent; lfts. oblong-obovate nearly or quite entire; uppermost l. opposite in pairs; heads naked slightly pubescent half-oate shortly-stalked terminal, harsh rigid and spinescent after fl.; cal.-tube 10-ribbed oboconic, swollen tumid and subpubescent upwards, teeth more hairy shortly ciliate unequal shorter than the cor. erect subulate, after fl. spreading subulate broad leaflike triangular acute subspinescent, the lowest one longest 3-nerced deflexed, the rest 1-nerced.—EB. t. 220; Sm. E. Fl. iii. 303; DC. ii. 192; Koch 187. T. irregularare "Pourr." Spr. iii. 215.—Herb. ann. Mad. reg. 1, rtr. PS. reg. 3, r. About the rocks a little above the "Crater" between the Gorgulho and E. end of the Praia, sparingly and in one spot only; first found in 1837 by Dr. Lemann. In PS. plentifully on steep grassy slopes near the top of Pico do Facho on the E. side, from $\frac{1}{4}$ to $\frac{1}{2}$ a mile below the rocky summit; also at the Fonte das Pombas on the N. coast near the Nino do Guincho. April, May.—Whole pl. more or less but not copiously hairy-pubescent, rather dark but bright full gr. with a somewhat rank coarse succulent habit when luxuriant. St. diffusely spreading nearly erect 6-12 in. long. Lfts. narrow and oblong, often an inch long, hairy on both sides, scarcely toothed; the lower broader and short, on slender stalks. L. alternate; but a little below the head there is always a pair of opposite more shortly stalked l., characteristic of the sp., though obtaining also in T. squarrosum L. St. and stip. mostly hairy throughout. Stip. long and narrow membranous and nerved at the base, produced into long gr. herbaceous points. Heads rather large in fruit, naked or inconspicuously pubescent. Cor. pale-pink or rose, longer than the cal.-teeth, mostly deciduous. Tube of cal. pale, only slightly pubescent upwards, 10-striate but not quite to the top, the throat closed by 2 opposite lateral lip-like protuberances; teeth short more copiously though still shortly ciliate-pubescent, after fl. much enlarged leafy at their base, dark gr. contrasting with the pale tube and throat, stellate somewhat like the cal. of Lotus major Sm.; the whole resembling the head of a Dipsacus in miniature.

Very distinct from any other Mad. sp. by its dark full gr. herbage, succulent often rank coarse habit, large oblong lfts., opposite uppermost l., and foliaceo-stellate cal. It comes un-
doubtedly very near *T. squarrosum* L. which I have gathered in Grand Canary; but it is perfectly distinct.


More or less pubescent scarcely hairy, dull gr.; st. erect branched succulent; lfts. large entire oval or oblong-oval, the upper elliptic-lanceolate; heads *large globose* or *ovate* oblique *densely felted sessile* mostly bracteate at the base by a pair of *floral leaves*; cal. 10-nerved hairy, teeth *soft setaceous ciliate unequal*, the lowest one much longer than the rest, but *not half the length of the tubular monopetalous cor.*; *all nearly erect in fr.*—Desf. ii. 194; Brot. ii. 105; H. Fl. Sc. i. 218; EB. t. 1770; Sm. E. Fl. iii. 302; DC. ii. 195 (var. a); Koch 184; Bab. 75.—Herb. per. Mad. reg. 1, semicult., *rrr*. Grass-plots at the Quinta do Valle, introd. originally from England with grass-seeds many years ago, and now perfectly established, yet not apparently self-propagating or spreading. June.—St. 10 to 18 in. high, erect or spreading. Stip. broad ovate nerved with an abrupt subulate or awn-like point. Heads large subelongate or *3-lobate* bracteate by the large dilated stip. of a pair of l. at their base, mostly solitary and sessile rarely geminate or stalked. Throat of cal. with a raised hairy ring inside. Fl. conspicuous fragrant bright rose-purple of varying intensity, quite overtopping and hiding the cal.-teeth which remain unchanged after fl. soft or flexible.

Occasionally cultivated, like common Lucerne (*Medicago sativa* L.), about English houses as an artificial grass or fodder for cattle.

7. **T. striatum** L.

Hairy-pubescent *hoary*; st. somewhat erect or spreading and procumbent; lfts. obovate or obovate-oblong minutely denticate at top; heads ovate or oval, oblong in fr., dense solitary sessile terminal and lateral, *sheathed or bracteate* at the base by the *broad dilated stip. of the uppermost l.*, in fr. *botryoidal*; cal.-tube *10-ribbed ventricose very hairy*, teeth *nearly smooth subulate awn-like or setaceous straight unequal about as long as the cor.*; tube in fr. *oval-globose* or *urecolate*, teeth *slightly rigid.*—Brot. ii. 107; H. Fl. Sc. i. 219; EB. t. 1843; Sm. E. Fl. iii. 307; Buchl. 198. no. 409; DC. ii. 192; Spr. iii. 216; WB. 173; Koch 188; Bab. 70, 77.—Herb. ann. Mad. reg. 1, 2, ccc. PS. reg. 4, r. Has not occurred in any of the Desertas! Rocky sunny places in Mad. everywhere below 1500 ft. In PS. observed only at the S. base of the rocky summit of Pico do Facho. March—May.—Whole pl. *softly downy and hairy, greyish*. St. mostly more or less erect, 3-9 in. long, at least ultimately hard and stiffish. Lower lfts. short and broad, upper narrower and lanceolate sometimes acute,
their teeth very small and scarcely visible without a lens, often entire; veins equal and straight throughout i.e. not arched at the margins. Stip. ovate setaceo-acuminate, broad membranous and nerved at the base especially the uppermost. Heads mostly quite sessile, and even when terminal or when shortly peduncled accompanied by one or more l., the broad dilated ovate stip. of which closely embrace them. Cor. pale rose permanent. Cal.-teeth erect or slightly spreading very narrow acuminate, after fl. subulate straight and parallel, somewhat stiff but scarcely pungent. Tube strongly nerved turgid contracted at top and bottom densely hairy; throat open but a little contracted and hairy; the teeth nearly smooth or with only a few scattered hairs. After fl. characterized by the pale or whitish heads and remarkably turgid urceolate berry-like cal. with straight erect or very slightly spreading awn-like stiffish teeth. The cor. never drops, but remains in a brown withered state, concealing the throat of the cal. to the last. Pods 1-seeded. Seeds globose-ovoid turgid y. pale; radicle not prominent.

8. T. SCABRUM L.

Hairy-pubescent dull hoary gr.; st. procumbent flexuose; lfts. obovate or obcordate denticulate, their veins thickened and curved at the margins; heads rather small ovate sessile bracteate at the base solitary lateral and terminal, in fr. more oblong hard and prickly; cal. 10-ribbed hairy, teeth rather large and conspicuous acuminate-cuspidate as long as or longer than cor., the midrib recurrent very strong and prominent, in fr. widely spreading or recurved very hard and prickly with the tube cylindrical.—Desf. ii. 189; Brot. ii. 107; H. Fl. Sc. 1. 219; EB. t. 903; Sm. E. Fl. iii. 306; DC. ii. 192; Spr. iii. 217; WB. i. ii. 74; Seub. Fl. Azor. 49. no. 373; Koch 189; Bab. 77.—Herb. ann. Mad. reg. 1, cc. PS. reg. 2, 3, 4, ccc. ND. 5; GD. reg. 2, rr; SD. reg. 2, rr.—Rocky dry sunny waste ground near the sea general; along the Canico road a little out of Funchal; Ptn S. Lourenço about the Piedade, &c., plentifully. In PS. hillsides everywhere up to the highest peaks. March–June.—An inconspicuous insignificant little pl. with rather dull greyish herbage and strong stiff woody often purplish-brown st. from 3 to 6 or 8 in. long, which are sometimes erect, and mostly flexuose or zigzag. Lfts. dark dull gr. pale-spotted somewhat harsh or coriaceous. Stip. small ovate abruptly pointed or acuminate nerved submembranous. Whole pl. hairy or downy, but remarkably harsh and stiff, the heads particularly after fl. becoming very rigid and almost prickly. Fl. small inconspicuous white. Cal.-tube pale, the throat closed by 2 callous lips, teeth gr. sharp hard and stiff. Pods 1-seeded; seed ovate oblong tawny-y.; radicle not prominent.
9. **T. Cherleri L.**

Softly villose dull dark hoary gr.; st. procumbent subcespite; lfts. obcordate or obovate minutely denticate; heads hemispherical softly and densely villose solitary terminal sessile sheathed at the base with three large rounded bract-like stip. forming a sort of cup-like involucre; cal.-tube and teeth silky-villose, the latter finely setaceous straight equal (very) villose, soft or flexible, as long as or a little longer than the cor., after fl. elongated otherwise unchanged.—Desf. ii. 197; Brot. ii. 104; Buch! 197. no. 406; DC. ii. 196; Spr. iii. 216; Fl. Gr. t. 745; Moris Fl. Sard. i. 480; WB. ii. 70; Koch 188.—Herb. ann. Mad. reg. i. (upper part). r. In rocky or stony barren ground to the E. of Funchal a little beyond the chapel at the top of the hill on the Canico road; and hills immediately above the Brazen Head, abundant April, May.—A small rather inconspicuous pl. with subcespite st. not above 6 or 8 in. long, all over densely clothed with whitish hairs. Lfts. rather small and foliage altogether scanty. Veins of lfts. straight and simple. Stip. broadly ovate pale or whitish membraneous with dark nerves; their short subulate tip herbarceous gr. and more or less recurved. Heads large hoary densely villose soft in all stages, semiglobose and somewhat flattened at top, seated in and closely embraced by a curious sort of shallow cup (like that of *Euphorbia segetalis* L.) formed by the 2 rounded enlarged pale or whitish green-edged gr.-nerved and gr.-tipped or mucronate stip. of the single fl. leaf and a 3rd internal br. or half-stip. without any l. opposite the other two. Fl. white with a faint blush or pink tinge sometimes in the bud, about the length of the straight setaceous densely villose cal-teeth. Cal.-tube pale obscurely 20-veined or striate not turgid, clothed like its teeth with long silky hairs; throat open but densely villose. Pods 1-seeded rather large turgid. Seed oval plump rufescent.

**T. sphaerocephalon** Desf. ii. 201. t. 209. f. 2 is probably, as remarked by Webb, a mere form of the present pl. with rather longer sepals than usual.

10. **T. Stellatum L.** Starry Trefoil.

Softly villose hoary; st. diffuse or decumbent loose and straggling; lfts. obcordate wedge-shaped or subtriangular slightly denticate at top; heads densely villose globose somewhat few-fld. lax stalked solitary terminal; fl. pedicelled; throat of cal. closed with hairs, teeth linear-lanceolate somewhat broad or leafy 3-nerved and reticulated at the base finely acuminate erect straight equal scarcely longer than the cor., after fl. long spreading stellite soft or flexible densely villose.—Desf. ii. 199; Brot. ii. 107; Buch! 197. no. 407; EB. t. 1545; Sm. E. Fl. iii. 304; Fl. Gr. t. 750; DC. ii. 197; Spr. iii. 213; WB. ii. 70; Koch 187; Bab.
76.—Herb. ann. Mad. reg. 1, §. Dry sunny hills to the E. of Funchal, as between the Caniço and Camacha roads about a mile out; at the fossil-bed and hills near the Piedade and about the whole of Pr. S. Lourenço, general. March-May.—Greyish, clothed in all parts with copious long soft white hairs. St. 4-6 in. long weak and loosely spreading. Foliage scanty; lfts. not large on long leafstalks. Stip. large broadly ovate or oval short spiculate and slightly toothed membranous with gr. nerves hairy. Heads large on rather long naked stalks loosely declining with less crowded somewhat fewer fl. which are more distinctly stalked than usual. Cor. pale rose (cream-coloured, Bab.) small yet as long as or very little shorter than the long slender cal.-teeth. Cal.-tube 10-ribbed villose; the teeth after fl. much and remarkably enlarged conspicuous and elegant star-like with the long rays fringed copiously with long white hairs, its throat or centre of a rich dark reddish-purple, in the midst of which is a prominent compressed tuft of densely interwoven white woolly hairs completely closing the mouth of the tube. This white tuft or eye relieved by the dark purple or red ground gives a very peculiar flower-like appearance to the head in fr. Pods 1-seeded. Seed "elongate-ovate red chestnut" (Webb).

II. Trichocephalum Koch; throat of cal. not inflated, open simple naked and not hairy within.—Herbage hairy. Fl. without bractlets; fertile few (1-5), sterile or abortive upper forming a terminal deflexed coma. Pod 1-seeded splitting the distended membranous cal.-tube.

11. T. Subterraneum L.
Softly hairy-pubescent pale bright gr.; st. prostrate or procumbent; lfts. obcordate nearly entire; heads few (2-5)-fl. lax stalked axillary lateral, after fl. deflexed and rooting; fl. stalked slender elongate deflexed after fl., the lower fertile with long filiform hairy nearly equal cal.-teeth shorter than the cor., the tube smooth, inflated and splitting longitudinally in fr.; the upper fl. abortive, presently becoming rigid 5-pointed stellate crowning the heads with a deflexed coma, and fixing or burying them in the soil.—Desf. ii. 196; Broth. ii. 103; E. 1048; Sm. E. Fl. iii. 300; DC. ii. 202; Spr. iii. 218; WB. i. 76; Hook. Fl. Br. (ed. 5) i. 79; Koch 189; Bab. 77.—Herb. ann. Mad. reg. 1, 2, §. Chestnut woods and mountain pastures at and above the Mount; Camacha about the church and on the Achada, &c.; Machico, reg. 1, 2, abundant. March–June.—Whole pl. clothed with soft white close not very long hairs; st. numerous branched 3-12 in. long, running amongst grass close to the ground, and fixing themselves in it by means of the deflexed axillary ped. Lf.-stalks rather long. Lfts. large bright but rather pale gr. with a pale transverse irregular band below the middle, mostly entire or
very obscurely denticulate at top. Stip. broad ovate large and conspicuous, their filmy white or pale lower half streaked longitudinally with dark purple, the upper half gr. herbaceous. Fl. 2-5, in oblong or obversely pyramidal heads, remarkably long and slender; cor. rather large much exceeding the cal. white i.e. very pale lemon or cream-colour, sometimes tinged with very pale rose, the standard faintly streaked with pale pink or purple. Tube of cal. long slender smooth pale lemon-gr. below, bright reddish or purple upwards, the red in streaks or close-set striæ; the long hairy softly setaceous or filiform teeth bright gr., nearly equal, and as long as the tube; the throat open naked. Fl. at first close and erect, but soon spreading and deflexed, discovering in their centre a small conical knob composed of close-pressed fleshy gr. points (abortive fl.). These when the ped. become de­flexed in fr., become themselves deflexed and starry at the tips, increasing in size and rigidity, forming a kind of white fleshy coma closely embracing the fr. of the lower (now uppermost) fertile fl., which they finally bury and root firmly in the soil; an in. or more beneath the surface, when the whole head assumes a globose shape. By the time this rooting coma has forced itself down into and taken firm hold of the soil, the seeds of the originally lower (now uppermost) 3 or 4 fertile fl. are found ripe, one large orbicular dark brown or black and shining in each smooth compressed orbicular pod, which is coated by the now inflated cal.-tube splitting longitudinally, and all closely embraced by the stiff fleshy white root-like transformed abortive fl. forming the coma.

III. Vesicaria L. (Vesicastrum Ser. in DC.); throat or upper lip of cal. after fl. inflated vaulted and bladdery, simple and naked within.—Herbage nearly or quite smooth. Fl. bractleted, the lowest bractlets forming an involucre.


Nearly smooth cespitose full gr.; st. creeping stoloniferous; lfts. obovate or obcordate closely and elegantly nervoso-striate finely and sharply serrulate; ped. axillary considerably longer than the l.; heads in fl. large hemispherical, bractlets of lowest ring of fl. forming a distinct many-cleft involucre equaling the cal. of lowest fl.; fl. all nearly or quite sessile; heads in fr. large compactly globose velvety, upper part of cal. inflated globose bullate scarious reticulated velvety all over, the 2 upper teeth setaceous equal sub-inconspicuous shorter than the prominent conspicuous permanent cor.—EB. t. 1050 (bad); Brot. ii. 109; H. Fl. Sc. i. 219; Sm. E. Fl. iii. 308; DC. ii. 202; Spr. iii. 217; Koch 189; Bab. 78.—Herb. per. Mad. reg. 1, cc. Dry sunny slopes near the sea; Pta. S. Lourenço, at the bottom of Labra crossing over to the N. side in the narrowest part, and at the Piedade below the fossil-bed
in the turf above the sandy beach; Machico, Rib. do Seixo, St. Cruz, Porto Novo, Caniço and Cabo Garajão, in sunny waste ground, roads and paths most abund.; also at Pto da Cruz in the north. May-Sept.—Plant gregarious cespitose with stoloniferous shoots forming perennial beds or patches. Habit or foliage most like that of T. repens L. but smaller. Root strong tough thick and woody, long and tapering, striking down deep into the soil. St. 3-12 in. long creeping interlacing and running partly under ground, throwing out at frequent intervals strong tough and fibrous roots, and thus forming large perennial beds or patches. Herbage bright full gr. nearly smooth; st. stip. and upper surface of lfts. quite smooth; ped. petioles and midrib beneath especially of young l. a little hairy. Petioles distinct slender filiform often elongate. Lfts. small stiffish unserrated, elegantly striate especially beneath with numerous straight regular close-set parallel forked nerves, more distinct or thickened towards the margins. Stip. ovate acuminate or lanceolate finely pointed whitish with gr. nerves. Ped. 3-4 in. long curved ascending. Heads large hemispherical in fl., globose in fr., with a large distinct multifid involucre formed of the confluent linear-lanceolate bractlets of the lowest ring of fl. which are as long as their calyces. Fl. rose, much longer than the cal.-teeth. Standard broad flat truncate or very obtuse streaked with very fine deeper pink lines; wings short, keel still shorter. Heads in fr. nearly or quite half an in. in diam. compactly and neatly globose, the inflated cal. being close-packed and half immersed like the grains (drupes) of a raspberry or blackberry, acquiring usually a pink or rosy, sometimes blood-red or crimson tinge, resembling Hautboy strawberries, or peaches; whilst the dried-up brown cor., standing out straight on all sides from the soft not densely velvety surface, give them also the appearance of those short-spiked balls called Morning-stars (Morgensterne), formerly used in battle. Pods quite enclosed in the inflated cal. 1-2-seeded orbicular. Seeds globose or orbicular i.e. somewhat flattened, varying from y. through tawny or chestnut to dark brown or blackish. In the 2-seeded pods they are usually less globose than in the 1-seeded.

I find, like Brotero, the pods usually 1-seeded. Curtis, Smith, Babington, and De Candolle describe them as 2-seeded.

Though not mentioned in WB.'s Canarian Flora, T. fragiferum L. occurs in such profusion in the neighbourhood of Laguna in Tenerife, especially along the road to Las Mercedes, that it could not have been unseen, and therefore was most probably confounded with the next sp., which, on the other hand, I never met with either near Laguna or elsewhere in Tenerife. Both sp. have been sent, however, to BH. and HH. by Bourgeau from the
Canaries; and I have myself lately found abundantly *T. resupinatum* L. in Gomera, an island never visited by MM. Webb and Berthelot.

13. *T. resupinatum* L.

Quite smooth dark full gr.; st. numerous prostrate or procumbent; lfts. obovate or obcordate finely and sharply serrulate; ped. axillary rather short about as long as rarely somewhat longer than the l.; heads in fl. small flat-topped umbellate with the involucre or bractlets very minute, fl. shortly stalked radiant, the standard resupinate or below the keel; heads in fr. large naked or only slightly pubescent not velvety subglobose somewhat loosely botryoidal, the upper part of cal. much inflated saccate conspicuously 2-horned beaked lageniform deflexed scariosus conspicuously reticulated pubescent chiefly at the base, with 2 short prominent divaricate conspicuous setaceous teeth. —Brot. ii. 109; DC. ii. 202; EBS. t. 2789 (fl. incorrect); Spr. iii. 218; WB. i ii. 77; Koch 100; Bah. 79.—Herb. ann. Mad. reg. 1, r; PS. reg. 3, r. Dry sunny grassy places near the sea; Machico at the E. and W. end of the beach, abundant in the Plane-tree public walk or Praça. Ascent of Cabo Girão (Dr. Lippold); in PS. at the Fonte das Pombas and N. side of P. de Juliana. May-Aug.—Root strong white fleshy, merely annual. Herbage quite smooth dark gr. St. 2-12 in. long radiato-prostrate but not rooting, very numerous matted in the centre straight slender. Lfts. bright full gr., barred or spotted, remotely nervèd as usual, not closely striate. Stip. ovate acuminate or lanceolate finely pointed. Fl. deep rose inclining to purple; conspicuous in radiant umbellate heads like little double daisies with a pale eye, the deep rose-col. standards forming the rays, and the pale pink-edged wings and keel the disk or iris, the centre or pupil of which is again deep rose, consisting of the unexpanded buds. Ped. sometimes shorter rarely longer than the l. mostly erect sometimes in fr. deflexed. Heads small in fl., large in fr. Bractlets or involucre reduced to an inconspicuous ring of very minute transversely oblong truncate shortly ciliate-toothed pale whitish membranous scales, not longer than the very short pedic. of the outer or lowest row of fl. Standard alone resupinate from a twist in its claw, deep rose with darker lines. Two upper teeth of cal. linear-setaceous closely parallel equal pale with a large dense silky-villose tuft of white hairs at their base, the 3 lower teeth larger broader divergent equal deep gr.; tube pale or whitish, smooth in fl., pubescent in fr. all over. Heads in fr. half an in. or more in diam. of a peculiar light transparent apple-gr. not streaked or tinged with red, the large bladdery calyxes deflexed imbricate and standing out distinctly like a bunch of filberds, the 2-horned vaulted upper lip quite concealing the remains of the cor. strongly conspicuously and
TELEOILLM.

Elegantly reticulated, resembling short ovate inverted wine-flasks split down in front. Pod very short round 2-seeded.

EBS. t. 2789 wrongly represents the fl. in the heads with the standard (as usual) superior instead of inferior or resupinate. Otherwise the figures are good and characteristic, and in the 2 magnified views of the fl. at the bottom of the plate, the relative position of the sep. and standard (not of the wings and keel) is perfectly correct.

14. T. TOMENTOSUM L.

Smooth light gr.; st. prostrate or procumbent; lfts. obovate or obovate-wedgeshaped sharply and finely serrulate; ped. axillary short distinctly shorter than the l., often none; heads in fl. small hemispherical with the involucre or bractlets very minute or obsolete; fl. sessile twice as long as cal. with obsolete or scarcely any bractlets; heads in fr. compactly globose densely cottony or velvety, upper half of cal. inflated globose or oval bullate scarious reticulated closely velvety, the two upper short divergent and deflexed setaceous teeth minute inconspicuous and like the remains of the cor. concealed in the thick short cottony tomentum or inflated cal.—Desf. ii. 200; Brot. ii. 110; Spr. iii. 218; DC. ii. 203; Moris Sar. i. 495. t. 64; Koch 190; WH. ii. 77.—Herb. ann. Mad. reg. 1, 2, 4, 5, 6, 7; PS. reg. 2, 4, 5. Mad. about Funchal near the sea to the W. by roadsides, in paved walks, and waste ground in dry sunny places. PS. roadside at Camacha and summits of Pico do Castello, P. de Juliana, and P. do Cabrito. March—May.—Root sometimes strong but distinctly only ann. fibrous beset with granular tubercles. Habit like T. glomeratum L. Foliage pale gr. altogether smooth. St. prostrate but not creeping, 2–4 in. long, rarely amongst herbage 5 or 6 in., unbranched or nearly so, except at their base. Stip. ovate or lanceolate acuminate. Ped. about half the length of petioles, often wanting, always distinctly shorter than the l. Fl. nearly white with the faintest possible blush of pink or rose, as long again as the cal. and its teeth together. Involucre reduced as in T. resupinatum L. to a ring of minute short truncate scales. Heads after fl. enlarged to the diam. of 4–5 lines, perfectly and closely or compactly spherical, white tinged with pale gr. and reddish on one side like a peach in miniature, the inflated cal. on one side the head being reticulated with red veins, otherwise nearly white from the dense velvety tomentum. Remains of cor. like the cal.-teeth not prominent or indeed, except partially or here and there, visible. Pod enclosed 1-seeded. Seed subglobose pale greenish-y.

Differs from T. resupinatum L. in the nearly or quite sessile
white cottony or thickly downy close compact heads, with the 2 upper teeth of the inflated cal. after fl. not porrected awn-like or conspicuous, and in the pale or quite white fl. It is also a much more delicate and smaller pl. The heads are more densely or closely velvety than in T. fragiferum L.

Bourgeau's Canarian spec. in BH. from Gomera, marked "T. tomentosum L. Bourg. Pl. Can. no. 168, Ins. Gomera," are certainly T. resupinatum L. But I gathered in Feb. 1858 the true T. tomentosum L. in Gomera myself; and I also met with it in Hierro, Lanzarote, Fuerteventura and Gr. Canaria.

IV. Trifoliastrum Ser. in DC.; throat of cal. in fr. not inflated or closed, simple and naked within.—Herbage smooth. Fl. crowded sessile erect bractleted, bractlets distinct not forming an involucre.

15. T. GLOMERATUM L.

Wholly smooth bright full gr.; st. procumbent or ascending; lfts. obovate or obcordate sharply and finely toothed; heads globose sessile axillary and terminal, distinct and usually remote sometimes geminate, quite smooth in all stages; fl. dense crowded erect nearly or quite sessile; cal. smooth 10-ribbed unchanged in fr., teeth nearly equal cordate-ovate short very acute or sharply setaceo-acuminate, leaf-like 3-nerved and reticulated at the base, spreading or reflexed; cor. conspicuous longer than cal., standard much longer than the wings striate.—Desf. ii. 200; Brot. ii. 108; EB. t. 1063; Sm. E. Fl. iii. 307; Buch! 197. no. 408; DC. ii. 198; Spr. iii. 209; WB. i. ii. 74; Seub. Fl. Azor. 49. no. 375; Koch 191; Bab. 78.—Herb. ann. Mad. reg. 1, 2, 3, c. PS. reg. 4, 5. Dry rocky waste ground everywhere to the E. and W. of Funchal, at Camacha, on the Caminho central under Pico Grande, &c. In PS. on summits of P. do Facho, do Castello, d'Anna Ferreira, &c. Febr.—June.—Whole pl. quite smooth of a bright full lively gr. St. slender filiform stiff and wiry 2–12 in. long straight flexuose at the divisions. Foliage rather scanty, the l. remote not crowded; the upper opposite. Lfts. unspotted not large, toothed nearly all round, with the teeth very sharp and fine formed by the shortly excurrent nerves. Stip. entire ovate-acuminate produced into a long point membranous nerved. Heads of fl. densely hemispherical or globose, mostly quite sessile distinct solitary, occasionally geminate, rarely shortly stalked. Cal. smooth in all stages, the teeth auricled or broad and dilated at the base full gr. and leaf-like finely awn-pointed, a little stiff or firm but scarcely rigid in fr. Cor. pale rose or pink permanent twice the length of the cal.-tube, standing out all round
the heads, which in fr. resemble little gr. balls stuck full of
short brown spikes; much as in *T. fragiferum* L., but with
the little spikes more numerous or crowded. Pods 2-seeded
enclosed within the cal.-tube. Seeds tawny-yellow "ovate-
reniform" Webb; radicle prominent.

16. **T. suffocatum** L.

Smooth bright full gr. ; st. prostrate short mostly buried in the
soil, the l. alone, and fl. partially, protruding; lfts. obovate or
obcordate sharply and finely toothed upwards, entire below
the middle; heads pale gr. irregularly diffusely or indetermi-
nately globose, axillary dense closely sessile, approximate or
crowded, often agglomerate or confluent at the base of the stems,
neatly or quite smooth in all stages, echinulate but not rigid;
fl. densely crowded erect sessile; cal. nearly or quite smooth
10-striate, unchanged in fr., teeth nearly equal ovate-acuminate
leaf-like 3-nerved not reticulated at the base, falcately spreading
or recurved often obliquely towards one side; cor. minute inconspicuous much shorter than the cal.—EB. t. 1049; Sm. E. Fl.
iii. 209; DC. ii. 198; Broth. Phytogr. Lusit. 158. t. 64; Spr.
iii. 210; WB. ii. 75; Seub. Fl. Azor. 49. no. 374; Hook. Br.
Fl. (ed. 5) i. 81; Koch 191; Bab. 78.—Herb. ann. GD. reg. 2,
m. Summits of one or two of the highest peaks in the Great
or Middle Deserta. May, June.—A minute scarcely discern­
ible inconspicuous pl. with very short stunted st. close-pressed
to or buried beneath the surface, often leaving only the l. above
ground. Root long slender fibrous. L.-stalks slender filiform
longer or shorter as the st. are more or less buried in the soil.
Lfts. small immaculate strongly nerved. Stip. broadly ovate
acute or shortly pointed. Heads of fl. tufted and mostly irre­
gularly crowded or confluent in the centre of the pl., like little
bus or the prickly husks of the Spanish chestnut. Fl. nu­
merous densely crowded. Cor. pale rose, much shorter than
the gr. leafy cal.-teeth, which are rather longer and more gra­
dually acuminate than in *T. glomeratum* L. and not auricled
or cordate at the base. Cal.-tube somewhat feebly striate,
thin and membranous, sometimes a little hairy, not hardened
inflated closed or otherwise changed in fr. except in becoming
ovate. Pods oblong 2-seeded; "seeds roundish, radicle promi­
nent." (Bab.) Whole pl. often not more than 1–2 in. in diam.,
the st. rarely exceeding 2 or 3 in. in length. The fl. are rather
aggregate in dense axillary tufts or clusters than in distinct
determinate globose or hemispherical heads as in *T. glomeratum
L.*, with the cor. very small and inconspicuous.

Bourgeau's Canarian spec. under this name in BH. are by
some mischance nothing but *T. glomeratum* L.
V. Lotoidea L.; like the last section; but fl. lax, distinctly stalked, subumbellate, mostly deflexed in fr., and pod 2-6-seeded.

17. T. repens L. Dutch or White Clover.

Smooth dark full gr.; st. creeping diffuse, their ends ascending, solid; lfts. obcordate obovate or oval, finely and minutely toothed, the veins excurrent; heads at first hemispherical on long axillary ped. longer than the l.; fl. distinctly stalked and somewhat lax, subumbellate, in fr. deflexed; pedic. of upper fl. as long as cal.; cal. smooth, unchanged after fl., teeth lanceolate acuminate erect unequal not more than half the length of cor.; pods linear sessile knobbed 3-4-seeded.—Brot. ii. 108; H. Fl. Sc. i. 218; EB. t. 1769; Sm. E. Fl. iii. 299; Buch 197. no. 404; DC. ii. 198, 9 (a and β); Scub. Fl. Azor. 49. no. 376; Koch 191; Bab. 78.—Herb. per. Mad. reg. 1, 2, 3, c. Roadsides and waste ground everywhere about Funchal, the Mount, Camacha, &c.; in the Ourral das Freiras, Rib. Frio, &c. Nearly at all seasons, chiefly Febr.–July.—St. 6-12 in. long hard firm solid within, weak and loosely straggling, rooting here and there, their ends ascending. Lfts. full gr., mostly pale- or dark-spotted. Stip. entire membranous ovate or oblong, abruptly acuminate. Heads on long axillary curved ascending ribbed or angular light-gr. juicy stalks, at first flat-topped, presently subglobose. Fl. numerous lax rather conspicuous, white or cream-col., often more or less deep pink or rose-purple; standard much longer than the wings acute striate; in fr. loosely deflexed. Pod included, sometimes monstrously protruded like a horn or leaf. Seeds unequally ovoid tawny.

VI. Lupulina L. (Chronosemium Ser. in DC.); throat of cal. in fr. not closed or inflated, simple and naked within. Standard in fr. enlarged dry membranous sulcate or striate deflexed over the stalked exserted 1-seeded pod.—Foliage smooth. Fl. y.


Main st. erect, branches procumbent more or less hairy or pubescent; lfts. smooth obovate-wedgeshaped often slightly retuse, the middle one distinctly stalked; heads rather large at first hemispherical then oblong-globose or oval and obtuse dense many-fl. (20-40) axillary stalked; ped. stiff straight erect or erecto-patent longer or shorter than the l.; fl. numerous crowded, deflexed and imbricated downwards in fr., their pedic. shorter than the cal.-tube; style not half the length of the pod; standard considerably longer than the wings, strongly furrowed broadly rounded or scallop-shaped, flattened and not connuplicate.
or keeled at the back, vaulted deflexed and curling in over the pod.—Linn! Sp. Pl. (ed. 1) ii. 772; Brot. ii. 110; EB. t. 945; Hook. Fl. Sc. i. 219; Sm. E. Fl. iii. 309; Buch! 198, no. 411 (sec. ex. in BII. "Downe 1776"); DC. ii. 205; WB. ii. 79; Seub. Fl. Az. 49, no. 377; Koch 194; Bab. 79. T. campestre "Schreb.;" Spr. iii. 210. T. agrarium Huds., Curt. (not Linn.). "T. pra­ tense" luteum &c. Vaill. Par. 196, t. 22. f. 3" (Sm.). Melilotus agraria Desf. ii. 193 (excl. syn. Linn.). — Herb. ann. Mad. reg. 1, 2, 3, ccc. PS. reg. 2, 3, 4, ccc. GD. reg. 2, c.—Dry waste ground, mountain pastures, hills and rocky peaks everywhere.

At most seasons, but chiefly March–June.—St. slender but stiff and firm; the primary or main st. always erect though often very short, with diffuse or decumbent mostly prostrate or procumbent branches 6 in.–2 ft. long spreading widely all round, sparingly subdivided and often dark violet or purple. St. pedicels stip. ped. and cal. more or less hairy or pubescent, sometimes nearly smooth. L. distant few and small in proportion; l.-stalks 2–3 lines long; lfts. 2–5 lines long, dark gr. unspotted, very slightly glaucous, smooth or only occasionally sprinkled with a few hairs, the upper in Mad. often subacute or at least not retuse. Stip. half-ovate acute entire, rounded but not auricled or cordate at the base. Ped. longer or shorter than the l. Heads rather large 4–5 lines in diam., at first lemon-y., afterwards becoming tawny-brown or chestnut, dry and scarious, at first hemispherical but soon becoming globose or shortly oval, approaching more or less to oblong, and very obtuse or truncate. Cal. pale gr., 2 upper teeth short ovate, 3 lower long linear-setaceous, subpilose unchanged after fl. Fl. small lemon-y., the lower sessile, the upper shortly stalked. "Wings divaricate," Koch. Standard much enlarged after fl. becoming tawny-brown dry and scarious, arching or curling down over the pod. Pod narrow smooth elliptic pointed at each end. Style ½–¾ the length of the pod, hooked at top. Seeds 1 or 2 "mostly 2" (Brot.) y. oval, the radicle not prominent.

The prostrate or procumbent and more erect forms of this pl., with ped. longer or shorter than the l., are often different stages only of the same individual; and all attempts to distinguish them by verbal definition are frustrated by endless intermediate transitional variations. The ordinary form however in Mad. is certainly that more diffusely spreading or procumbent state, with ped. longer than the l., to which belong the following synonyms: T. procumbens Linn! l. c.; EB. t. 945; Brot. ii. 110; WB. ii. 79; Bab. 79; var. a majus Koch 194; var. β campestre Ser. in DC. ii. 205; var. a Hook. Br. Fl. (ed. 5) 81. T. campestre "Schreb.;" Spr. iii. 210. T. agrarium var. foliis non
retusis, Madera 1776 Downe (marked also *T. procumbens*) BH! *T. procumbens* Buch! 198. no. 411.

A 2nd more erect form, with ped. shorter than the l. (var. f Hook. Br. Fl. l. c.), occurs only occasionally and at higher altitudes on rocky, moist or shady banks.

A 3rd cognizable but equally transient or trivial local form of the pl. is that dwarf state (*§ nanum* Ser. in DC. ?) which grows in short turf whether in maritime or mountain open sunny pastures, with short st. 2 or 3 in. long and numerous crowded heads of fl. Two sheets of such ex. in Herb. Linn., marked simply with the numerals 38 and 39, have been pinned by their illustrious owner to his authentic "38 *procumbens*.

A third sheet, without any mark or number, containing 3 spec. of the very same form, has however been similarly affixed by him to his very different authentic "agrarium 36;" to which he has also attached another sheet without mark or number of his own, but which has been, I think, rightly named by Sir J. E. Smith in pencil "agrarium Fl. An." (i. e. Huds. Fl. Angl.) "*procumbens* Lin."

I have looked in vain in Mad. for the true *T. agrarium* L. (*T. aureum* Poll.), which, with the apparently still more nearly allied *T. patens* Schreb. (*T. parisiense* DC.), said to be distinguished from *T. procumbens* L. by the denticled and cordate stip. auricled at the base, by the longer style nearly as long as the pod, and prominent radicle of the seed, might have been expected to occur.


St. stip. and foliage as in *T. procumbens* L. but smaller and more slender, petioles very short; lfts. obcordate or obcuneate retuse, the middle one distinctly stalked; heads small subumbellate, about 12-fl., globose or hemispherical in fr., very obtuse or truncate; ped. axillary distinctly longer than the l., slender but straight and erect; fl. shortly stalked, tubular, closely deflexed and imbricate in fr.; pedic. shorter than the cal.-tube; style not ½ the length of the pod; standard faintly furrowed or striate, oblong-spathulate truncate entire keeled at the back, conduplicate, not curling in downwards but folded together laterally over the pod.—Rellh. Fl. Cantab. ed. 2; EB. t. 1256; H. Fl. Sc. i. 220; Sm. E. Fl. iii. 310; Bab. 79. *T. agrarium* Buch! 198. no. 410 (not Linn.). *T. filiforme* DC. ii. 206 (excl. var. f); WB. ! ii. 79 (excl. syn.); Koch 195 (not Linn.). *T. filiforme* var. *a major* Hook. Fl. Brit. (ed. 5)
92. *T. lupulinum alterum minus* Dillen. in Ray's Syn. (ed. 3) 330. t. 14. f. 3.—Herb. ann. Mad. reg. 3, r. PS. reg. 4, r. Pico da Silva up the Caminho do Meio, mountain pastures by the Palheiro Levada; Rib. Frio. In PS. on the rocky summit of P. do Facho on the S. side abundant. Apr.—Aug.—Habit entirely of *T. procumbens* L. but altogether smaller or more delicate in every part, mostly smoother, with shorter leafstalks longer peduncles and much smaller looser heads of fewer distinct fl. like little spiked balls only 2–3 lines in diam. Leafstalks very short half as long as in *T. procumbens* L. Stip. half ovate acute entire simply rounded at their outer base. Middle lft. distinctly stalked. Lfts. small more retuse or truncate than in *T. proemblem* L. Ped. often twice as long as the l. Fl. 10–15 subumbellate and all distinctly though shortly pedicelled, tubular compressed lemon-y. small; the standard neither broadly dilated nor with the edge curled in, striate but scarcely furrowed, folded together lengthways but only partially concealing the perfectly ripe pod. "Wings protracted" Koch. Two upper teeth of cal. ovate short; the 3 lower long linear-setaceous mostly hairy towards the tips. Style less than \( \frac{1}{4} \) length of the oval swollen half-protruded pod, hooked at the tip. Seeds 1 or 2 chestnut-brown exactly oval, the radicle scarcely prominent.

There are 2 forms of this sp.: 1, the ordinary luxuriant state with st. or branches 6–24 in. long; 2, the delicate dwarf fine-leaved state (Ray Syn. t. 14. f. 3) with the lower heads only 3–5-flld. which approaches in habit so nearly the true *T. filiforme* L.

Three good spec. of this pl. on one sheet marked "Tr. agrarium Linn. Sp. Pl. 1087—Madera" in BH. sufficiently attest the syn. *T. agrarium* of Buch. On the other hand, his *T. proemblem* was doubtless founded on the " *T. agrarium* var. foliis non retusis Madera 1776 Downe" of the same Herb. marked also " *T. procumbens," and which is unquestionably true *T. proemblem* L.!

The true *T. filiforme* L. ! EB. t.1257 (*T. micranthum "Vivian." DC., Koch), characterized by its very few (2–5 or 6) loosely and remotely flld. racemose umbels, delicate slender habit, pedic. longer than cal.-tube, quite smooth, standard and style much shorter than the pod, which stands in much the same relation as to size and habit with *T. minus* Relh. as the latter does to *T. procumbens* L., has not occurred in either the Mad. or Can. islands. I found, however, *T. minus* Relh. (*T. filiforme* Webb, not L.) in both Grand Canary at El Monte towards the Bandama Crater, and in Hierro up the Vueltas at El Golfo.
10. **MELILOTUS Lam.**

**Melilot.**

1. **M. PARVIFLORA Desf.**

St. erect or diffuse and ascending; lfts. broadly obovate-oblong, the lower obovate or obcuneate, the upper narrow oblong or lanceolate and somewhat feebly or irregularly serrate, all obtuse; stip. lanceolate-acuminate; fl. very small shortly stalked, in crowded dense many-fld. not awned or mucronate rac.; pedic. not above half the length of cal.; sep. nearly equal; cor. but little longer than cal., wings and keel equal, nearly or quite as long as standard; pods small smooth subglobose or roundish-oval very obtuse somewhat faintly and remotely corrugate or reticulately rugulose 1-seeded.—Desf. ii. 192; DC. ii. 187; Spr. iii. 206; Koch 183; Seub. Fl. Azor. 49. no. 369. **M. indic.a** (All.) WB. ii. 67; Buch! 197. no. 402; Moris Sard. i. 459. t. 56. **Trifolium Melilotus Indica** Brot. ii. 102.—Herb. amm. Mad. reg. 1, cc; PS. reg. 2, 3, cc; ND. GD. reg. 2, J; SD. i. Cornfields and open sunny places almost everywhere; in Mad. only near the sea, as about the Praia, cliffs to the E., Pº S. Lourenço, &c.; in PS. more up the hills. March–July.—St. branched 1-2 ft. high, the side-branches ascending. Whole pl. smooth with a strong bitterish hay-like scent, especially in drying; foliage bright full gr. Lfts. before flowering rather large and broad, 9 or 10 lines long, 4 or 5 broad; the lower nearly or quite entire, the upper narrow-oblong toothed. Stip. ovate-lanceolate finely acuminate sometimes obsoletely denticulate at the base. Fl. minute bright y. in dense cylindric crowded spikes rather than rac. 1-2 in. long. Sep. all equidistant nearly equal. Pods orbicular and turgid, rather subglobose than ovate, 1 line in diam., not mucronate beaked or bordered, pale with only 3 or 4 remote arched transverse anastomosing wrinkles, reticulate or corrugate, not plaited. Seeds oval flattened rufescent closely and minutely granulate; radicle not prominent.

2. **M. LIPPOLDIANA Lowe.**

St. erect; lfts. broadly roundish-obovate, or shortly wedge-shaped suborbicular, the upper oblong-obovate, sharply unequally denticulate; stip. obsolete or small narrow linear-acuminate; fl. middle-sized loosely racemose distinctly stalked, rac. not awned or mucronate; pedic. about the length and cor. twice the length of cal., wings shorter than the keel and standard; cal. 3, sep. unequal; pods 1-seeded smooth turgidly ovate beaked keeled or bordered, somewhat closely ribbed with distinct arched wavy plaits or wrinkles.—Hook. J. Bot. viii. 292. **M. italica** Buch! 197. no. 403. **Trifolium Mel. italica** Sol. ! in BH. (not Linn.)—
MELILOTUS.

Herb. ann. Mad. reg. 1, r. Waste open ground near the sea; Praia Formosa to the W. of Funchal; Brazen Head (Sr. Moniz, Mr. J. Y. Johnson).—A somewhat larger stouter more leafy pl. than *M. parviflora* with larger short broad rounded lfts., much larger longer-stalked fl. in rather loose rac., and more strongly closely and regularly transversely ribbed or wrinkled pods. St. branched erect 1-2 ft. high. Stip. small lanceolate narrowly and finely acuminate entire. Lfts. rounded or very broadly wedge-shaped 5-10 lines long and nearly or quite as broad; the lower entire, the upper sharply and finely toothed. Fl. bright y., becoming deeper golden-y. in drying, in lax mostly short not mucronate rac. Cal. slightly 2-lipped, the two upper teeth approximate. Keel as long as standard, wings shorter. Pods 1\(\frac{1}{2}\) line in diam., i.e. larger than in Madeiran but not larger than in French spec. (Castigneuex, 22nd May 1848, E. Bourgeau, no. 120) in BH. of *M. parviflora* Desf., ovate subglobose and turgid, distinctly mucromulate or beaked, with a keeled edge or border, much more strongly regularly and closely arcuato-costate than in *M. parviflora*, but still less approaching *M. sulcata*, the ribs or wrinkles being wavy or flexuose and subanastomosing, yet again scarcely corrugate or rugoso-scrobiculate, and not imbricate. Seeds evenly globose, pale reddish-chestnut or rufescent, closely and minutely granulate; *radicle not prominent.*

I had long ago (Febr. March 1828) observed this pl., but without separating it from *M. parviflora* Desf.; and my attention was more particularly drawn to it in 1838 by Dr. Lippold. More recently it has been again observed by Sr. Moniz and Mr. Johnson.

In drying, the fl. of this Melilot become deeper—instead of paler-col., and the l. turn almost uniformly to a peculiar dark reddish-brown; and by this latter mark an old imperfect spec. from Madeira in the BH., ticketed by Solander "*Trifolium Melilotus italic*, Linn. Sp. Pl. 1078, Madera," was at once recognizable. It is quite distinct however from *M. italic* Lam.

3. *M. sulcata* Desf.

St. erect or diffuse and ascending; lfts. lanceolate-oblong, the lower obovate, the upper linear-oblong, all sharply serrate; stip. linear-acuminate toothed or laciniate at the base; fl. middle-sized distinctly stalked in loose distinctly mucromate or awned finally elongated rac.; pedic. not quite the length and cor. nearly twice the length of cal.; sep. equal; wings shorter, keel *equal to or longer than the standard*; pods 1-seeded smooth orbicular compressed very obtuse elegantly and regularly many-ribbed or
plaited, plait arched or circular parallel close crowded large and imbricated.—Desf. ii. 193; Moris Sard. i. 463. t. 59; WB. i. 67, 68; β, DC. ii. 189; Koch 184. *Trifolium Mel. segetalis* Brot. ii. App. 484; DC. ii. 187. —Herb. ann. Mad. reg. 1, §; PS. reg. 2, §. Cornfields in Mad. to the W. of Funchal above the Gorgulho, Praia, &c., and on Pau de S. Lourenço; in PS. general, as between the town and Fonte d’Areá, halfway up Pico do Facho, P. do Concelho, in the Serra de Fora, &c. March–May. —Habit much the same as in *M. parviflora*, but a somewhat smaller stiffer-branched almost inodorous or at least much less strongly-scented pl., scarcely above 6–12 in. high. It is further distinguished by the much narrower more evenly sharply and finely toothed lfts. which are 6–10 lines long, 1–3 broad, the more ovate or less wedge-shaped form of those of the lower l., the toothed or jagged stip., the larger fl. (nearly as large as in *M. Lippoldiana*) in much shorter laxer fewer-fl. rac. terminated by a rather long mucro or barren prolongation of the rachis, and above all by the large and elegantly circularly ribbed or plaited pods. These are always 1-seeded in Mad., 1½ line in diam., more compressed or flattened than in either of the other 2 sp., especially than in *M. Lippoldiana*, and not mucronulate beaked or bordered. Seeds orbicular slaty-brown or blackish, prominently and distinctly granulate, angular, with a deep groove in the middle from the prominent large radicle. Fl. bright–y. turning mostly pale in drying like those of *M. parviflora*.

11. **Medicago L.**

Sect. i. *Lupularia* Ser. in DC.—Fl. racemose or spicate; pods kidney-shaped, sickle-shaped or subspiral unarmed, the edge or margin entire.—St. erect or prostrate. L. 3-nate. Fl. y. rarely v.

1. **M. Lupulina L.**

More or less pubescent; st. procumbent or ascending spreading widely; stip. obliquely ovate-acuminate, the upper entire the lower slightly toothed; lfts. roundish-obovate or obcuneate denticulate notchcd and mucronate at top, entire downwards; spikes many-fl. short dense oval; fl. very small and shortly stalked; pods 1-seeded compressed kidney-shaped somewhat turgid with the point spiral, rugose with arcuate prominent branched veins.—Brot. ii. 112; Buch! 198. no. 416; EB. t. 971; Sm. E. Fl. iii. 318; DC. ii. 172; Seub. Fl. Azor. 48. no. 366; Bab. 74. *M. lupulina a*, Koch 177.

Herb. ann. Mad. reg. 1, §. Waste ground about the Quinta do Valle near Funchal; moist grassy spots along the whole S. coast on or below the sea-cliffs, as at the Arco de Calheta, Paul do Mar, &c. Irregularly at almost all seasons throughout
the year.—Pl. of a rather dull or hoary dark gr. St. 6-18 in. long spreading widely, the ends ascending. Fl. lemon-\(y\). in little compact oval or oblong short heads on axillary ped. longer than the l. Pods brown or blackish scarcely spiral smooth or slightly pubescent arcuato-reticulate 1-seeded. Seed ovate-reniform.

Common Lucern (\textit{M. sativa} L.) is occasionally cult. about Funchal for fodder, but has shown no tendency to naturalize itself. It is characterized by its Melilot-like erect bushy habit 1-2 or 3 ft. high, oblong lfts. toothed upwards, axillary many-fl. mc. of handsome violet-blue fl. on ped. longer than the l. with pedic. shorter than the br. or cal., and many-seeded adpressedly pubescent scarcely reticulate 2-3-whorled pods.

Sect. ii. \textit{Spirocarpos} Ser. in DC.—Fl. umbellate; pods distinctly spiral of several turns or volutions.—St. prostrate or procumbent. L. 3-nate. Fl. small \(y\).

* Pods unarmed, with a simple entire thin sharp edge or margin.

2. \textit{M. orbicularis} All.

Quite smooth; stip. lacinate with long setaceous teeth; lfts. obcordate obcuneate or obovate, toothed upwards; ped. 1-3-fl. awned shorter than the l.; pods very smooth and shining pale brown mostly orbicular and flattened or lenticular, of 4 or 5 membranous or foliaceous finely radiately-veined mostly incumbent and closely (sometimes loosely) spiral volutions with sharp thin entire even edges, many-seeded; seeds flattened subtriangularly orbicular, very closely and finely granulate or dotted.—\textit{Pods closely spiral}, Moris. Hist. ii. t. 15. f. 1; Brot. ii. 113; Buch! 198. no. 418; DC. ii. 174; Moris Fl. Sard. i. 434. t. 37; Koch 177; WB! ii. 60, 61, var. \(a\), \(b\). \textit{M. polymorpha} A. Orbicularis Deaf. ii. 210.—\textit{Pods loosely spiral}, \textit{M. marginata} Willd., Moris. Hist. ii. t. 15. f. 2; DC. ii. 174; Koch 177. \textit{M. orbicularis} var. \(y\). marginata WB! l. c.

Herb. ann. Mad. reg. 1, 2. Grassly places in waste ground near the sea. Cliffs to the E. of Funchal along the Caniço road, Brazen Head, \&c.; to the W. about the Gorgulho and upwards towards Pico da Cruz, \&c. March—May.—Sparingly leafy. St. slender hard and wiry angular prostrate 6-12 in. long spreading flat all round unbranched except at the base pale gr. sometimes dark purplish or violet. Foliage rather thin and scanty; lfts. rather small dark gr. Fl. small lemon-\(y\), mostly two together but rarely more than one producing fr. Pods large and conspicuous \(\frac{3}{4}-\frac{1}{2}\) inch in diam. parchment-like in substance and of a peculiar light-gr. or yellowish colour whilst immature, when
ripe pale drab-brown with a paler edge or border, becoming altogether darker or blackish when old; almost always quite smooth in Mad., but occasionally a little puberulous or ciliate at the edge, mostly flat or disk-like with the turns closely superincumbent, but sometimes on the same pl. the volution are loosely coiled and more or less drawn out like a corkscrew, constituting apparently M. marginata Willd. or M. orbicularis y WB. l. c.; the edges very thin and entire, often turned a little either up or down, plain or flat and even in the disk-like pods, and slightly waved or plaited in those that are drawn out. Seeds many pale yellowish or rufous compressed somewhat triangular or shortly pear-shaped.

** Pods (normally) armed, the edge or margin spinose.

3. M. lappacea Desr. in Lam.

_Nearly or quite smooth_ succulent stout leafy; stip. large deeply laciniate and fringed with long setaceous teeth; lfts. large obovate-wedge-shaped, the lower obcordate, all unevenly or irregularly toothed; ped. 2-5-fl., 1-3 or 4 only fertile, not awned; keel shorter than wings; pods rather large agglomerate firm quite smooth of 4-5 arcuately ribbed or veined turns or volution thickly spinose at the edge, spines crowded hooked at the tip; seeds tawny-y. oblong scarcely reniform.—M. lappacea Lam., nigra Willd., Terebellum Willd., Histrix Ten., pentacycla DC., denticulata, WB. ! (not Willd.).

a. macracantha Lowe; pods subglobose large mostly in threes forming blackish bur-like globular heads with numerous thick-set long slender spines equal to or exceeding in length the breadth of the pod and mostly radiant or standing out straight horizontally rarely subdivergent.—M. lappacea Desrouss. in Lam. Dict. iii. 637, 638. _M. ciliaris_ Brot. ii. 114 (not Linn.). _M. muricata_ Buch! 198. no. 419 (nec alior.). _M. nigra_ (W.) DC. ii. 178. _M. pentacycla_ DC. and _M. Histrix_ (Ten.) DC. ii. 177. _M. pentacycla_ Seub. Fl. Azor. 48. no. 368. _M. denticulata β. macracantha_ WB. ! ii. 64 (not _M. denticulata_ Willd.).—Herb. ann. Mad. reg. 1, and PS. reg. 2, 3, cc; GD. reg. 2, ½; SD. rr. Waste ground amongst vineyards and by roadsides; about Funchal especially to the E. along the Caniço road, &c.; in PS., Serra de Fora, Serra de Dentro, back of Pico de Juliana, grassy slopes nearly at the top of P. do Castello, &c. Jan.–June.—Distinguished by its large densely glomerate subglobose hedgehog- or bur-like masses of fr. composed almost uniformly of 3 pods, and its somewhat coarse rank succulent leafy habit. Whole pl. robust dark full grass-gr. copiously leafy nearly or quite smooth in all its parts except the cal. with the stalks and midribs of the l. beneath whilst young, which are slightly pubescent towards the ends of the shoots. St. long trailing or prostrate spreading 1-2 ft. in all
directions from the centre or crown of the root; the ends ascending; more stout and succulent than in most of the other Madeiran sp. Foliage or rather lfts. large and copious. L. on rather long stalks; lfts. $\frac{1}{3}$ to $\frac{3}{4}$ in. long, $\frac{1}{3}$ to $\frac{1}{2}$ in. or more broad, with shallow unequal teeth, sometimes entire; the lower broadly obcordate. Stip. conspicuous, irregularly but deeply and remarkably cut and fringed. Fl. small bright golden-y. (flavus) mostly in threes, upwards in fives or even more, rarely in fours. Pods always perfectly smooth, dark blackish-brown, diam. including spines 3-6 lines, axis 3-5, mostly in threes, often in twos, rarely in fours or fives together; spines 1-2 lines long in a single row on each side the plain not thickened even edge or margin, radiant or standing out horizontally all round, rarely subdivergent, rather weak or soft and slender, quite smooth, channelled at the base. Sides or surface of the pods seldom reticulate never lacunose, but usually with somewhat strong curved simple rarely branched nerves or ribs radiating obliquely from the inner edge or central axis of the spire to the circumference, one to the base of each spine. Seeds large $\frac{1}{2}$-2 lines long, half as broad, oblong not at all or only slightly reniform, scarcely notched at the hilum, fulvous or tawny-y.

The description of *M. lappacea* in Lam. Encycl. iii. 637 agrees precisely with the present pl. in all respects except in ascribing “sometimes only 2 or 3” volutions to the pods, which are also said to be “flattened and often a little concave at each end,”—expressions referring doubtless either to the tricyclous form or var. of the present pl. (not found in Madeira), or even possibly to some example of *M. denticulata* Willd. not then distinguished from the true *lappacea*. The same remark applies also to Brotero's *M. ciliaris*.

3. *brachycantha*; pods rather smaller harder or more compact mostly in pairs or single shortly cylindric flat and abruptly truncate at each end, spines crowded or numerous but very short stout and thickish, not longer than half the breadth of the pod, curved and divergent i.e. bent upwards and downwards parallel to the axis of the spire, or straight and radiant.—*M. Terebellum* Willd. DC. ii. 176; Koch 181. *M. Sardoa* Moris, “Inter segetes prope Pulam Sardinie, Aprili ” U. S. Müller! in HH.—Herb. am. PS. reg. 3, r. Grassy slopes below the rocky summit of P. do Facho on the E. side descending towards the road or ridge between the Serra de Dentro and Serra de Fora. March-May.—Similar in every respect to a, except in the smaller shorter-spined not bur-like pods in pairs instead of threes. Diam. of pods 3-4 lines; axis 2-3 lines; spines $\frac{1}{2}$-4 line long.

A mere var. or form of a, into which it passes through various
gradations in size and shape of pods, length and direction of
their spines, &c. In its extreme form of least development and
utmost divergence of the latter, the pods considerably resemble
those of *M. minima* Desr. γ, but are much larger. It has oc-
curred only in *P. S. 5* growing sparingly amongst beds of a.
*M. denticulata* Willd. (EBS. t. 2634) differs in the 2–3– (not
4–5–) whorled smaller flattened or subdiscoidal less firm or softer
thinner or more membranous strongly and distinctly reticulately
lacunose or pitted pods, and less leafy luxuriant or succulent
habit. It has not occurred in either the Madeiran or Canarian
group.

The 2–4– or 3-whorled-fruited form or var. (=*M. lappacea*
DC. l. c. no. 46; Seub. l. c. no. 367 = ? *M. denticulata* γ. *lappacea*
WB. l. c. = *M. denticulata* a. *tuberculata* (short-spined) and β.
*lappacea* (long-spined) Moris Fl. Sard. i. 447. tt. 47, 48 = ? *M.
denticulata* β. *lappacea* Koch Syn. ed. 2. 181) has not occurred in
Madeira. Both Lamarck and Brotero appear to include it under
their respective syn., *M. lappacea* Lam. and *M. ciliaris* Brot.

Although I have thus included Webb’s var. γ. *lappacea* with
the other tricyclos-podded syn. above mentioned, in deference
to his char. “fr. minore subtricyclo,” yet his collector Bour-
gean’s pl. in BH. and HH., ticketed “*M. denticulata* W. var.
lappacea, Canaria, Barr° de la Angostura, Mart. 1846, Pl. Can.
no. 384,” has the pods distinctly pentacyclos, and is precisely
*M. lappacea* a. *macracantha* i. e. *M. denticulata* β. *macracantha*
Webb. Nor have I myself ever met with his “subtricyclos” γ.
in any of the Canary Islands.


*Not quite smooth* succulent robust leafy; stip. large deeply la-
cinate and fringed; lfts. large obovate or obcuneate finely and
sharply-toothed upwards, puberulous beneath; ped. 2–3-fl. awned,
1 or 2 fl. fertile; keel longer than wings; pods very large glo-
bose or ovoidal thickly hairy-webbed and spinose, of 6–8 turns;
spines crowded numerous long and slender straight divergent in-
terlacing hairy not hooked at the tip; seeds large black reniform.
—DC. ii. 180. no. 76; Moris Fl. Sard. i. 452. t. 51; Bourg. Pl.
Can. in BH. no. 86, Teneriffa, S. Diego. *M. polymorpha* D. Chi-
arris Desf. ii. 212. *M. intertexta* Willd., DC. ii. 180. no. 75, and
“Fl. Fr. iv. 546” (not All. which = *M. Echinus* DC.).—Herb.
ann. Mad. reg. 1, r. Cornfields about the Fort and above the
small “Crater” at the E. end of the Praia to the W. of Funchal.
May.—Habit like *M. lappacea* : distinguished by its partial hpairi-
ness and very large globular webbed bur-like pods clothed with long thick-set interlacing hairy spines standing out straight on all sides like a chestnut-husk. Whole pl. smooth except the pods which are thickly hairy, and the l. which though smooth above are minutely adpresso-puberulous beneath. St. prostrate 1–2 ft. long; foliage dark dull gr.; lfts. large, sometimes dark-spotted. Fl. 2 or 3 together, mostly 2, larger than in M. lappacea, pale lemon-y. (lutens v. citrinus). Pods half an inch in diam. not truncate but rounded at each end, pale gr., light brown when ripe, hedgehog-like especially whilst young, with numerous close compact volutions, the margin thickened and beset on each side with a row of long subulate flexible interlacing hairy spines clothed with arachnoidal or interweaving hairs like those of the common Burdock (Arctium minus Schk.).

Webb refers to this pl., but not as a Can. sp., in WB. ii. 63, at the end of his account of M. intertexta All. (M. Echinus DC.). The true M. ciliaris Willd. is however found in Tenerife. M. intertexta All., distinguished by its very large oblong-ovoidal perfectly smooth unwebbed pods with vertically divergent closely and curiously interwoven spines, has not occurred in Madeira, although found in Gr. Canary.

5. M. TRIBULOIDES Desr. in Lam.

Hairy-pubescent; stip. large laciniate fringed, lfts. obovate or obcuneate strongly and regularly toothed; ped. mostly 2- or 4-fl. awned; pods pale or whitish cylindric flat or truncate at each end nearly or quite smooth, ultimately hard and coryc rugged or pitted, of 3–5 or 6 close-set volutions remotely and shortly spinose, the margin raised and thickened; spines few distinct short thick conic or bulbous at the base, scarcely hooked at the tip; seeds or.-y. oblong.—Herb. ann. Mad. reg. 1, *; SD. reg. 1, *; PS. reg. 1, *r. Waste rocky sunny places to the E. and W. of Funchal, and in PS. to the SW. of the town.

March–July.—Varr.:

a. Fr. large (diam. 3½–4, ax. 3–3½ or 4½ lines) subglobose shortly cylindric, spines rather long spreading or divergent every way like those of a chestnut-husk.—M. tribuloides DC. ii. 178; WB. ! ii. 65; Koch 178, var. y. rigidula. M. polymorpha F. Tribuloides Desf. ii. 212. M. muricata Brot. ii. 116? (not of others). M. interrupta (sic—qu. intertexta?) Buch! 198. no. 417. M. polymorpha e. intertexta Madeira Fr. Masson 1777, BH. !—Mad. to the E. of Funchal along the Caniço road about the Louros, Neves, Brazen Head, &c. plentifully; sea-cliffs, in the S. Deserta very rare, passing into β; not found in PS.—Distinguished from all the preceding by its hairiness, and by its nearly smooth or naked
pale or whitish, coarsely rugged or pitted, hard and corky pods which are distantly and shortly spined resembling a calthor or
the fruit of *Trapa natans* L., as the specific name well expresses.
Whole pl. especially the l. softly downy, and of a slightly greyish-
gr., otherwise most resembling *M. lappacea* Desr., though per-
haps of somewhat smaller less rank or succulent luxuriant habit,
with more prostrate wiry st., considerably larger fl. and smaller
heads of fr. St. often purplish, densely hairy or downy. Stip.
deeply cut and jagged or fimbriate, the teeth shorter less narrow
numerous and regular than in *M. lappacea* Desr. Lfts. more
strongly and regularly toothed, very downy, of a dull dark some-
what glaucous-gr., immaculate. Ped. shorter than the l. with
a long awn, mostly 2- or 4-fl., rarely 1- or 3-fl., never more than
4-fl. Fl. large in comparison with those of *M. lappacea* or *M.
minima*, bright golden-y., keel a little longer than the wings,
shorter than the standard which is nearly as broad as long.
Pods from the first almost or quite veinless, but often a little
hairy, as large perhaps individually as in *M. lappacea* a; but
since 2 only are usually produced, they do not form the large
bur-like heads of fr. characteristic of that pl., and the spines,
though longer in the unripe than ripe pod, instead of being
slender long and crowded, are comparatively stout short conic
thick or even bulbous at the base and remote, with their points
indistinctly if at all hooked, and the edge raised or thickened
like a cord or belt. When ripe they are excessively hard rude
and corky in appearance, with the surface coarsely pitted or un-
even, and instead of turning brown or black, like all the pre-
ceding sp., they are always pale or whitish, becoming as they
ripen frequently quite smooth. The spines vary considerably
both in length and direction; either standing out all round in
various directions like those of a hedgehog, or, especially when
more short and bulbous-conical, reflexed and bent up and down
vertically or parallel to the axis of the pod, locking its turns to-
gether and constituting the var. β, which however blends into
a. by imperceptible gradations. An extreme form or state of this,
with also smaller longer more cylindric truncate and distinctly
hairy pods, which are more rarely or remotely and very shortly
bulbously-spinous, occurs above the “Crater” at the E. end of
the Praia Formosa, constituting var. β, no. 2.

β. Fr. large (diam. 3-4, ax. 3-5 lines) cylindric often distinctly
hairy, spines very short thick and bulbous strongly reflexed up
and down and interlocking.—*M. tribuloides a. genuina* Koch l. c.
About the crater at the E. end of the Praia Formosa to the W.
of Funchal.—Two forms may be distinguished: 1, fr. larger, diam.
3½-4, ax. 3½-5; and 2, fr. smaller, diam. 2½-3, ax. 3½-4½ lines.—
A mere state of a, with longer more cylindric subpubescent fr.,
and shorter bulbous interlocking spines; volutions 5 or 6 rarely 7.
Fr. small, diam. 2½ lines or 5 mill., ax. 2 lines or 4 mill.,
shortly cylindric subdiscoidal, spines short and thick, reflected.—
M. littoralis Rohde, DC. ii. 177; WB. i. ii. 62; Koch 178;
Bourg. ! Pl. Can. no. 184 in BH. De Heldreich ! ex. exsicc. in BH. and HH.
M. tribuloides Bourg. ! Pl. Can. no. 768 in BH. and HH.—PS. to
the SW. of the town, Campo Debaixo, abund. Dec. 1856 (Sr. J.
M. Moniz).—With the smaller foliage, though not the more deli­
cate habit, of M. Helix Willd. rather than of the two preceding
varr. of M. tribuloides Desr., this is a completely annectent link
between the two sp. Still it is a larger more robust pl. than
M. Helix W. a. calcarata to which it otherwise approaches
nearest, with stout stiff straight st. 3–4 ft. long, and villose grey
or hoary lfts. Ped. a little longer than the 1., and 4–6-fl. Pods
clustered smaller and less flattened than in M. Helix W., and
courser ruder or thicker in substance and formation, nearly or
quite smooth with 3–4 volutions, and distinct remote short
thick bulbous-conic spines, larger and stouter considerably than
in any state of M. Helix a, and reflected vertically up and down
parallel with the axis, instead of radiating horizontally.—This
form or var. has never occurred in Mad., whilst on the other hand
the common Mad. M. tribuloides a. has not occurred in PS.

Amidst all its variations in size of pods, their degree of
smoothness, and the length and direction of their spines, M.
tribuloides is usually recognizable by the fr. as it ripens becoming
rude and thick or corky, and by the spines being more or less
tumid thick or bulbous at the base.

6. M. Helix W.

Hairy-pubescent almost villose, greyish; st. prostrate slender
tough and wiry; stip. lanceolate sparingly and remotely inciso-
laciniate; lfts. obovate sharply serrulate at top, the lower retuse;
ped. 1–8-fl. awned; pods orbicular discoidal pale rather small
quite smooth membranaceous venose of 3–5 turns remotely and
very shortly or minutely spinose, sometimes nearly or quite un­
armed; seeds or.—y. reniform oblong.—Varr.:

a. calcarata; ped. rather longer than the 1.; 1–5–, mostly
2–3-fl.; pods discoidal slightly thickened and pitted or ru­
gulose, their edge armed with minute distant very short
straight radiant spinules; diam. 3–3½, ax. 2–2½ lines.—M. Helix
b. spinosa WB. ! ii. 61. t. 56 (M. canariensis Benth.); M. Helix
b. spinulosa Moris Sard. i. 438. t. 39. B. M. calcar Lowe in
Hook. J. of Bot. viii. 291 and ix. 75.—Herb. ann. PS. reg. 1, 2, 5,
Sunny hill-sides here and there. Sloping banks at the back of
the beach or foot of the sea-cliffs 2 miles to the E. of the town,
and ascent (N. side) of Pico Debaixo abund. April, May.—
This the normal state in P° S° of the sp. must be admitted to

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approach very closely to *M. tribuloides* Desr. var. γ. (*M. littoralis* Rohde): but even when the pods are more than usually thickened and rugulose, they are scarcely rude and corky, and the spinules are vastly more minute and delicate, and always radiant like little spur-rowels. The fr. is also larger and orbicular or more flattened vertically, and the stip. are more sparingly or inconspicuously fringed or laciniate. It must be owned however that this form of the sp. presents a completely transitional or intermediate step from the unarmed var. β. (*M. Helix* Willd. of authors) through *M. littoralis* Rohde to *M. tribuloides* Desr.

I formerly referred (Journ. of Bot. viii. p. 292) Bourgeau's *M. tribuloides* no. 768 in BH. to the present pl.; but his no. 768 in HH. gathered at the same place and time is certainly *M. tribuloides* γ. supra: and therefore the BH. example, though in itself somewhat ambiguous, is most probably the same. This shows however how closely the two pl. *M. Helix* a. and *tribuloides* γ. (*M. littoralis* Rohde) run into each other.

β. *inermis*; ped. about the length of the l.; 2–8–, mostly 3–6–fl.; pods lenticular clustered nearly or quite unarmed even (not rugulose) altogether thin and membranous or foliaceous; diam. 3–3½, ax. 1½ lines.—*M. Helix* Willd. Sp. Pl. iii. 1409? (DC. ii. 174 under *M. lavis* Desf.); Moris Sard. l. c. t. 39. A.—Herb. ann. PS. reg. 4, rrr. Summit of Pico do Castello on the walls of the old fortress. April, May.—Merely a more robust luxuriant form of α, growing in a higher cooler moister instead of low dry sandy situation. St. stouter and longer, ped. rather shorter with more numerous fl. and larger clusters of pods than in α; the pods also flatter and more foliaceous.

Characterized in both its varr. by its more delicate habit and small lfts.; and particularly from α. and β. of *M. tribuloides* Desr. by the comparative smallness of all its parts, by its less divided or fimbriated narrower stip. and smaller flattened discoidal membranous unarmed or delicately spinulose veined pods. St. from 6–12 in. long rigid wiry hard and very tough, pubescent. Lfts. 2–4 or 5 lines long villose. Fl. large lemon-γ., wings as long as keel and both nearly as long as standard. Pods orbicular flattened at each end, very peculiar in appearance; in α. like little spur-rowels, with few very short and distant minute fine radiating spikes, which are sometimes reduced to scarcely more than little points not reaching beyond the keel, and thus passing gradually into β, in which they are quite obsolete or evanescent; in α. the pods have sometimes a little of the rugose thickened corky appearance of the pods of *M. tribuloides*, but in β. they are much more even, thin and membranous (reminding one, except in size, of those of *M. orbicularis* Willd.), and
in both varr. not reticulated, but with a few remote oblique transverse veins. The spinules when present never exceed half the diam. of the pod in length, and always stand straight out horizontally, like rays, in the plane of the pod, not (as sometimes in *M. tribuloides* Desr. and as in *M. littoralis* Rohde) bending alternately up and down vertically parallel to the axis; they originate from a rib parallel to and below the sharp prominent keel on each side of it. Volutions in both varr. close and compact, almost always 4.

I follow, though with some doubt even with regard to β, considering Willdenow’s desc. and synonym, the high authority of Mr. Bentham in referring this pl. to *M. Helix* Willd. When spec. of a. collected by me in 1828 were first shown to him some years ago by the late Dr. Lemann, he had considered it a new sp. allied to his *M. reticulata* from the S. of France and Spain: and I accordingly proposed it as distinct in the J. of Botany under the name of *M. calcar*. Subsequently I found it had been previously named by Webb on his *plate* t. 56 figuring the sp., *M. canariensis* Benth., although in the *text* of his *Phytographia Can.* it is referred to *M. Helix* W.—Lemann (in litt.) had rightly considered it nearer to *M. littoralis* Rohde than to *M. reticulata*. Willdenow insists on the pods in his *M. Helix* having only two distant volutions, and quotes with a ? *M. laevis* Desf. ii. 213, a pl. described as having its st. smooth and pods “scarcely 2-whorled.” He adds, “Leg. fere ut in *M. obscura* sed anfr. binis non arcte adpressis diversa. A sequenti (*M. tornata*) distincta leg. non cylindricis, anfr. tantum binis.” This seems to point to something different from even β. of my pl., which is however assuredly *M. Helix* of Moris and of De Heldreich !, Parlatori !, Pavillon !, Bourgeau! in HH., &c.

Not found in Mad.: but in P<sup>10</sup> S<sup>10</sup> taking the place of the Madeiran *M. tribuloides* a. and β, which on the other hand have not been found in P<sup>10</sup> S<sup>10</sup>.

7. *M. MINIMA* Desr.

Silky-pubescent or villose hoary-grey; stip. nearly entire or the lower sparingly toothed, ovate-lanceolate acuminate; lfts. obovate or obcordate wedgeshaped and entire below, sparingly and sharply toothed at top, often 3-toothed; ped. short 1–3–mostly 2-fl.; pods dark brown small globose somewhat hairy with 3–5 rather lax turns, densely spinose with straight crowded subdivergent slender spines mostly hooked at the tip, grooved and distinctly 2-forked at the base; seeds reniform y.—DC. ii.
178; Spr. iii. 290; Moris Sard. i. 450; WB. ii. 64; Koch 180.
a. longispina; pods thickly spinose, spines spreading long
slender hooked at the tip, not pungent, about equalling or ex­
ceeding the diam. of pod; stip. sometimes sparingly toothed.—
M. minima β. longispina and γ. uniflora Benth. in EBS. at t. 2635.
M. minima a. pubescens and β. hirsuta WB. ii. 65. M. minima
β. canescens and γ. longiseta, M. mollissima (Roth) and M. Graea
(Hornem.) DC. l. c.; M. recta (Desf.) DC. ii. 179. M. mollissima
Spr. Syst. iii. 291. M. minima β. mollissima Koch l. c. M. poly­
t. 211. Mad. and PS., ccc, in waste rocky ground and mountain
pastures everywhere, especially below 1500 ft. and near the sea;
to the E. and W. of Funchal, Loo fields, Praia Formosa, Brazen
Head, Pra do de S. Lourenço, the Piedade, &c.; SD. at top, rrr.
Pods (with spines) 3–3½ lines in diam., spines about one line long.

β. brevispina; pods thickly spinose, spines spreading or sub­
reflexed short not above ½ diam. of pod, strong pungent, not
hooked; stip. mostly entire.—M. minima a. brevispina Benth.
EBS. t. 2635. M. minima Brot. ii. 115; Sm. E. Fl. iii. 321; Bab.
74. Not noticed in Mad., but in PS. c, though far less so than
a; cliffs to the E. of town, roadside at Camacha, Pico d'Anna
Ferreira, P. do Castello, and ascent of P. Branco mixed with a.
Pods (with spines) 2½ lines in diam., spines about half a line long.

γ. pulchella; pods unarmed, spines undeveloped and almost
or quite reduced to their forked base, very short and strongly
reflexed, not reaching beyond the edge or margin of the 3–4
volutions.—M. pulchella Lowe Novit. 25 or 547.—Herb. ann.
Mad. reg. 1, rrr; PS. reg. 2, 3, r. Brazen Head outside the
hummock (intermixed with a.) plentifully, and sparingly half­
way between Funchal and the same along the edge of the sea­
cliffs: PS. hill-sides about 2 miles E. of the town; April, May.

In all these varied forms, or modifications, M. minima is
distinguished by its comparatively diminutive size, excessive
hairiness, and the smallness of all its parts from the preceding
sp., except M. Helix W. Whole pl. usually densely and softly
pubescent or villose and more or less silky and of a dull hoary
gr. St. 4 or 5 to 10 or 12 in. long, hard and stiff or woody.
Lfts. small retuse, with a point or mucro in the notch, and a
larger prominent tooth on each side of it. Ped. in starved ex.
1-, in others 2–3- or 4-fl. Fl. very small lemon–y. Standard
longer than the keel which is longer than the wings. Pods
small 1½–2 lines in diam. without the spines, globose. From
their never bursting, and the consequent germination of the seed
within them, the pod from which the pl. has sprung is found constantly attached at the crown of the root. Sometimes two pl. spring from the same pod; but usually only one seed germinates. In y. the pods are strikingly dissimilar, with a peculiarly neat appearance: apparently but not really smaller than in a. or β. from their spines being reduced to little tooth-like plaits or tubercles locking the 3½–4 remarkably compact or close volutions of the little pill-like pods together, like the cogs or teeth on the upper and under sides of a pair of horizontal wheels: they are mostly in pairs and erect. In all other respects the pl. does not differ from the common spiny-podded state, of which it is doubtless a mere unarmed var. The two forms however are found growing always intermixed; and thus the variation cannot be ascribed to difference of soil or situation.

Occasionally in a. the root becomes strong and woody, throwing out numerous cespitose prostrate st.; but this is merely a luxuriant state of the pl. due to better soil and a more abundant supply of water.

I cannot find any warrant for the formation of varr. founded on the degree of villosity (varying from simply pubescent to densely silky-tomentose), or number of fl. on the ped. In both these respects it ranges indefinitely according to dryness or elevation of locality.

**Tribe IV. Loteeae.**

**12. Lotus L.**

**L. parviflorus** Desf.

Wholly pilose; st. slender branched erect procumbent or ascending; lfts. narrow linear-lanceolate or obovate-wedge-shaped; stip. large broadly cordate-ovate acute; *umbels villose* 4–6-fl.; ped. after fl. curved or arched downwards; cal.–teeth straight linear-subulate as long as the cor., 2–3 times as long as the tube; *pods very short scarcely so long as the sep.* ovate-oblone turgid smooth 6–8-seeded.—*Dorycnium parviflorum* DC. ii. 208; Seub. Fl. Azor. 49. no. 378.—Herb. ann. Mad. reg. 1, 2, c. Rocky dry ground and mountain pastures general. March–June.

-Var.:

a. *robusta*; larger with thicker stouter more upright st. and larger broader lfts.—*L. parviflorus* Desf. ii. 206. t. 211. *L. microcarpos* Brot. ii. 119?—At or above 2000 ft. r.; banks by the roadside a little beyond the Church at Camacha descending
into the ravine, and in the Serra beyond, towards S. Antonio. May, June.

\( \beta. \) tenuis; smaller with more slender filiform procumbent st. and smaller lfts.—*Lotus parviflorus* Deless. Ic. i. t. 30.—Chiefly below 2000 ft. c. in dry rocky waste ground, but also in dry mountain pastures; about Funchal on the top of the rocks E. of the Quinta do Valle or W. cliff of the Rib. de João Gomes, &c. March—May.

A small hoary pl. of delicate habit, especially in \( \beta. \), and rather short duration, with soft flaccid quickly withering foliage. Root small fibrous. St. pale yellowish or straw-colour (in \( a. \) browner) much branched, mostly prostrate at first, their ends ascending, 3–6 in. long, very slender and filiform; in \( a. \) more robust and upright. Whole pl. clothed with long soft white hairs, which in drying often turn brown or fulvous. Lfts. and stip. as usual entire. Lfts. bright gr. but hoary with their long hairs; in \( \beta. \) small and delicate. Stip. inequilaterally ovate large and leaflike. Fl. in dense villose umbels small plain y. inclining to lemon, not at all streaked or marked with red, turning bluish-gr. or greenish-black in drying. Cal. densely hairy, sep. very long and slender. Style distinctly capitate. Ped. about an inch long, exceeding the l., densely pilose especially in \( a. \), slender filiform; immediately after fl. and in fr. bent down strongly in an arch; with mostly a single leafy shortly stalked linear-lanceolate br. or lft. close below the fl. Pods smooth even very short and turgid acute brown; the valves not twisting spirally after bursting as they do in all the other Mad. sp. Seeds pale y. minute orbicular compressed.

The foregoing description is taken from pl. of \( \beta. \), which is in Mad. by far the more ordinary form, and of which indeed \( a. \) is scarcely more than a luxuriant state, due to a moister soil or atmosphere.

2. *L. hispidus* Desf.

Pilose; st. prostrate much branched intricate subcespitose slender elongated subflexuose pale gr. or straw-colour; lfts. lanceolate or obovate-cuneate; stip. inequilaterally ovate half-cordate acute; umbels 3-fl. on rather long erect ped.; cal.-teeth straight linear-subulate shorter than the cor., twice the length of the tube; pods cylindric subtorulose short turgid thickish about twice as long as the sep. or cal. and 5 or 6 times as long as broad, 8–12-seeded.—“Desf. Cat. Hort. Par. 190;” “Loisel. Fl. Gall. 490. t. 16;” DC. ii. 212; Seub. Fl. Azor. 49. no. 379; EBS. t. 2823; Bab. 80. *L. pilosissimus* (Poir.) DC. ii. 212? *L. divaricatus* Sol. ! in BII.; Buch ! 198. no. 413; Novit. 546, 7. *L. angustissimus* \( \beta. \) Hook. Brit. Fl. (ed. 5) i. 83.—Herb. ann. Mad. reg. 1, 2, 3, ccc.
LOTUS.

GD. reg. 2, §.—Dry sunny rocky ground and mountain pastures everywhere. Top of rocks E. of the Quinta do Valle near Funchal, the Praia Formosa, mountain pastures 3000 ft. up the Caminho do Meio, Serra beyond Camacha, at Caniço, S' Anna, mouth of the Rib. da Janella, bed of the Rib. da Metade, summit of the Pico da Suna, &c. May-Sept.

St. prostrate very numerous branched and often almost matted or cespitose, 6-18 in. long, slender pale or whitish. Whole pl. pilose, but hairs shorterless copious and silky than in L. angustissimus L. Stip. leafy. Ped. filiform, considerably longer than the l., 1-1½ in. long, straight or curved, not deflexed, with mostly 3, sometimes 4 or 2, very rarely 5 or 1 fl., 3 being the normal number by a vast majority. Fl.-bract or lift. lanceolate, always in Mad. single. Fl. much larger than in L. parriflorus Desf., but slightly smaller than in L. angustissimus L., bright full orange-y., with the standard streaked inside and tinged outside with red, turning in drying a peculiar dark indigo-gr. Pod 3-6 lines long, 1-1 line thick, very straight and equably cylindric, beaked by the simple (not forked) long straight slender minutely capitate persistent style; the valves twisting spirally after bursting. Seeds small globose pale y. speckled with rufous or plain light brown.

Constantly distinct from L. angustissimus L. in habit, pale st., less hairiness, mostly smaller or finer foliage, rather smaller deeper orange fl. turning gr. in drying, normally 3- (not 2-) fl. umbels on mostly longer ped., and above all, by the short and twice as thick pods. Both pl. occur continually growing intermixed.

A starved maritime smaller more hairy state than usual of this pl., of which I have a spec. gathered in 1827 by Herr Holl, is possibly L. cytisoides of his List, which otherwise omits the present common sp. altogether. The true L. cytisoides L. is not found in Madeira.

3. L. ANGUSTISSIMUS L.

Very pilose; st. firm and stiffish procumbent or diffuse sometimes erect; lfts. lanceolate or oblong-obovate; stip. inequilaterally ovate or lanceolate half-cordate acute; umbels 2-fl.; ped. in all stages straight erect longer than the l.; cal.-teeth straight linear-subulate, nearly twice the length of the tube, much shorter than cor.; pods subtorulose linear long narrow-cylindric very slender straight 4 or 5 times longer than cal. and 10 or 12 times as long as broad, 18-24-seeded.—Brot. ii. 119; Hook. Brit. Fl. (ed.5) 83 (var. a.); Koch 198; Seub.Fl. Azor. 49. no. 380; Bab. 80; WB. ii. 85 (excl. syn. L. hispidus Desf.). L. angustissimus and L. diffusus Ser. in DC. ii. 213. L. diffusus Sol. ! in BH.; Buch l 198. no. 414; EB. t. 925.—Herb. ann. Mad. reg. 1, 2, 3, c. With the
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25. _Leguminosae._

last sp. here and there, general, but less common or abundant. Top of rocks to the E. of the Valle Quinta near Funchal. Chestnut woods at the Jardim da Serra. Along the Levada in the Rib. das Cales above the Arrebadão, bed of the Rib. da Metade, and summit of Pico da Suna above Porto da Cruz, mixed with _L. hispidus_ Desf. May-August.—St. 6-12 in. high, generally more or less erect, in young pl. often quite so, finally spreading or diffuse. Habit leafy with the st. somewhat stout firm or stiff and reddish-brown or purplish downwards. More hairy with mostly larger foliage than _L. hispidus_ Desf., of a dark dull gr. Lfts. and stip. inequilateral. Ped. about an in. long, both in fl. and fr. longer than 1, and in fr. sometimes twice as long, but varying on the same pl. Fl.-bract often 3-foliate, lfts. lanceolate. Fl. normally 2, often 1, rarely 3 together, rather larger than in _L. hispidus_, full y., the standard streaked inside and tinged at the base outside with red; sometimes in dry spots orange, but generally paler than in _L. hispidus_, and never turning gr. or blackish-indigo in drying. Style simple, not forked or toothed; stigma plainly though minutely capitate even to the naked eye. Pods slightly torulose (knobbled or knotted) smooth and shining, dark rich reddish-brown, \( \frac{3}{4} \) in. long, \( \frac{1}{2} \) line broad, beaked by the straight persistent style, lomentaceous within, with distinct transverse membranous partitions or diaphragms between the seeds, which are small orbicular compressed (not globular) and plain testaceous or fulvous brown.

4. _L. uliginosus_ Schkuhr.

Perennial cespitose robust sprinkled more or less with hairs, rarely quite smooth; st. procumbent or ascending; more or less erect, succulent stout hollow; lfts. elongate-obovate; stip. large short and broad roundish-ovate subcordate and unequal at the base; heads or umbels flat-topped many-fl. on long stout upright stalks; cal.-teeth linear-lanceolate leafy, ciliate-hairy stellate spreading or recurved in the bud like a star, hairy, not longer than the tube, much shorter than the cor., the 2 upper teeth divergent; pod smooth cylindric straight slender 4 or 5 times as long as cal. and 8 or 10 times as long as broad, 20-25-seeded.—Koch 197. _L. major_ EB. t. 2001; Sm. E. Fl. iii. 313; Bab. 80. _L. corniculatus_ B. major DC. ii. 214; Seub. Fl. Azor. 49. no. 382 a.—Herb. per. Mad. B. reg. 1, 2, 3, c or ccc; y. reg. 3, rrr.

_b. glabrisscula_ Bab. 1. c.; nearly smooth the edges and veins only of the lfts. stip. br. and sep. pilose; st. procumbent or ascending.—_L. major_ B. Bab. 1. c. _L. corniculatus sylvesticus_ Brot. ii. 121. _L. odoratus_ Hol's List in Hook. J. of Bot. i. 20 (not Schousb. or Sims in BM. t. 1238).—Moist steep banks about waterfalls or dripping rocks and borders of streams, general. Particularly abundant along the sea-cliffs of the S. coast from the Cabo Girão.
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westward. About Funchal, Sta Anna, S. Vicente, &c. May—September.

Root perennial long thick somewhat fleshy stoloniferous. St. 2 ft. long or more, nearly solid at the base, hollow and without pith upwards, stout purplish smooth, but sometimes sprinkled with a few long soft spreading hairs, cespitose, forming a large spreading tuft, quite prostrate at the base, their ends ascending and approaching to erect. Foliage dark full gr. flaccid quickly withering. Lfts. large oblong-obovate or elongate-obovate sprinkled with long soft hairs, the 2 side ones inequilateral; glaucous beneath. Stip. very large broad leafy short and roundish inequilateral half-cordate, also hairy like the l. Fl.-br. 3-foliate, lfts. large very broadly ovate, the 2 side ones inequilateral half-cordate short. Ped. 2 or 3 in. long. Fl. scentless rather large, 10–12 or more in a large close head or umbel, often about 20, rarely so few as 6 or 8, of a somewhat duller y. than in L. corniculatus L. a.; standard saffron-red outside especially in the bud, streaked internally at the base with saffron lines; it turns gr. in drying. Shorter filaments simple scarcely dilated upwards. Cal.-teeth densely hairy, almost woolly in the bud, and stellate like those of L. odoratus Sims in BM. t. 1233, mostly purplish, ovate, with long subulate hairy or ciliated points; in fl. and fr. lanceolate, the 2 uppermost diverging at an acute angle. Pods cylindric about an in. long, ½ in. or nearly 1½ line broad, dark coffee-brown quite smooth and nearly even, spreading or drooping, tipped with the slender straight minutely capitulate simple style. Seeds orbicular compressed small, one millim. in diam., plain yellowish-brown or fulvous.

γ. pisifolia; smooth glaucous; st. suberect spreading or diffuse branched throughout dichotomously, very stout thick firm hollow; lfts. and stip. very large.—L. pisifolius Novit. 24 or 546.—Wet grassy bank by a spring called the Junqueiro or Juncêiro on the S. side of Pico Grande at the beginning of the ascent from the Caminho Central; also in a very wet spot halfway down the Voltas below the Cruzinhos on the road to Seixal. July, Aug. —Very different in aspect and habit, but proved, by examination of the Pico Grande pl. subsequently in its place of growth, to be a merely transitory rank luxuriant state of β.

Whole pl. quite glaucous and except the cal. nearly smooth. St. 2–3 ft. high and as thick as the little finger, quite smooth and glaucous, spreading or reclining but more erect than in β, regularly forked throughout flexuose or zigzag and branched alternately in one plane, the branches expanding in a fan-shaped manner. Foliage very large and pale glaucous gr., as glaucous as in the common Garden Pea (Pisum sativum L.); lfts. 1–2 in. long, ½ in. broad. Stip. rather larger than the lfts., sprinkled like them towards the edges with a few long hairs. Ped. 4–6 in. long bearing at top close beneath the heads or densely crowded
umbels a single ternate l. like the other l. Fl. 12–15 in a head, full y. Cal. campanulate, the tube quite smooth pale gr., teeth always dark gr. narrow acuminate rather longer than the tube fringed with long white soft hairs, woolly and stellate in the bud. Standard faintly streaked with red indistinct not confluent lines. Shorter filaments not dilated upwards.

13. PEDROSIA Lowe.

* Ped. 1–5 or 6-fl. Fl. subumbellate y. or or.

1. P. NEGLECTA Lowe.

Suffrutescent mostly gr. and rarely glaucous hoary-grey or silver, yet clothed with fine short close-pressed inconspicuous pubescence; st. elongated wiry slender lax and widely spreading procumbent or diffuse not intricate or cespitose; 1. distinctly stalked; lfts. and stip. unlike but both submucromulate with the midrib slightly excurrent; lfts. obovate or obcuneate rather longer than the tube fringed with long white soft hairs, woolly and stellate in the bud. Standard faintly streaked with red indistinct not confluent lines. Shorter filaments not dilated upwards.

LOTUS corniculatus var. Sol. in BH. quoad ex. in schedis tantuni duabus inscriptis “Lotus corniculatus Linn. variet. Madera Fr. Masson 1776,” et “Lotus corniculatus Linn. var. Madera 1776 Downe” (not Linn.). L. corniculatus Buch 198. no. 415 (not Linn.). L. glaucus β. nob. MSS. olim. L. cytisoides Holl in J. of Bot. i. 20? subper. Mad. reg. 1, r. Sea-cliffs to the E. of Funchal between Fort S. Jago and the Louros, and to the W. between the Soccorridos and Camera de Lobos. July, Aug.—Habit somewhat resembling that of L. corniculatus L. except the wiry woody st., but much more like that of L. cytisoides L., being altogether greener with a more herbaceous look, and with larger thinner flatter lfts. than in any of the following sp. except P. argentea. St. sparingly branched with elongated and distinct not interwoven and entangled branches, and not bushy or cespitose as in P. glauca Ait., the branches 1–2 ft. long rambling slender stiff and wiry, for the most part gr. though woody. L. not crowded always distinctly stalked; petioles 1–2 lines long. Lfts 2–4 or even 5 lines long 1–2 or 3 broad, foliaceous flat and membranous, not thick or succulent. Stip. shortly and broadly rhomboidal or rounded-deltoidal, not attenuated downwards but on the contrary broadest below their middle, leafy, 1–2 lines long and broad. Ped. 1–3 in. long mostly curved or flexuose but moderately stout, with a 3-foliate fl.-br. at top close below the mostly 4- or 5-fld. umbel. Fl. smaller than in P. glauca (Ait.) and of a less full golden (not at all or.) y., more like those of L. corniculatus L. but not turning gr. in drying. Cal. dark purple at the base;
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sep. lanceolate \( \frac{3}{4} \), the 3 lower exactly equal considerably shorter narrower and smaller than the 2 upper. Style very distinctly forked or toothed; stigma slightly capitate. Pods \( \frac{1}{3} \) in. long, 1 line thick, torulose but not moniliform or strangulate, straight spreading, dark coffee-brown.

This may be subdivided into 2 states or varr., viz. a. *virescens*; gr. herbaceous in aspect though shrubby, with long straggling branches, longer ped. (2-3 in.), and larger more naked lfts. and stip., approaching *L. cytisoides* L. much in habit and appearance, and growing in moister or more sheltered spots: and b. *cinerea*, with more the habit of *P. glauca*, i.e. more suffruticulose or bushy, with shorter branches and smaller greyer or even silvery-silky foliage, the lfts. being only 1-2 lines long by \( \frac{1}{3} - 1 \) line broad, the petioles 1 line long, and stip. 1 line long and broad. Such spec. occur only late in the autumn (Oct.) before the rains or after the summer drought, along the sea-cliff between Fort S. Jago and the Louros, and are merely depauperated states of a, formerly confounded by me with *P. glauca*. On the other hand, var. a. more resembles *Lotus cytisoides* L. or *L. prostratus* Desf., which are not however (quoad ex. in HH.) true *Pedrosia*, having the style simple. Hence however the present pl. rather than the small starved maritime state of *Lotus hispidus* Desf. above mentioned was probably Holl’s *L. cytisoides*.

2. *P. GLAUCa* (Ait.).

Suffrutescent glaucous-grey very finely and shortly adpresso-pubescent not silvery scarcely silky-hoary; st. slender filiform much branched and entangled cespitose prostrate or procumbent; l. very shortly stalked or sessile rarely all sessile; lfts. and stip. alike in size and shape crowded small often a little succulent or fleshy, twice as long as broad, mostly obovate or spathulate obtuse or rounded at top, not mucronulate, the midrib not excurrent; ped. rather short 2-4-fl.; pods rather short and slender 2-4 times the length of the cal., irregularly beaded or moniliform and often here and there strangulate from abortion of the seeds, smooth 10-30-seeded; seeds globose, often in part abortive. —Varr. :

a. *intricata*; lfts. and stip. obovate or spathulate obtuse; partly stalked, sometimes all or often nearly all sessile.—*Lotus glaucus* Ait. ! Hort. Kew. (ed.2) iv. 392; DC. ii. 210; Buch ! 183. no. 412; Holl’s List in Hook. J. Bot. i. 20. *L. glaucus* a. and b. Sol! in BH. *L. glaucus* WB. ! ii. 84 (in part only, and excl. icon. t. 61). “*L. corniculatus* Linn. variet. Madera. Francis Masson 1776,” Sol ! in BH. quoad ex. in scheda una e tribus sub eodem nomine (non
Linn.).—Subper. Mad. reg. 1, cc; PS. reg. 1, rr; ND. ccc; GD. c; SD. \(\frac{1}{2}\). Sea-cliffs, rocky slopes and borders of the beach almost everywhere along the S. coast of Mad., as e.g. at the Gorgulho and Pta da Cruz near Funchal, and on Pta de S. Lourenço chiefly beyond Labra; forming on the Ilheo dos Embarcadores and I. de Fora as on the N. and S. Desertas large dense mats or beds of herbage, and brought by boatloads for fodder to Machico. In PS. on the headland called Malhado or Pta de Guillerme on the N. coast. Spr. chiefly March–June, but occasionally throughout the year.—Root tap-shaped strong woody white scarcely more than biennial. Branches thin and wiry tough but flexible very numerous and entangled, spreading flat all round from the crown of the root, and forming a thickly leafy mat 1–3 ft. in diam. of a dull glaucous grey enamelled with the numerous little umbels of conspicuous bright-y. or or. fl. Pubescence thick-set and close-pressed yet fine and short. Lfts. crowded very small and short, obtuse or rounded at top and attenuated at the base, 1–2 lines long and half as broad the midrib never excurrent; stip. exactly similar to them in size and shape. Petioles mostly \(\frac{1}{2}–1\) line long though sometimes all or almost all the 1. are nearly or quite sessile with the petiole scarcely or not longer than broad. Ped. about \(\frac{1}{2}\) or \(\frac{3}{4}\) in. long, rarely more, with a 3-foliate sessile fl.-br. at top close below the mostly 2–4-, often 1-, very rarely 5-fl. head or umbel. Fl. rather larger than those of L. corniculatus L., deep golden-y. or or. and streaked more or less with reddish, often varied with or fading into dark rich saffron-brown. Cal.-tube purple; sep. lanceolate \(\frac{3}{4}\), the 2 upper larger broader and longer, all stellate in the bud. Pods \(\frac{1}{2}–1\) in. long, \(\frac{1}{2}–1\) line thick slender strongly moniliform or beaded and here and there irregularly strangulate. Seeds 10–30, mostly 12–20, very small, 1 millim. diam. quite globose smooth and shining, very dark plain coffee-brown or almost black.

The pointed appearance and lanceolate or elliptic shape of the lfts. in certain depauperated altogether sessile-leaved states of this pl. from hot dry situations, is merely caused by their edges having become unnaturally revolute from heat or drought.

\(\beta.\) dubia; somewhat greyer or more hoary than \(\alpha\), but not silky-villose; l. chiefly stalked; lfts. and stip. elliptic or obovate-lanceolate acut-ae.—Mad. reg. 1, rr. Pta de S. Lourenço on the Ilheo dos Embarcadores, a few pl. only, growing amidst a profusion of rank luxuriant pl. of a. intricata, March, April, 1861.—Lfts. 1–2 lines long and half as broad above their middle, almost all decidedly acute. Nearly all the l. distinctly stalked, with petioles a line long. All the rest exactly as in \(\alpha\), between which and P. florida it is a truly intermediate form. Indeed it is a very nice point to determine whether it should be affixed to P. glauca
or prefixed to *P. florida*; but the distinct leafstalks and want of silky villosity incline the scale in favour of the first alternative.

*L. glaucus* Sol. MSS. in BH., and therefore of Ait. Hort. Kew., was established on two ex. without fl. but in fr. of the Madeiran pl. on a single sheet marked by Solander himself "*Lotus glaucus* β, 1. Madeira prope Funchal J. B. and DS. 1768," and "2 Madeira prope Ponta Saõ Lourenzo, Fr. Masson 1777." In the 1st of these the l. are all nearly or quite sessile; in the 2nd some of them are shortly stalked (petioles 1 line long). Hence in his *diagnosis* Sol. says "foliis sessilibus;" whilst in his *description* occur the words "brevissime petiolata." Hence also Webb’s wrong reference of "*L. glaucus* β. Soland. MSS. in herb. Banks." (Phyt. ii. 85) to the very distinct Tenerifan *L. sessilifolius* DC.: for no. 1 on this sheet is assuredly (strictly speaking) Solander’s original type of *L. glaucus*, and notwithstanding the altogether sessile l.=the common Madeiran pl., no. 2, with which in fact Solander has associated it.

Another sheet in BH. contains two ex. marked also by Solander "*Lotus glaucus* MSS. a., 1. Madera F. Masson 1776 (juxta ponta de Crux)," and "2. Ins. Canar. Teneriffa Fr. Masson 1778." Of these the 1st (which is in fl. and fr.) accords exactly with the 2nd of the two ex. on the former sheet in having some few of the l. similarly stalked; and perhaps this was the cause of Solander marking it with an *α* as varietally differing from one at least of the two above-named spec. marked *β*; though in his MSS. he does not preserve, or indeed notice such distinction; rather indicating by certain corrections in them a sense of its futility.

The Tenerifan spec. (Masson 1778) on this sheet (in fl. only) is a mere fragment in bad condition; but it probably belongs to the very distinct *Pedrosia tenella* Lowe.

There exists yet a 3rd sheet in BH. marked by Solander "*Lotus corniculatus* Linn. variet. Madera Francis Masson 1776," but which I believe to be precisely identical with his *L. glaucus* as above explained and exemplified. Some of the l. have petioles 1 line long. This possibly occasioned its reference by Solander to *L. corniculatus*, as being rather in his judgment identical with the Madeiran pl. on two other sheets so-called by him (*Pedrosia neglecta* Lowe), than with his *L. glaucus*, before he had abandoned his first idea of the latter being characterized by having uniformly sessile leaves.
Webb, having sent me from Orotava in 1829 a single spec. of the true *L. glaucus* Ait. *a. intricata*, has subsequently confounded with it two very distinct and hitherto undescribed sp., *P. tenella* and *P. leptophylla* Lowe, the last of which he has also unfortunately figured (Phyt. Can. t. 61) for the true "*L. glaucus* Hort. Kew.," and again probably at t. 60 for the true *L. sessilifolius* DC., a not uncommon pl. in Tenerife (near S'a Cruz and Guimar), but very unlike his t. 60. This confusion is completely proved by his and Bourgeau's spec. sent as "*L. glaucus* Ait." "or Hort. Kew." in BH. and HH., which all belong either to *P. leptophylla* or *P. tenella*. The true *L. glaucus* Ait. I was myself unable to discover anywhere in Tenerife; and indeed in all the Canary Islands I only once met with a single pl. of it on the W. coast of Fuerteventura on the remote desert shore of the Plaga Biocho. The spec. however from Webb of true *L. glaucus* Ait. above referred to as sent to me by him in 1829, appears from his accompanying letter, dated Orotava, to have been collected by him on the W. coast of Tenerife, on which during a six months' residence near Orotava, and in shorter subsequent visits, I could myself find nothing but *P. tenella*. This sp. indeed, abounding all along the W. coast of Tenerife from Orotava to Garachico, must be assuredly the pl. intended by Webb under his *L. glaucus* by the words "In rupibus maritimis Teneriffae occidentalis copiosa." His other localities for *L. glaucus* between Las Palmas and Telde in Gr. Canary, I have never visited: but the common Gr. Canarian sp. on barren hills above Las Palmas to the N. is *P. leptophylla* Lowe.

The nearest approach to the true *L. glaucus* Ait. exhibited by any spec. from Webb or Bourgeau in HH. or BH. is presented in 3 sheets or sets of spec. from Tenerife named *L. dumetorum* WebbMSS., but not described or alluded to in his 'Phytographia Can.' They are no. 803 of Bourgeau's first (1846) and nos. 1321 and 1322 of his second (1855) Tenerife collections: and though I cannot at all assent to their supposed affinity to *L. arenarius* Brot., indicated by the words "*L. arenarius* Brot. var.?" appended to the name *L. dumetorum* Webb MSS. in nos. 1321 and 1322, there seems less objection to their being regarded as extremely luxuriant or robust states or var. of *L. glaucus* Ait.; though at present I am more inclined to consider them with Webb as constituting a distinct and undescribed sp.
PEDROSIA.

The two sp. above mentioned as confounded by Webb with *L. glaucus* Ait. may be thus distinguished:

1. *Pedrosia tenella*; suffrutescens tenuiuscula hispido-pubescent pro-strato-dumosa, ramulis erectiusculis tenuibus patenti-vel reflexo-velutinis; fol. petioli latissimis sessilibusque; foliolis stipulisque conformibus ovatis obtusis subciliatis raro acutiusculis; ped. filiformibus brevissimis reflexo-hispidosus 1-5-fl.; cal. hispidiusculis; leg. rectis cylindricis equalibus longiusculis nigris 10-30-spermis.—*Lotus glaucus* WB. ii. 84 quoad “Hab. In rupibus maritimis Teneriffse occidentalis copiosa.” *Lotus glaucus* Bourg. ! Pl. Can. in itin. 2 do (1855) no. 1323 in BH. et HH. —Hab. copiosa in maritimis plagae occidentalis Tenerife ab Orotava usque ad Garachicum.—A very distinct and pretty sp. at once known by its peculiar bristly or hispidulous pubescence spreading or reflexed on the branches and fringing the lfts.: it abounds on the sea-cliff road between Realejo and S. Juan de la Rambla, and again at the east end of Garachico. Two states or var. may be distinguished: a. virescens, hispida; and b. cinerea, sericea.

2. *Pedrosia leptophylla*; fruticulosa tenuis arcte adpresso-pubescent intricato-dumosa, ramulis disarticatis erectiusculis tenerissimi filiformibus adpressae puberulis; fol. plerisque sessilibus scaphiis; foliolis stipulisque subdifformibus tenuibus adpressae puberulis acutiusculis, obovatis; ped. filiformibus tenuibus adpressae puberulis brevissimis 1-2- (raro 3-) floribus; cal. nudiusculis s. glabriusculis; leg. curtis alqualibus cylindricis torulosis 8-15-spermis.—*Lotus glaucus* WB. ii. 84 quoad icon. t. 61; ejusd. quoad ex. 2 in HH. “Lotus glaucus* Hort. Kew. Ad littora ins. Canariensium, P. B. Webb Esq., inscripta. (N.B. *L. sessilifolius* Webb i. c. t. 60 has been also more probably drawn from a spec. of *P. leptophylla* than from one of the true *L. sessilifolia* (DC.), for which it was intended: and in his description the words “foliis... aut brevissime pedicellatis” and “foliolis... aut ovato-linearisbus” again show that he confounded *P. leptophylla* with *P. sessilifolia* (DC.).) Hab. passim in collibus marit. apricis juxta civit. Las Palmas Ins. Canarieae Magnae, vulg.

3. *P. Florida* Lowe. Sufrutescent pale ashy-grey or whitish; adpressedly and densely silky-grey or hoary almost silvery-silky-villose; st. slender cespitose subprostrate or procumbent; lfts. quite sessile; lfts. and stip. alike, crowded small elliptic lanceolate or obonate-lanceolate acute quite sessile scarcely fleshy; ped. short, 3-5-fl.; pods straight evenly cylindric moderately long and thickish smooth 2-4 times as long as the cal. and 12-20-seeded.—Hook. J. Bot. viii. 294.—shr. u., subper. PS. reg. 1, r. Zimbral d’Arèa at the
Porto dos Frades, April, May.—Habit of *P. glauca*, but with perhaps less prostrate more upright or ascending st., more silky villose pale and grey or hoary foliage, larger more numerous deep-or. fl. often 4 or 5 in a head, lanceolate acute lfts. and stip., the former sessile on the branches or without any common foot-stalk, and larger somewhat thinner straighter not moniliform or strangetulate but only subtorulose or evenly cylindric pods, which are scarcely or about an inch long and \( \frac{3}{4} \)–\( \frac{1}{2} \) line thick. Ped. about \( \frac{1}{2} \) in. long 1–5– or 6- mostly 3–5-fld. with a 3-foliate sessile leaf-like br. at top. Cal. as in *P. glauca* a. In PS. this fine pl. seems to take the place of *P. glauca*, which occurs however here and there on the N. coast. At Porto dos Frades in the Serra de Fora, *P. florida* grows in vast profusion, almost clothing the Zimbral d'Arêa or sandy fossiliferous slope at the S. base of Pico do Concelho, which it makes perfectly brilliant rich with its large rich orange fl. often streaked or stained with dark coffee-brown, forming quite a carpet. A few pl. of *P. macrantha* grow intermixed; but this sp., like *P. Porto-sanctana*, rather affects more rocky situations. Amongst whole beds of pl. of *a. aurantiaca*, with deep-orange fl., occurred a patch of 6 or 8 pl. of a beautiful var., viz. *β. sulphurea*; fl. pale sulphur or straw-colour. Zimbral d'Arêa, rrr; with equally large and almost more copious fl. of a very delicate pale greenish sulphur-y. or light straw-colour, the standard having a few pale streaks of purplish at the base, somewhat like those of *L. macranthus*, but without the violet-purple keel, &c., and in large heads or clusters as in *a*, with which it also perfectly agrees in habit, pods, and foliage. In both varr. the fl. are quite scentless.

*P. florida* is totally distinct from the common Canarian *L. sessilifolius* DC., WB. ! ii. 85 (vix ic. t. 60 ?), but it very possibly may be a mere local state or extreme form of *P. glauca* (Ait.). I have never met with any pl. in the Madeiran group that on due examination could be mistaken for the true *P. sessilifolia*.

The above description was taken solely from the Zimbral d'Arêa spec. In a few others discovered only recently in my Herbarium, and which were gathered in June 1832 on hills near the sea a mile or two to the E. of the town of Pto Stō, I find a very few of the lfts. on the more vigorous leaf-bearing branches with petioles \( \frac{1}{4} \)–\( \frac{1}{2} \) line long. In other respects the spec. agree with the Zimbral pl. This of course invalidates the claim of *P. florida* to rank as distinct from *P. glauca*. 
PEDROSIÀ.

** Ped. short 1-fl. Fl. greenish tipped with blackish-purple.


Suffrutescent dull glaucous-green subcinereous very finely and minutely adpresso-puberulous scarcely silky-hoary; st. slender stiffish bushy procumbent or diffuse; l. very distinctly stalked; lfts. and stip. unlike very small, the latter transversely oval or rhomboidal nearly sessile, the former roundish-obovate obtuse or retuse minute; fl. solitary on short axillary ped. versicolorous; pods very long and straight evenly cylindric many-seeded smooth; seeds 30-40 minute orbicular compressed shining dark brown.—Lotus macranthus Novit. 24 or 546.—shr. subper. Mad. reg. 1, r; PS. reg. 2, 3, 4, c. Mad., Brazen Head, outside the hummock on sunny rocky slopes. PS., hill-sides and highest rocky peaks, general. March–June.—Root scarcely more than ann. or at most bienn. nearly simple or tapshaped flexuose whitish soft brittle juicy. From its woody suffrutescent crown spring several partly prostrate st. spreading all round to the length of a span or more, forming usually a little bushy shr. They are round smooth and purplish at the base, hoary upwards with close-pressed silky hairs, and altogether stouter stiffer and less wiry than in P. glauca. Foliage much finer and smaller than in that sp., less close or dense, and not white or grey, but glaucous dull smoky green, appearing smooth, yet clothed like the st. upwards and the petioles with fine short close-set or distant adpressed white and silky hairs. Stip. nearly sessile leaf-like subinequilateral broader than long often emarginate at the base. Petioles about two lines long. Lfts. roundish-obovate or ob-cordate 1-2 lines long, 1-1½ broad; petiole or common footstalk 1½-3 lines long. Fl. very large often an inch long, always solitary cernuous or even pendulous on short jointed rounded axillary ped. 2 or 3 lines long, scentless, often dull purplish even in the bud, but mostly at their first expansion pale sulphur or pale greenish-y., streaked or tinged more or less with dull brownish purple, with a blackish purple patch at the base of the standard, and the tip of the keel always dark purple. As it fades the whole fl. becomes first brownish, then more or less dark purple or blackish. There is usually a stalked 1-3-foliate br. at the joint or base of pedic. Cal. large pale gr. pubescent; teeth ½, long linear acuminate nearly equal in length, the two upper broadest; the 4 upper ascending, the lowest straight. Pet. not loose and flaccid as in P. glauca, but compact and close, altogether concealing the stamens and style. Wings as long as standard, closely embracing the remarkably long purple-beaked keel, uniform pale sulphur. Stam. diadelphous 9½ the 9 combined into a smooth silvery-whitish sheath; fil. unequal, the longer dilated upwards and often barren. Ov. hairy chiefly along the upper suture, soon becoming smooth. Style as long
as ov. round slender smooth, giving off from its upper side a little below the thickened tip a short distinct straight slender branch or tooth. Pods mostly 2 in. long, $\frac{1}{3}$ in. thick, perfectly straight and cylindric, tipped with a short curved point, quite smooth, shining dark brown or black, erect or spreading not deflexed or drooping, divided within into as many cells as seeds by numerous regular transverse membranous dissepiments; very rarely here and there strangulate or torulose. Seeds very small, one millim. in diam., 30-40 in a full-sized 2-inch pod, orbicular compressed, perfectly smooth and even, appearing to the naked eye dark brown, but through the lens tawny or dark yellowish mottled with black specks and dots.

Usually more erect or bushy and always less grey or hoary than P. glauca (Ait.), with a wholly different habit, owing to its delicate minute thin foliage, and shorter stiffer branches not interlacing into tangled matted beds or tufts.

5. P. ARGENTEA Lowe.

Suffrutescent silvery-white or grey and softly silky-villosely or hirsute; st. elongated woody stout and stiff prostrate or procumbent; stip. shortly stalked roundish-oval; lfts. large obovate or obovate-wedgeshaped retuse mucronulate; fl. solitary very rarely binate on short stalks with a large leafy 3-foliate br. or sub sessile; pods distinctly stalked long straight evenly cylindric more or less hairy many-seeded; seeds 12-50 a little larger than in P. macrantha.—Hook. J. Bot. viii. 293.—$^{\text{shr}}$ subper. PS. reg. 4, rrr; ND. r; SD. reg. 2, $^{\frac{r}{2}}$ PS., rocky summit of Pico do Facho, N. side. ND. at the top, under the low central ridge or bank of rocks running northwards immediately beyond the ruined house. SD. at or near the top on the W. side or edge of the cliff. April–July.—Very different in aspect and habit from P. macrantha, altogether coarser and stouter with large silky densely hairy silvery foliage, and comparatively stout stiff woody branches, though the pl. is of scarcely more than annual duration. Branches long straggling procumbent or diffuse distinct not crowded and thus rarely cespitose or bushy; silvery and silky-hairy. Petioles rather long (2-3 lines) distinct; lfts. sometimes $\frac{2}{3}$ in. long and $\frac{1}{2}$ in. broad at top, bluntly rounded, more or less retuse often mucronate, thickly clothed and almost shaggy with white adpressed silky hairs. Stip. the same but shorter and cordate-oval or rhomboid. Fl. rarely more than half the size of those of P. macrantha, and mostly altogether dark dull mulberry-juice- or claret-purple, rarely pale greenish-lemon. Teeth of the cal. (in the fl.) $\frac{3}{4}$ longer than the tube linear-acuminate or subulate nearly equal in length broader in fr. Style long, persistent, with a very
distinct parallel straight tooth or rather fork towards the end. Pods $\frac{1}{4}$ in. thick and sometimes $\frac{3}{4}$–2 in. long, but mostly about half the length of those of \textit{P. macrantha}, which they resemble otherwise in all respects. Seeds perhaps a little larger than in that sp., viz. $\frac{1}{2}$ millim. in diam., but otherwise the same.—A very distinct sp., most resembling \textit{Lotus creticus} L., which is however not a true \textit{Pedrosia}.

States of this pl. undoubtedly occur which appear in some points intermediate, and may seem to pass into \textit{P. macrantha},—having less shaggy silky foliage, and forming (as at the top of SD. in July 1849) large matted beds like \textit{P. glauca}. Such are perhaps hybrids. But on the humid cold N. side of the rocky summit of \textit{P. do Facho} in PS., bathed in almost constant cloud and moisture, \textit{P. argentea} and \textit{P. macrantha} are found growing intermixed, each in its extremest form of character, viz. with large silky-hirsute, and minute nearly smooth lfts.,—thus proving themselves to be at least no mere local varr. of a single sp. And if the occasional occurrence of an intermediate form be held fatal to the constitution of a sp., there will remain few indeed in other genera than \textit{Lotus} or \textit{Pedrosia} that will stand the test.


Suffrutescent \textit{silky white} or \textit{silvery-grey} profusely leafy; st. diffuse or prostrate woody slender flexible; l. stalked; lfts. and stip. alike \textit{linear-lanceolate acute densely silky-hairy}; fl. solitary axillary sessile subsperate towards the ends of the branches; pods villose very short scarcely longer than the enlarged persistent villose equally 5-partite cal. \textit{few-seeded} linear straight moniliform or strangulate, the joints globose; seeds 2–6 subglobose.—\textit{Lotus Loweanus} WB. ii. 87. \textit{Pedrosia Porto-sanctana} Lowe in Hook. J. Bot. viii. 293.—shr. per. PS. reg. 1, 2, cc. Sea-cliffs and rocky slopes or hill-sides near the sea almost every where in PS., especially near the town. April–June.—Per. and more suffruticos in habit than any of the preceding sp. Branches numerous from the crown of the root, spreading prostrate or diffusely suberect and then distichously branched and elegantly feathery or drooping, round and faintly striated, 6–18 in. long. Whole pl. thickly leafy clothed with soft dense silky silvery adpressed pubescence, except the cal. which are quite villose with spreading hairs. L. all stalked; stip. and lfts. of same size and shape, 3–5 lines long and 1–1$\frac{1}{2}$ broad. Fl. dark dull blackish purple, not altogether small but inconspicuous and buried in the foliage, not longer than the l., uniformly solitary and sessile in the axils towards the ends of the branches. Cal.
large campanulate 5-fid, its teeth 3 times the length of its tube linear equal erect or ascending villose nearly as long as the fl. Cor. rather small scarcely exceeding the cal.; standard and wings blackish purple shorter than the narrow acuminate keel which is greenish lemon-col. more or less black or streaked with black. Stamens diadelphous 9|1. Style smooth upwards with a short straight fork or tooth below the distinctly capitate stigma. Pods most like those of *P. glauca* but only \( \frac{1}{4} \) in. long and 1 line broad, often shorter than the sep. and concealed within the cal., clothed like the cal. with thick w. shaggy hairs, strongly moniliform or strangle, divided internally by complete transverse *septa* into as many distinct cells as there are seeds or turgid globose joints, not however separating across between the joints but bursting as usual longitudinally into two valves, each divided into cells by the halves of the *septa* which split each into two parts. Seeds oval-globose brown quite smooth and even.

Exclusively, apparently, a Porto-Santan pl., discovered first in 1828 in company with Webb, but laid aside for many years in order to establish, by comparison with other cognate genera and sp., the claims to generic distinction from *Lotus* which, from the first, I believed it to possess.

Scarcely three months after its publication (Oct. 1856) under the name of *P. Porto-sanctana* in the J. of Bot. seeing for the first time a copy of vols. ii. and iii. of Webb's Phytogr. Can., it was at once apparent that the pl. had been previously described from PS. specimens, gathered with me in 1828, under the name of *Lotus (Heinekenia) Loweanus*, by the excellent and amiable author of the 'Canarian Flora.' His specific name possesses therefore a clear right of priority. I only regret unfeignedly that *Heinekenia* has no such claim for adoption, having been imposed by him on an ill constituted section merely of *Lotus*, embracing only one (the present) true *Pedrostia*, and not being in any way correlative with that generic group, to which indeed his other section, *Etymolotus*, rather corresponds, though not defined by any clear invariable or important character.

††† Tribe V. Galegeae.


False Acacia.

††† R. Pseudacacia L. American Locust-tree.

Branches smooth mostly armed with a pair of small strong
stipulary spines at base of petioles; lfts. oblong-oval or elliptic; rac. drooping and with the pods smooth.—Brot. ii. 486; DC. ii. 261.—Tr. per. (l. deciduous) Mad. reg. 1, 2, c or ½. In public walks and gardens chiefly about Funchal, the Mount, Camacha, &c. March, April.—A tr. 30 or 40 ft. high with deciduous odd-pinnate l. of 5–10 pairs of rather large stipelled smooth lfts. 1–1½ in. long, ½–¾ or 1 in. broad, and lax drooping short rac. of pure w. fragrant fl. appearing in early spring before the l. and perfuming the air in their neighbourhood. Bearing the sea air better than most tr. in Mad., it is well adapted for planting near the beach; but affords rarely more than a scanty shade. Though its roots run generally near the surface, throwing out frequent suckers, it shows no disposition to become truly naturalized in Mad.

A few tr. of *B. dubia* Fouc., DC., with pale blush-pink fragrant fl. formerly existed about the Quinta do Valle; and *R. hispida* L., a shr. with hispid st. and rac. of deep-rose-purple scentless fl., also occurs sometimes in gardens.

**Tribe VI. Hedysarea**.

* Fl. umbellate. L. odd-pinnate.

15. **ARTHROLOBIUM** Desv.

1. A. EBRACETATUM (Brot.).

L. all pinnate; lfts. elliptic-oblong in 3–7 lax or distinct pairs, equal, the lowest remote from the st.; stip. minute indistinct; ped. about as long as the l. mostly 2–3-fld.; pods falcate slender filiform.—"Desv. Journ. Bot. 3. 121, t. 4. f. 10;" EBS. t. 2544; Bab. 86. **Astrolobium ebracteatum** DC. ii. 311; Seub. Fl. Azor. 49. no. 390. **Ornithopus ebracteatus** Brot. ii. 159; Brot. Phyt. Lusit. i. 168, t. 63; Spr. iii. 325; WB. ii. 117.—Herb. ann. Mad. reg. 2, 3, ccc; reg. 1, occasionally. Mountain pastures, especially near rills or water-courses, everywhere. At the mouth of the Rib. da Janella near the sea. May–July.—Nearly or quite smooth and of a full or darkish gr.; sometimes a little puberulous upwards. Root with several knobs or tubers at the crown. St. 6–12 in. long numerous spreading all round prostrate filiform straight rather stiff and hard mostly reddish or purplish. Lfts. in about 6 pairs distant and distinct, each 3 or 4 lines long and half as broad. Stip. very minute and inconspicuous adnate to the petiole, obsolete or wanting altogether in the upper l. Ped. slender filiform 1–2 in. long 1–4-fld. without any l. or lft. at the top. Cal.–teeth many times shorter than the tube, triangular-ovate. Fl. small golden-y. inclining to or. Pods very smooth and shining mostly
reddish or purplish before ripe, very narrow and slender almost filiform, an inch or more long and only ¼ a line broad falcate of equal curvature throughout, nearly cylindric or only slightly compressed, and even or scarcely perceptibly strangulate or torulose, minutely punctato-rugulose, with a slender acuminate more or less hooked beak.

Mr. Babington in EBS. t. 2844 refers to “Koch. Syn. 189,” meaning his 1st ed., for the pl. is omitted altogether in his 2nd.

16. ORNITHOPUS L.

1. O. perpusillus L.

Ped. about as long as the l. mostly 2–3-fld.; cal.-teeth ovate 2–3 times shorter than tube; pod slender narrow compressed erect arched or curved upwards, distinctly jointed or moniliform, beak straight shorter than the topmost fertile joint.—Desf. ii. 172; EB. t. 369; Buch. i. 197. no. 396; DC. ii. 312 (excl. var. β); Sm. E. Fl. iii. 290; Koch 209; Bab. 86.—Herb. ann. Mad. reg. 2, 3, c. Grassy banks in chestnut woods and mountain pastures almost everywhere above 2000 ft., e.g. up the Caminho do Meio, at or above Camacha, Paul da Serra at the Chão de Madeira, &c., and abundant in chestnut woods about the Jardim da Serra. May–July.—An inconspicuous but elegant little pl., not easily discernible in the short mountain turf of which it is however in most places a constituent. Whole pl. pubescent. St. 3–12 in. long prostrate or procumbent slender straight and stiffish. Lfts. in 5–12 or even 2 or 3 more pairs, small 1–2 lines long, half as broad oval or elliptic rather close or crowded, the lowest pair in all but the root-l. close to the st. Stip. very small and indistinct adnate to the petiole. Ped. 1–4-fl. slender filiform ¼–1½ in. long with a sessile pinnate l. at top. Fl. very small white elegantly painted within with bright crimson and y. lines or dashes. Cal. pubescent the teeth short triangular-ovate. Pods pubescent ¼–½ in. long, 1 line broad, slightly curved upwards throughout their whole length, distinctly constricted between the joints; when riper or dry elegantly wrinkled or striate longitudinally. Joints oblong-oval truncate at each end. Beak straight short.

O. sativus Brot. (O. roseus Dufour, O. perpusillus β DC.) with cal.-teeth linear-subulate as long as the tube, and rather longer straighter or quite straight inclining or pendulous pods with a beak as long as the topmost joint, should be looked for in Mad., occurring as it does both in Portugal and (Seub. Fl. Azor. 49) in the Açores.

2. O. compressus L.

Ped. shorter than the l. mostly 2–3-fld.; cal.-teeth linear-
subulate nearly as long as tube; pods large broad and flat de-
clining or pendulous scimitar-shaped or hooked downwards
only towards the tip, distinctly jointed or moniliform; beak
hooked, as long as or longer than the topmost joint.—Desf. ii. 172;
Brot. ii. 159; Buch! 197. no. 397; Fl. Gr. t. 714; DC. ii. 311;
WB. ii. 117.—Herb. ann. Mad. reg. 2, 3, ccc. Sunny open spots
and mountain pastures everywhere. Waste ground about
Funchal, at Camacha, &c. April–June.—Altogether hairy or
pubescent, and of a peculiar somewhat pale or hoary light apple-
gr. St. numerous from a radical tuft of l. prostrate or pro-
cumbent 6–18 in. long spreading all round stout straight and
stiff. Lfts. numerous in 10–20 pairs crowded and close together
larger than in Arthrolobium ebracteatum DC.; the lowest pair
in the upper l. close to the st.; in the lower l. oval, in the upper
elliptic; all acute or mucronulate. Ped. 2–5-fl. short with a
sessile pinnate l. at top beneath the umbel. Fl. small, the
same size as in A. ebracteatum DC. but clear y. approaching to
lemon. Pods much compressed 1–2 in. long, 1½–2 lines broad,
straight below, strongly hooked towards their point, finely
pubescent, distinctly constricted between the joints which are
oval and truncate at each end: when ripe or dry longitudinally
striate.

17. HIPPOCREPIS L.

§ Annual. Sinuses of pods circular or nearly closed.

1. H. MULTISILIQUOSA L.

Ped. about the length of or a little shorter than the l. mostly
4–6-fl.; pod arcuate or circularly falcate with deep horse-shoe-
shaped sinuses opening on the convex edge, hispid-echinulate
over the horse-shoe-shaped seeds and minutely glandular-ciliate
irregularly at the upper convex edge.—Desf. ii. 175; DC. ii. 312;
WB. ii. 118; Fl. Gr. t. 717; Moris Sard. i. 543. t. 66.—Herb.
ann. Mad. reg. 1, rrr; PS. reg. 2, r. Brazen Head, Mad., out-
side the rocky hummock; hill-sides in PS. here and there to-
wards the sea. April, May.—Nearly smooth and shining, only
here and there slightly puberulous. Cotyledon-leaves long
linear. Root nearly simple white. St. several 6–12 in. long
sometimes erect mostly procumbent or diffusely spreading
straight angular strongly ribbed or striate shining reddish or
purple. L. dark full gr. 1½ in. long; lfts. of lower l. in 2 or 3
pairs broad oval, of upper in mostly 5 pairs with an odd one
narrow elliptic about ½ in. long slightly refuse mucronate,
beneath like the short leafstalks, ped., and st., subpuberulous.
Ped. usually nearly or quite the length of the l. sometimes
shorter 2–6-fl. Fl. rather small bright golden y., standard a
little streaked outside with reddish-purple. Pods of a very
singular and beautiful form, an in. or more long, ½ in. broad
very flat and thin, curved almost into a circle, with large circular or horse-shoe-shaped sinuses at regular distances on the convex upper side, hispid or muriculate-scabrous with dense short erect glandular spinules or bristles all round the sinuses where the seeds lie arching round them, and indistinctly ciliate with very short tubercular or glandular pale points at the opposite or upper convex excised edge, which is also red or purplish before maturity. When ripe the whole pod is reddish-brown. Seeds brown smooth shining angularly compressed slender horse-shoe-shaped curving semicircularly round the sinuses.

** Fl. umbellate. *L. simple.*

18. **Scorpiurus** L.

1. **S. sulcata** L.! *Cabreira.*

Nearly or quite smooth; ped. longer than the l. 1-4-fl.; cal.-teeth ovate-triangular shorter or not longer than the tube; pods armed loosely curled downwards, the volutions distinct or distant unentangled and nearly in the same plane, ribbed lengthways, the inner ribs unarmed, the 4 outer armed with distinct not crowded bristly spines with slightly hooked points.

—Desf. ii. 174; Buch! 197. no. 398; DC. ii. 308; WB. ii. 115. *S. subvillosa* Holl's List! in J. of Bot. i. 20 (not Linn.). *S. echinata* var. *sulcata* Brot. ii. 79.—Herb. ann. Mad. reg. 1, 2 (principally 1), ccc; PS. reg. 1, 2, 3, ccc. Waste ground, borders of cornfields and road-sides Mad. everywhere; in PS. up the P. do Castello, P. d'Anna Ferreira, in the Serra de Fora, &c. Feb.—May.—St. prostrate, the ends ascending, rather stout and stiff, pale gr. L. dark shining gr. very variable in size and shape mostly subspathulate-lanceolate acute, much attenuated downwards into the long narrowly winged or margined petiole, ribbed not veined from 2-6 in. (with petiole) long and ½-1½ in. broad. Ped. 1-5 or 6 in. long axillary 1-4—mostly 1-, rarely more than 2-fl. Fl. small bright full y. Cal.-teeth broad and short acute. Pods mostly reddish scarcely so thick as a crow-quill, irregularly waved and spiral in one plane, contracted between the seeds and thus singularly flexuose or wavy in short arches, armed with 4 rows of very unequal spines or bristles often a line long on their upper or outer convex dorsal side.

The true *S. subvillosa* L.! (*S. sulcata* Fl. Gr. t. 719 not Linn.!) distinguishable, as well observed by Boissier, by its pods being from their earliest stage strongly and irregularly curled or twisted into a confused closely entangled mass, has not hitherto occurred in Mad. Webb however records it as a Canarian pl., and I have, I believe, myself collected it in Palma.
BISERRULA.

2. S. VERMICULATA L.

Hirtosely pubescent or subvillose; ped. 1-2-fld.; cal.-teeth ovate-acuminate or lanceolate longer than the tube; pods smooth closely curled thick unarmed, the 10 outer ribs warded with stalked clubshaped crowded close-set tubercles.—Brot. ii. 79; DC. ii. 308; WB. ii. 116.—Herb. ann. Mad. reg. 1, 5. Edge of the sea-cliff halfway between Funchal and the Brazen Head (Dr. Lemann); Canico (S. Moniz); to the W. of Funchal at top of some rocks halfway between the little Crater and the E. end of the Praia Formosa; between Machico and Canical abundantly. April, May.—Larger coarser and ranker than the usual states of S. sulcata L., and always subvillose or softly hairy-pubescent, scarcely shining. St. 1-2 ft. long. L. as in S. sulcata L., but light apple-gr. and slightly hoary. Fl. much larger and mostly solitary rarely 2 together, or not y. Cal.-teeth longer and narrower than in S. sulcata. Pods very curious, large or thick, shorter and of fewer volutions, but these more closely rolled together and ½ in. in diam. or as thick as a large goose-quill, contracted between the seeds, of a singular pale whitish spongy appearance, and most curiously covered with close-set stalked wartlike or scale-like tubercles, each resembling in miniature a conical nail-head or the pileus of a Leotia or Helvelia.

Tribe VII. Astragaleae.  

19. BISERRULA L.

1. B. PELECINUS L.

The only known species.—Brot. ii. 170; Novit. 23 or 545; WB. ii. 96.—Herb. ann. Mad. reg. 1, r; PS. reg. 2, 3, 4, c; ND. r; SD. reg. 2, r. March-June.—St. prostrate or procumbent from 6-18 in. long, lying usually quite close to the ground and often thickly matted, sparingly branched, elongate slender leafy. Whole pl. pale dull gr. almost hoary, with the habit somewhat of an Ervum. Lfts. small, in many (about 10) distinct or subremote pairs, widely notched as if they had been doubled together and their ends cut off obliquely rather than obcordate, the lobes being acute not rounded; the midrib forming a minute point or mucro in the middle of the notch. Fl. small inconspicuous very pale greyish-b. or almost white, 2-4 together in a short-stalked umbellate rac. Cal.-teeth long subulate setaceous. Pods drab-brown pendulous large broad flat and very singular from their regularly large-toothed edges or rather sharply-keeled backs, being flattened or compressed in a contrary direction to that of most leguminous pl. i.e. from suture to suture; they are ½-2 in. long and ½-⅓ in. broad, and about 14-seeded, the seeds in 2 rows of about 7 each. Var.:
25. **LEGUMINOSÆ.**

*a. pubescens* Novit. 1. c.; wholly pubescent. — *B. Pelecinus* Desf. ii. 190; Fl. Gr. t. 737; DC. ii. 307.—On the Brazen Head outside the hummock, and at the Piedade, Caniçal, ascending from the sandy beach. Top of N. Deserta near the ruined house. Top of SD. In P° io S° general in waste ground, cornfields, on sunny slopes of hills by road-sides, &c., from the sea-cliffs up to the very summits of P. d'Anna Ferreira, P. do Castello, &c. here and there.

*b. glabra* Novit. 24 or 546; WB. 1. c.; wholly smooth.—rrr. Only on the Brazen Head, Mad., growing intermixed with a, and without intermediate forms. Yet, except in the entire want of pubescence in every part, there is no essential difference at all between the two,—a being all over hairy, almost hoary, in every part, with the midrib of the pods usually dark purple or v.; /3 quite smooth in every part, with the midrib of the unripe pods gr. like the rest. In size or luxuriance, as in size and colour of the fl. the two entirely agree.

### § OCHROLEUCI

*Bucrates* DC. Stip. free distinct, fl. y. or yellowish, pods often hooked, root annual.

1. **A. Solandri** Lowe.

Herbaceous ann. villose-pubescent; st. procumbent or diffuse; stip. free distinct; lfts. in mostly 10–12 crowded pairs oval or elliptic-oblong notched or retuse smooth above, hoary-grey and hairy or villose beneath; ped. many-flowered elongate as long as or somewhat longer than the 1.; pedic. in fr. deflexed; pods pendulous slender falcate acute compressed trigonal widely and deeply channeled at the back, closely strigose-pubescent.—Hook. J. of Bot. viii. 294. *A. canescens* Sol! in BH.; Buch1 197, no. 399; Prim. 34 (not DC.). *A. hamosus* Sibth. Fl. Gr. t. 728 (not Linn. !).—Herb. ann. Mad. reg. 1, rrr. PS. reg. 2, 3, c. P° S. Lourenço on the Ilheo dos Embarcadores, first observed by the Rev. Marwood Tucker, 1838. PS. sunny rocky slopes and hill-sides; general. April–June.—Very variable in size and luxuriance.—Root small nearly simple tapering white a little woody. From its crown spring several slightly flexuose st. which are sometimes nearly upright but mostly at first more or less prostrate then ascending, from 2 or 3 to 12 or 18 in. long. Whole pl. hoary dull gr. and clothed in all parts except the upper surface of the lfts. with copious white adpressed shaggy but not long hairs. Stip. ovate-lanceolate acuminate, free and distinct from the petiole, but often more or less combined with each other round the st., placed as usual one on each side the base of the petiole. Lfts. in from 10–14 seldom fewer than 5 or 6 pairs becoming gradually smaller from the base upwards, 3–7.
ASTRAGALUS.

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lines long; 1–3 broad. Fl. rather small pale or greenish y.; rac. shortly oblong dense, mostly from 10–15– not often less than 5– or 6-fld., on erect axillary ped. 2–4 or 5 in. long produced throughout the whole length of the st. Bracts small lanceolate membranous deciduous. Cal. and rachis clothed with brown and black hairs. Cal.-teeth linear-lanceolate shorter than the tube. Pods about 1 in. long, ¼ in. broad, strongly hooked or sickle-shaped, 3-sided but distinctly compressed, with a deep broad furrow, having prominent raised margins, on their convex side or back, clothed in all stages with short cless-pressed bristly hairs, pale gr. or yellowish, but when fully ripe pale brown and splitting open along their concave side. Seeds compressed dark olive-y.; radicle prominent.

Varies greatly in habit and luxuriance, being sometimes quite prostrate, with st. not above 2 or 3 in. long, and sometimes a foot high or more and bushy, with upright or diffusely spreading branches. It differs from the true A. hamosus L. (Herb. Linn.) in the smaller (shorter and narrower) compressed trigonal (not terete or cylindric) widely channeled and in all stages (adult as well as young) adpressedly strigose-pubescent pods, in the smaller more crowded lfts., the hoary villose foliage, and free distinct not oppositifolious stipules. Nor are the lfts. cuneate or ovate, or the ped. shorter than the l. On the other hand the Canarian pl. A. hamosus a and b WB. ii. 93, 94, formerly confounded with the present by myself and Webb, proves by examples gathered recently abundantly in Lanzarote, Fuerteventura, Hierro, and Gomera by myself, to be the true A. hamosus L. Herb. Linn.!

†2. A. BENTICUS L.

Herbaceous ann. inconspicuously pubescent; st. procumbent or diffuse; stip. free distinct; lfts. in 10–15 pairs oblong or linear-oblong truncate or retuse smooth above; ped.few-flowered short, much shorter than the l.; pods erect straight oblong short and thick three-sided subcompressed broadly channeled on one side, beaked with a hooked point at the tip; dorsal suture and edges of channel tumid thickened.—Desf. ii. 184; Broc. ii. 167; DC. ii. 291; WB. ii. 94; Fl. Gr. t. 730.—Herb. ann. Mad. reg. 1, rrr. Brazen Head, only on the steep sunny western slopes of the extreme point in a strong clay soil, where it is perfectly naturalized, though doubtless originally a mere straggler, or the remains of cultivation on the spot. It has not been met with either wild or cult. elsewhere in Mad., though probably, from its luxuriance in this exposed and arid situation, it might prove in similar places an exceedingly valuable re-
source for fodder, if cult. as a crop. First noticed by the late Dr. C. Lemann, then by myself, and again, after many years, recently by the Barão de Paiva and Sr. Moniz. March, April.—

A large coarse straggling branched copiously leafy pl. with dark-gr. foliage. St. 1-2 ft. long stout and robust round striate often purplish. Stip. free from the petiole but partially combined with each other round the st., membranaceous ovate acuminate. L. 5 or 6 in. long; lfts. \( \frac{1}{2} \text{–} 1 \) in. long, 2-3 lines broad, quite smooth above, adpressedly pubescent beneath like all the rest of the pl. Fl. ochroleucous pale very small and inconspicuous crowded in small 2-6-flowered shortly stalked spikes. Cal. clothed with black hairs; the teeth linear-subulate as long as the tube. Peduncles angular about 1 in. long, solitary. Standard pale dull greenish-y. much longer than the wings which again are longer than the keel. Pods 1 in. long, \( \frac{1}{2} \) in. broad, short thick oblong prismatic subcompressed and hollow or broadly channeled on the outer or lower inflexed suture-side, shining though finely adpresso-pubescent; when ripe becoming roughish, especially along the rounded thickened or tumid edges of the channel, and of a pale light yellowish colour, with a short strong sharp hooked beak. Seeds 4 in each cell large squarish much compressed with a strong notch or sinus at the hilum, pale brown or tawny-y. smooth.

Tribe VIII. Vicieae.

†††21. Cicer L.

†††1. C. Arietinum L. Grão de bico.

Glandular-pubescent; l. mostly odd-pinnate; lfts. in many pairs ovate- lanceolate sharply serrate equal; stip. ovate coarsely and irregularly serrate; cal. but slightly gibbous at the base, its teeth as long as the wings of cor.—Desf. ii. 168; Brot. ii. 165; Buchl. 197. no. 394; BM. t. 2274; DC. ii. 354; Koch 212; Wight Ic. Pl. Ind. Or. 1. t. 20.—Herb. ann. Mad. and PS. reg. 1, 2, c. Amongst corn and in waste ground here and there occasionally; towards the Praia, to the E. of Funchal, &c. Frequently cult. as a crop. April, May.—Sparingly branched and chiefly from the base, the branches distichous or spreading in one plane, 12-18 in. long; the l. also regularly distichous and without tendrils, rendering the habit altogether peculiar. Whole pl. dark gr. glandulose-pubescent and with an acid taste when applied without bruising to the tongue. Lfts. ovate oblong or elliptic acute at both ends sharply and strongly serrate. Stip. ovate strongly sharply and coarsely toothed. Ped. 1-fld. very much shorter than the l. 2-bracteolate at top. Fl. solitary moderately large about 5 lines long dull purple with darker veins,
often creamy-white in the Canaries but not observed to be so in Mad. Pedic. as long as ped., in fr. abruptly deflexed at juncture with ped. Sep. linear-lanceolate twice as long as tube. Pods 1-1½ in. long very short and turgid rhombic-ovoidal velvety-pubescent pale gr. or yellowish when ripe. Seeds 2 large (size of marrowfat peas) pale y. ovate gibbous obtuse rudely resembling a ram's head; when boiled hard and flavourless, but considered the best of the various kinds of field pulse cultivated by the Portuguese, and forming a frequent ingredient in their "Sopas." In the Canaries, under the name of "Garbanzos," they are almost a universal adjunct to the "Puchera," that sine qua non of a Spanish dinner.

22. ERVUM L.

§1. Lens Ser. in DC.; pods slightly turgid short broadly oblong 2-seeded.

†††1. E. LENS L. Lentilha, Mad.; Ervilha PS.

Erect branched bushy pubescent; lfts. linear-oblong in mostly 4-5 pairs with simple unbranched not prehensile tendrils; stip. ovate or linear-lanceolate entire ciliate; ped. 1-3-fl. awned nearly as long as the 1.; sep. linear-subulate equal as long as or longer than cor.; pod short broad subtruncate smooth and even 2-seeded; seeds compressed lens-shaped smooth.—Desf. ii. 167; Brot. ii. 152; DC. ii. 366; Koch 219; Seub. Fl. Azor. 49. no. 383. Lens esculenta Moench, WB. ii. 97.—Herb. ann. Mad. reg. 1, 5; PS. reg. 2, 3, ccc. Cult. as a crop amongst corn about the Piedade on Pta S. Lourenço in Mad.; above the town beyond the windmills towards the Fonte d'Arêa and almost everywhere in PS. April, May.—A small erect bushy leafy pl. 6 or 8 in. high with small light or y.-gr. foliage. Whole pl. except the pods slightly hairy. L. short 3-1 in. long. Tendrils very fine and filiform 4-5 in. long straight or slightly curling, not prehensile, reduced on the lower l. to a short awn or point. Lfts. 2-6 pairs, 2-5 lines long 1-2 broad truncate or retuse mucronulate, the uppermost linear-acute. Ped. mostly 2-fld. Fl. small inconspicuous 2-2½ lines long light bluish; cor. not longer than sep.; standard blue upwards with darker streaks or lines. Style upwards sparingly puberulous only along the upper side. Stigma capitate. Cal. and sep. hairy, the latter very long and narrow linear and finely acuminate of equal length 5 or 6 times longer than the very short tube. Pods pendulous subrhomboidal compressed somewhat turgid quite smooth pale yellowish brown or fawn-colour when ripe, 5-6 lines long, 3 broad, rarely 1-seeded. Seeds rather large (2 lines diam.) orbicular sharp-edged perfectly smooth and even, dark reddish-brown; hilum very small and narrow linear short.
Grown amongst corn (wheat, rye, or barley) as clover in England. When ripe the whole pl. is pulled up by the roots and dried in bundles. The ripe seeds are a favourite pulse with the poor.

2. E. PARVIFLORUM (Loisel.).

Climbing branched rampant subpubescent; lfts. in mostly 5-7 pairs but often irregularly alternate especially downwards linear-oblong or elliptic distinctly mucronate; the tendrils branched prehensile twining; stip. half-arrow-shaped linear-lanceolate; ped. 2-3-fld. awned shorter than the l.; sep. unequal linear-lanceolate finely acuminate shorter than cor.; pod short broad obliquely truncate smooth and even, subpuberulous only at the upper edge, 2-seeded; seeds compressed globose minutely scabrous.—" Vicia parviflora Loisel. (not Mich.)." “Ervum parviflorum Bertol.;” Moris Sard. 1. 570, t. 71. Vicia disperma DC. ii. 359; WB. ii. 101.—Herb. ann. Mad. reg. 2, rr. Along the Levada de Bom Successo up the Caminho do Meio, in the Rib. de Joao Gomes in waste rocky places or bramble-hedges amidst cult. ground. March, April.—Most like E. hirsutum L. in habit and fl., but lighter gr. with large smooth pods like E. Lens L. St. branched ribbed and angular climbing and entangled amongst other pl. or bushes. Lfts. 2-5 lines long, 1-1½ broad, mostly acute at each end, often obtuse, always distinctly mucronate, in 4-8 pairs but set very irregularly on the rachis. Fl. 1-4 very small 2 lines long scarcely larger than those of E. hirsutum L., pale grey or bluish, the keel tipped with v.-black. Cal. and sep. hairy; the latter unequal, the 2 uppermost broadest and shortest subtrangular or semi-ovate-lanceolate converging, the 2 side ones rather narrower and longer, the lowest narrowest (linear-subulate) and longest; all finely acuminate longer than the tube but shorter than cor. Style hairy all round upwards below the capitate stigma, not bearded. Pod large like that of E. Lens L., but rather longer and more obliquely truncate (not perfectly ripe in my spec.) 6-8 lines long, 3 broad, very flat and thin with always 2 prominent seeds, perfectly smooth and even, except along the upper fertile suture which is minutely subpuberulous, pendulous pale yellowish-brown or fawn-colour. Seeds (not quite ripe) a line or a tenth of an in. in diam. dark brown or blackish finely punctato-granulate or scabrous; hilum small.

This sp. much resembles in its pods and foliage E. vicioides Desf. ii. 168, t. 198. Its transfer from Vicia to Ervum permits, and indeed necessitates, recurrence to Loisleu'r's original specific name, forestalled in Vicia by Michaud, as dispernum of DeCandolle is by Roxburgh or Willdenow in Ervum.
3. **E. HIRSUTUM L. Cigerão.**

Climbing branched rampant subpubescent; lfts. in mostly 6-8 pairs irregularly opposite often alternate linear-oblong or linear truncate or retuse mucronulate the tendrils branched prehensile twining; stip. linear-setaceous 2-3-partite; ped. 2-6-fl. awned shorter than the l.; sep. equal linear-acuminate shorter than cor.; pod more or less pubescent often almost velvety small oblong short compressed obliquely truncate 2-seeded; seeds prominent globose smooth.—EB. t. 970; Brot. ii. 152; Buch! 197, no. 393; Sm. E. Fl. iii. 289; DC. ii. 366; Hook. Fl. Brit. (ed. 5) 88; Koch 218. *Vicia hirsuta* WB. ii. 99; a. Bab. 81.—Herb. ann. Mad. reg. 1, 2, 3, ccc; ND. r.; GD. r. A common weed in Mad. everywhere in waste ground, vineyards, cornfields, road-sides, &c. about Funchal, P° da Pargo, Cayados Ravine, &c. Jan.—June.

Branches slender entangled climbing thickly amongst herbage by the twisting branched tendrils. Lfts. dull gr. 2-3 lines long very variable in breadth, i.e. 1/3-1 3/4 line broad, truncate or notched mucronulate; stip. semisagittate, upper lobe lanceolate, lower in 2 or 3 linear setaceous segments. Fl. very small 1/4 or not quite 2 lines long, greyish nearly or quite white. Cal. and sep. pubescent, the latter straight equal linear finely acuminate longer than the tube, the 2 upper approximate. Style short stout subcapitate altogether smooth. Pods never in Mad. quite smooth mostly densely pubescent, scarcely above half the size of those of *E. parviflorum* (Loisel.), 4 lines long 2 broad, dark coffee-brown or black, very closely finely and minutely striolate obliquely. Seeds 2 rarely 1, protuberant large proportionately, 1 line in diam. globose slightly compressed smooth and even, fulvous or pale yellow-testaceous mottled with brown or black; *hilum* long linear equal to 1/3 circumference of seed.

§ 2. **Ervilia Ser.** in DC.; pods linear-oblong 4-6-seeded.

††4. **E. ERVILIA L. Marruço or Marroiso, i.e. Marrvio.**

Smooth erect branched from the base, branches stout straight simple; lfts. subpectinate linear or linear-oblong truncate or retuse mucronate in mostly 12-14 pairs, often irregularly alternate, without tendrils; stip. half-arrow-shaped lanceolate lacinately cut or toothed; ped. 2-flowered awned much shorter than the l.; sep. equal linear-subulate shorter than cor.; pod linear-oblong rather short and broad moniliform 2-4-mostly 3-seeded smooth; seeds very prominent large subglobose slightly angular smooth.—Brot. ii. 153; DC. ii. 367; Koch (ed. 2) 219. *Vicia Ervilia* Willd.; WB. ii. 100; Koch "(ed. 1) 192." **Ervilia sativa** Link sec. DC.—Herb. ann. Mad. reg. 2, r. Cult. as a crop in cornfields on the Cabo Girão towards the Pico do Rancho. May, June.—Forming a thickly matted or entangled
crop about 12 or 15 in. high. Whole pl. nearly or quite smooth, light gr. leafy with finely pectinate foliage. Branches numerous from the base, rarely or sparingly subdivided, firm erect strongly ribbed or angular, as thick as a crowquill, 9–12 in. long. L. 2½–3½ in. long with numerous (8–16) pairs of narrow linear somewhat crowded pectinate lfts. 3–4 lines long and ½–1 line broad, of which the lower and often all are placed very irregularly and alternately. Lower lobe and teeth of upper lanceolate part of stip. linear-setaceous. Tendrils reduced to a short simple awn. Fl. middle-sized 3–4 lines long pale rose-purplish, the keel tipped with w. Ped. not half the length of l. Cal. and sep. smooth or only puberulous, the latter long and subsetaceous longer than the tube. Style capitate sparingly pubescent upwards along the upper side only. Pod 6–8 lines long, 2½ broad, pale yellowish or fawn-colour perfectly smooth and even, but curiously moniliform or strangulate from the very prominent large seeds, which are 1½ line in diam. and of a reddish tile-colour. Hilum small oval.

†††5. E. monanthos L. Lentilha.

Smooth climbing branched from the base, branches little subdivided rampant; lfts. linear or linear-oblong truncate or retuse mucronate in 5–7 pairs, the tendrils branched and twining; stip. dissimilar very unequal, one very small sessile simple linear-lanceolate entire, the other large stalked pedately fringed or ciliate with long subulate setaceous divisions; ped. 1-flowered nearly or quite as long as the 1, mostly awned; sep. equal linear-lanceolate acuminate half the length of cor.; pods broadly oblong compressed torulose 3-or 4-seeded smooth; seeds prominent large orbicular compressed.—Brot. ii. 152; DC. ii. 367; Koch 219. Vicia monanthos Desf. ii. 165. V. monantha WB. ii. 101. Vicia articulata Willd.; Spr. iii. 267. Lathyrus monanthos Willd. Enum. (non Spec.) ex DC.—Herb. ann. Mad. reg. 2, i. Cult. as a crop in fields amongst corn to the E. of Funchal along the Caniço road beyond S. Gonçalo, and above the Brazen Head. April, May.—Wholly smooth; st. 1–3 or 4 ft. long scarcely branched except at the base, climbing thickly interwoven and entangled, especially when growing as a crop, by the mostly 3-cleft tendrils, stout striate or 4-angular with a strong rib up each of the 4 sides. Stip. very peculiar; the fringe-like lacinia? of the large stalked pedate one long and setaceous. Lfts. subremote in tolerably regular pairs, 4–9 lines long, 1–1½ broad. Lower ped. shorter, the middle about as long as the 1. Fl. rather large 4–6 lines long mostly considerably larger than those of the next sp. (E. gracile Loisel.) pale bluish grey; standard with dark dull v. veins and tip of keel with a dark v. spot, the wings white. Cal. and sep. quite smooth, the latter straight and equal acuminate longer than the tube about half the length of
cor. Style slender capitate minutely puberulous upwards all round. Pods like those of the common garden-pea (*Pisum sativum* L.) but smaller, 1–1 ½ in. long, ½ in. or 4 lines broad, quite smooth 2–4–mostly 3-seeded pale yellowish brown or fawn-colour. Seeds large 2½ lines or ½ in. diam. uniform velvety-black. Hilum small short linear white.


Smooth or nearly so but occasionally subpubescent, branched climbing rampant; lfts. linear or linear-oblong acute cuspidate erect in 3–4 pairs but mostly placed irregularly or alternate, the tendrils simple unbranched twining; stip. all semiagitate or hastate; ped. 1–4-flowered longer than the l., often twice as long, awned; sep. nearly equal short half-ovate or triangular shorter than their tube, much shorter than cor., the 2 uppermost converging; pods linear or linear-oblong compressed subtorulose 6 or 7-seeded smooth; seeds globose even; hilum roundish-oval small.—"DC. Catal. Hort. Monsp. 109; Fl. Franc. v. 581;" Koch 219. *E. tetraspermum* β. *gracile* DC. ii. 367; Senb. Fl. Azor. 49. no. 384. "*E. tenuifolium* Lag.,*E. tenuissimum* Pers. and *E. longifolium* Ten." DC. i. c. *E. varium* Brot. Phyt. Lusit. Fascic. 1 (1801) "no. 29;" Eus. Fl. Lusit. ii. 152; Welwitsch Fl. Lusit. exsicc. Sect. ii. no. 811 in BH. *Vicia gracilis* Loisel. Fl. Gall. ii. 148. f. 12; Koch (ed. 1) 192; EBS. t. 2904; Bab. 82. *V. laxiflora* Brot. Phyt. Lusit. Fascic. 1 (1816) p. 125, t. 52. *V. tetrasperma* β. *laxiflora* WB. ii. 100.—Herb. ann. Mad. reg. 1, 2, 3, ecc; PS. reg. 2, 3, 4, c, or ½; GD. reg. 2, c. Waste ground, vineyards, &c., a common weed about Funchal, and in ravines and thickets everywhere in Mad. Road-sides about Camacha, up P. do Facho and P. Branco, &c. in PS. Central valley, GD. March–June.—St. slender branched and climbing extensively amongst shrubs or herbage. Whole pl. slightly puberulous but apparently smooth, sometimes distinctly subpubescent, of a bright full gr. Lfts. commonly 5–10 lines long and linear or very narrow but variable in breadth, the lower especially, in luxuriant pl., sometimes half as broad as long, yet always acute and cuspidate, never blunt and mucronate. Ped. erect stiff slender 2–3 in. long, often, especially in fr., twice as long as the l. Fl. Bluish-lilac 3–4 lines long i. e. larger than those of *E. tetraspermum* L. and twice the size of those of *E. hirsutum* L. Cal. and sep. subpubescent, the latter very slightly unequal short half-ovate or triangular-lanceolate, acute, the 2 uppermost broadest and shortest ascending and converging with their points mutually incurved, the 3 lower (especially the lowest) a little narrower and more lanceolate but very little longer, all shorter than the tube, scarcely (with tube) half the length of cor. Cor. 2–3 times length of cal. Style capitate subpuberulous upwards. Pods 6–7 lines long, 1½–2 broad, pale fawn-col., 5–8–
mostly 6–7-seeded. Seeds dark blackish-brown smooth even with a short rounded oval hilum not $\frac{1}{10}$ circumference of seed.

Mr. Carruthers informs me that “in B.H. there is a spec. of E. gracile (Loisel.) from Jacquin, gathered in Languedoc, labelled in Jacquin’s own handwriting:—‘Ab Ervo tetraspermo differt seminibus pluribus quam quatuor, et foliolis acutis. Videtur nova Ervi species.’ This shows that Jacquin first distinguished the species.”

7%. E. PUBESCENS DC.

More or less pubescent rarely glabrescent, branched climbing rampant; lfts. oblong rather short and broad the lower oval, all obtuse submucronate in 5–7 or 8 pairs, the tendrils branched twining; stip. upper linear-acute, the lower semi-hastate; ped. 2–4-fld. filiform awned (“awnless” Gren. and Godr.) shorter or scarcely longer than the l.; sep. distinctly unequal elongated-triangular at length linear-subulate longer than their tube shorter than cor.; pods mostly pubescent linear-oblong 5–6-seeded; seeds globose even, hilum roundish-oval small $\frac{1}{10}$ circumf. of seed.—DC. ii. 367 (not Tenor. or Loisel.); Gren. et Godr. Fl. Fr. 1. 474. “Vicia tetrasperma Moris Fl. Sard. 1. 567! (not Moench)” Gr. and G. l. c. V. tetrasperma a. WB! ii. 100 (not Moench, and excl. most of the syn.).

3. glabrescens; smooth except the younger portions of the pl. and cal.; ped. awned.—Vicia gracilis Sol. MSS. in part, and BH! quoad ex. ad sinistram schedse “1. Madeira 1768, JB. and DS.” inscriptum; Buch ! 197. no. 390 in part also. Vicia tetraspernum Moench (Phytogr. Canar. 2. pag. 99) Teneriffe: in campis san Roque, Maio 1845, Bourgeau ! Pl. Canar. no. 599 in BH. and HH. —Mad. Sir J. Banks and Dr. Solander, 1768: not observed more recently.

My sole authority for this as a Mad. pl. is the scrap referred to in BH. pasted by Solander on the same sheet with a spec. in fr. of Vicia albicans Lowe and marked as collected by himself and Sir Joseph Banks in Mad. A.D. 1768. It is Solander’s original and principal type for his V. gracilis, though he described the pods of that pseudo-species from the other right-hand spec. of V. albicans Lowe. It is also the pl. mentioned by myself twice in Primit. (ed. 2) App. p. v. under the name of E. hirsutum L. as it had been inadvertently called by my friends Lemann and Bennett in litt. I had subsequently on personal inspection referred it to E. gracile (Loisel.); but I now acquiesce entirely in the
opinion of Mr. Carruthers that, notwithstanding some discrepancies, it belongs rather to *E. pubescens* DC. as described by Grenier and Godron. The following notes upon the spec. have been kindly furnished by Mr. C.:

"Smooth except the cal. and young lfts. or rather all the younger portions of the spec. which are hairy. Tendrils branched. Lfts. 5–9 lines long \( \times 1–2 \) broad oblong bluntish rounded slightly mucronate in 5–8 pairs. Stip. all semi-hastate, but the upper portions of the branches are wanting in the spec. Ped. 2–4-fld. awned 1–2 in. long in fl., shorter than the l. Fl. with cal. 2 lines long. Cal. and sep. thinly hairy (pilose). Sep. elongated-triangular, at length subulate, with the edges ciliate; 2 upper about the length of tube, the 3 others much longer yet shorter than cor. Pods wanting in this spec., but in Bourgeau’s no. 599, which there can be no doubt is the same sp., the pods are linear-oblong, covered with short scattered hairs, 5–6-seeded, and the seeds roundish with a rounded-oval hilum \( \frac{1}{6} \) of their circumference."

The absence of pods in Solander’s pl.—not to mention the general smoothness and awned ped. in both his and Bourgeau’s spec.—invalidates of course the certainty of the foregoing determination, and consequently the claims of *E. pubescens* DC. to a place in the Mad. Flora. But, as Mr. Carruthers justly observes, "granting that Solander’s spec. is a satisfactory datum for including a pl." otherwise unobserved "in the Mad. Flora, then, with the assistance of Bourgeau’s Canary pl. (no. 599), which are undoubtedly the same sp., there can be no doubt that *E. pubescens* must have a place there." That the latter pl. has escaped the observation in Mad. of myself and other recent botanists is of little weight, considering its close resemblance to *E. gracile* and *E. tetraspermum*, and the fact of its having remained elsewhere so long confounded with those sp. It has proved to be however a Canarian sp.; and now that its characters are better understood, its detection in Mad. will it may be hoped soon follow, and establish, after nearly a century’s obscurity and error, the correctness of Mr. Carruthers’s determination of Solander’s unique specimen.

MM. Grenier and Godron l. c. describe *E. pubescens* DC. as distinguished, "1st, from *E. tetraspermum* by its often more than 2-fld. ped., longer as many as 6-seeded pods, seeds with an oval-rounded hilum \( \frac{1}{6} \) their circumference, and by the broader lfts.; 2ndly, from *E. gracile* by the more slender awnless ped. scarcely longer than the l., by the generally smaller fl., the more unequal
25. LEGUMINOSÆ.

cal.-teeth, by the oval lfts. of the lower l. and shorter much broader elliptic or oblong lfts. of the middle l., and lastly by its pliant (molles) flexuose stems; 3rdly, from both by the linear-subulate cal.-teeth longer than the tube, by its almost always pubescent rarely smooth pods, its linear-acute stip. the lower only being semi-hastate, and lastly by the numerous hairs covering the stems and l.—Pl. pale gr. varying much in the size and number of the fl."—Thus, with the pods and seeds of *E. gracile*, it has more the aspect, the fl., and shorter broader lfts. of *E. tetraspermum* L.

In the Canaries I have observed both *E. gracile* (Loisel.) and *E. pubescens* DC. (with shortly awned or awnless ped. and altogether pubescent), but not *E. tetraspermum* L.; and Mr. Carruthers and the Rev. W. W. Newbould assure me that Bourgeau's Canarian ex. both in BH. and HH. of his Pl. Canar. no. 599, "*Vicia tetraspermum* Moench (Phytogr. Canar. 2. pag. 99) Teneriffe: in campis san Eoque, Maio 1845," are not, as I had hastily supposed, *E. gracile* (Loisel.), but certainly identical specifically with Solander's left-hand spec. of his *V. gracilis*, i.e. with *E. pubescens* DC. β.

8. *E. TETRASPERNUM* L.

_Nearly or quite smooth branched climbing rampant; lfts. linear-oblong obtuse mucronulate in 3–5 or 6 pairs, the tendrils forked or simple; stip. semi-sagittate the upper sometimes simple linear-acute; ped. 1–2-fld. filiform awnless as long as the l.; sep. very unequal shorter than the tube, the 2 upper shortly triangular or half-ovate, all shorter than cor.; pods mostly smooth subcylindric 3–5-seeded; seeds globose even marbled or speckled, hilum linear-oblong elongate =½ circumfl. of seed.—Desf. ii. 167 (in part); EB. t. 1223; Sm. E. Fl. iii. 288 (in part); Hook. Br. Fl. (ed. 5) i. 89; DC. ii. 367 (excl. var. β.); Koch 218; a. Gren. et Godr. Fl. Fr. 1. 474; Buch ! 197. no. 392; *Ervum tetraspermum* L. var. latifolia, pedunculis unifloris—forte distincta species—Madeira 1777, Fr. Masson, Sol! in BH. *Vicia tetrasperma* "Moench," Bab. 82.—Mad. Fr. Masson 1777; not lately noticed.—I have never observed in Mad., but may have easily overlooked amidst a profusion of *E. gracile* (Loisel.), this common English hedge and cornfield weed. It is inserted on the authority of the spec. in BH. above referred to, which after careful examination is pronounced by my very exact and obliging friend Mr. Carruthers to be merely a trifling var. of *E. tetraspermum* L. as originally determined by Solander. I am also indebted to Mr. Carruthers for the following description of this typical ex. :—"Quite smooth. Tendrils simple unbranched. Lfts. all oblong smooth obtuse 5 lines long, 2 broad, in 2–3 possibly more pairs. Stip. simple undivided elongated-tri-
angular. Ped. 1-fld. awnless 1-1½ in. long in fr., as long as or a little longer than the l. including the tendril. Fl. none remaining in the spec. Cal. and sep. smooth. Sep. with membranous margins, the 2 upper triangular shorter than the tube, the 3 others elongate-triangular not or scarcely longer than the tube. Pods 2-3-seeded smooth, 3½-4½ lines long by 1½ line broad.”

_E. tetraspernum_ L. may be known from the common Mad. _E. gracile_ (Loisel.) by its mostly forked tendrils, more numerous (in mostly 4-6 pairs) shorter and broader blunt mucronate lfts., shorter awnless 1-2-fld. ped., much smaller fl., distinctly unequal sep., 3-5- mostly 4-seeded pods, and seeds with a linear-oblong _hilum_ twice as long proportionately to the circumference as in _E. gracile_.


Subpuberulous branched slender climbing rampant; lfts. oblong or linear-oblong obtuse mucronate, in mostly 5 or 6 irregular remote pairs, the tendrils much branched and twining; stip. semi-sagittate or simple, small narrow-oblong or linear, acuminate withering: ped. many-flowered as long as or longer than the l.; cal.-teeth much shorter than cor., shorter than their tube, the 2 upper triangular-ovate broad and short converging; pods oblong compressed quite smooth faintly reticulate 3-5-seeded; seeds subquadrangular, oblong slightly compressed, even; _hilum_ linear very long.—_Vicia capreolata_ Novit. 23 or 545.—Herb. ann. Mad. reg. 3, rr. ND. rrr. Wooded banks and cliffs in ravines, Mad., as at the head of Rib. de St. Luzia, in the Serra d'Agua under Pico Grande; Rib. da Metade, de S. Jorge, do Seixal, &c.; ND. at the top near the ruined house, a single pl. May-August.—Whole pl. slightly pubescent more or less, only in ND. examples nearly smooth, of a full not at all hoary gr. St. very long spreading extensively over bushes or hanging 3 or 4 yards down rocks, slender sparingly branched ribbed or angular. Lfts. 2-6 pairs remote alternate or very irregularly paired, mostly 4-8 lines long and 1-2 lines broad, sprinkled, especially beneath, with short adpressed hairs. Stip. hairy, either simply acuminate or 2-toothed at the tip, otherwise quite entire except the toothlet at the base when they are semisagittate; soon turning red, then brown and dry. Stipels and bractlets none, or minute and deciduous. Rac. stalked secund, about 10-15-fld. Fl. 4-5 lines long, pale lilac or cream-colour, white and hoary with pubescence in the bud. Ped. in fl. about the length of the l., in fr. twice as long, subpubescent. Pedic. short thickly pubescent or hairy. Cal. submembranaceous thin pale or yellowish-gr. pubescent campanulate slightly compressed, ¾-toothed; 2 upper teeth broad and short acute or even cuspidate approxi-
mate, their points singularly curving inwards towards each other, with strong fleshy midribs; 3 lower more produced or acuminate, with less prominent midribs and withered or discoloured tips; the teeth all hairy like the rest. Cor. cream-coloured more or less lilac, the standard streaked with dark-lilac or indigo-blue lines, keel nerv'd and tipped with a patch of the same, its edge pale y. or cream-colour. Stam. 1/9 not longer than the style, the sheath smooth. Style smooth below, clothed upwards chiefly beneath the capitate stigma with glanular spreading hairs, not bearded across with a distinct bunch or pencil as in genuine *Vicia*. Ov. quite smooth. Pod 1 1/4 in. long and 1 1/4 in. wide (in the ND. pi. narrower, viz. 1 1/4 in. long and only 2 lines or 1/4 in. wide), glaucous pale reddish brown or fawn-col. when ripe; straight or somewhat scimitar-shaped, the point curving upwards. Seeds rather large and shaped somewhat like horse-beans, 5 millim. long and 3 broad, mottled with black on a dark red-brown ground. 

Hilum linear extending the whole length of one side of the seed; funiculus very large and conspicuous. Nearly allied to the British *V. sylvatica* L.

23. *Vicia* L.

§ 1. *Cracca*; fl. in distinctly stalked secund spikes or racemes.


Ann. villose hoary, st. 4-sided climbing; lfts. elliptic-oblong mucronate in 6–12 somewhat irregular pairs, the tendrils much branched and twining; stip. semisagittate deeply cut and toothed; ped. 2–5– (mostly 2–) fld. much shorter than the l.; cal. coloured villose-hairy, the 2 upper teeth minute and indistinct, 3 lower linear-subulate shorter or not longer than the tube; pods oblong rather broad and short compressed velvety or densely pubescent about 4-seeded; seeds globose smooth.—Prim. 33; Seub. Fl. Azor. 49. no. 386. *V. gracilis* Sol. ! MSS. quoad leguminas; BH. quoad ex. ad dextram schedae “2 Madeira, 1777; Fr. Masson” inscriptum; Buch! 197. no. 390 in part (not Loisel.). *Vicia micrantha* Lowe! Prim. 33 and App. (ed. 2. p. v). *V. atropurpurea* y. *biflora* WB. ii. 105. *V. biflora*, WB. t. 65 b. (not Desf.).—Herb; ann. Mad. reg. 1, r. Sunny rocky ground in the neighbourhood of Funchal; e. g. at the top of the W. bank of the Rib. de João Gomes; amongst cornfields and waste ground to the E., especially below the Capella das Nêves on the Canico road; in the vineyards on the road to S. Antonio a mile out of Funchal to the W., &c. Jan.–June.—Root small fibrous with small tubers. St. diffuse branched at the base, climbing by means of the much branched 3- or 4-cleft tendrils, 2 or 3 ft. long leafy upwards and rather stout.
Whole pl. of a whitish or hoary dull gr. and more or less villose with white hairs. Lfts. from 12–25, mostly 20, irregularly opposite or alternate, very uniform in shape and size, about 5 or 6 lines long and 2 or 3 broad, obtuse or subacute, all distinctly mucronate. Stip. rather broad at the base, deeply cut into sharp subulate teeth. Ped. short quadrangular ½–1 in. long, the l. being from 1–3 in. long. Fl. rather large ½ in. long, mostly 2–4, lax or remote, a little larger than the fl. of V. Cracca L., bright rose-purple downwards, dark dull blackish-purple upwards, with the standard streaked with darker lines. Cal. similarly coloured more or less, with the 3 setaceous lower sep. greenish, the middle one longest but scarcely longer, often shorter, than the tube; the whole thickly clothed with long soft white hairs. Style hairy all round below the globose capitate stigma, bearded beneath; pod an inch or a little more long, 3–4 lines broad, flattened compressed, but a little turbid and torulose when ripe, pale brown or fawn-colour; in all stages thickly clothed with short adpressed soft white hairs. Seeds 4–6, mostly 4, dark-coloured, being mottled or marbled with dark-brown and small black specks on a paler greenish ground.

The true V. atropurpurea Desf., which I have gathered several times and carefully observed in the Canaries, is an altogether larger more robust pl., with full-gr. scarcely at all hoary foliage, and large many-flowered racemes: nor do these differences appear attributable to mere luxuriance of growth.

Vicia gracilis Sol. ! in BH., and consequently of Von Buch, is a mixture founded on a spec. in fl., but without fr., of Ervum pubescens DC. β. supra p. 196 (inadvertently called by Lemann and Bennett in litt., and so twice by myself in Primit. (ed. 2) App. p. v, Ervum hirsutum L.), and Vicia albicans Lowe. An ex. of each of these two sp. has been pasted by Solander on one sheet,—that of E. pubescens DC. β. (Solander's original type, though he described the pods from the other spec.) being on the left hand of the sheet and referred to at the back as "1. Madeira, 1768, JB. and DS. ;" the other right-hand spec. (Vicia albicans Lowe) being marked "2. Madeira, 1777, Fr. Masson." This last was the type of my Vicia micrantha Prim. p. 33; and it is certainly merely a smoother-leaved state than usual of V. albicans. See Prim. (ed. 2) App. pp. iv, v.

§ 2. Fl. nearly sessile, axillary either solitary or in short few-flowered clusters.

+2. V. CORDATA Wulf.

Robust succulent leafy pubescent bright full gr.; st. stout
succulent climbing not much branched; lfts. in 4 or 5 pairs pubescent broadly orbicordate or obcuneate, the upper more oblong, retuse or truncate with a very prominent awn or mucro, the lower less, none more than 2–3 times as long as broad; stip. semisagittate many-toothed laciniate, the teeth acuminate-aristate, darkly branded beneath; fl. 1–2-nate all nearly sessile inconspicuous narrow-oblong; sep. hairy-pubescent linear-lanceolate acuminate unequal, the 2 upper distinctly longer than the tube; cor. not more than twice as long as tube and sepal, standard narrow-oblong; pod narrow linear 8–9 times as long as broad, smooth even or scarcely nodulose subreticulate or vein flat or compressed 10–12-seeded; seeds rather large (3½–4 mill.) orbicular compressed smooth and even, plain black, separated by a slight spongy cellular dissepiment.—DC. ii. 362; Koch 217; Gren. et Godr. Fl. Fr. i. 459.—Herb. ann. Mad. reg. 1, 4½; PS. reg. 3, r; GD. reg. 2, r.—Varr.:

a. Fl. dull-purple inclining to violet.

β. Fl. brighter-purple approaching to crimson.

Cornfields and waste ground, never cult. as a crop, but singly here and there, and often intermixed with V. conspicua; a. Mad. along the Canico road to the E. of Funchal; β. with brighter col. more conspicuous fl., Mad. in corn; Loo-fields and between the Quinta do Valle and Rib. de João Gomes; grassy mountain pastures amongst brambles at the Terra Queimada above Machico on the road to S. Ant. da Serra; PS. at the base of the steep grassy slope half a mile below the top of Pico do Facho; GD. in the central valley. May–June.—A somewhat coarse and robust or rankly growing pl. of a bright full green, all over hairy-pubescent, and with rather large dense cumbrous foliage, 18 in. high, but little branched, climbing by means of its branched twining tendrils. Branches stout and succulent. Stip. much cut or toothed, stamped with a blackish depression beneath. Lfts. rather large and broad, 4–9 or 10 lines long, 2–3 broad and, except the lowest, which are shorter and broader (roundish-ovovate or orbicordate), very uniform in size and shape, coarser or more substantial than in V. conspicua. Fl. all solitary in Mad. and nearly or quite sessile, narrow-oblong with a narrow standard; in a. inconspicuous with the keel dark dull red; in β. rather or at least more conspicuous, of a brighter colour verging towards crimson or (in GD.) dark crimson. Sep. unequal, the 2 uppermost a little shorter than the rest, but distinctly longer than the tube, which is split up in fr., linear-acuminate, pubescent. Pod 24–27 lines (50–55 mill.) long, 3 lines (6 mill.) broad, pale or rusty brown quite smooth flat or compressed feebly reticulate or vein and not knobbed or bossed by the seeds, which are only large in comparison with those of V. conspicua and not speckled.
Habit of *V. sativa* L., but distinguished by its strongly retuse or obcordate subbilobed lfts., black and narrow pods which are only half as broad in proportion to their length, smooth instead of pubescent, and less distinctly reticulate or veiny, with the seeds not prominent and much smaller.


Slender with dull dark foliage mostly smooth sometimes pubescent; st. thin slender wiry branched climbing rampant; lfts. in 4–6 pairs obovate-oblong or oblong retuse or truncate, prominently awned or mucronate, not more than 3–6 times as long as broad, the lower broader obcordate, the uppermost only narrowly-oblong or linear sometimes lanceolate or elliptic; stip. semisagittate many-toothed laciniate, the teeth acuminate, darkly branded beneath; fl. 1 or 2–4–nate mostly 2–nate, the lower solitary, upper 3–4–nate, shortly but distinctly stalked except quite the uppermost, conspicuous; cor. pea-like with the standard at least as broad as long; cal. subpubescent, sep. linear-subulate nearly equal and nearly or about the length of tube; pods straight narrow subcylindric 8–10 times as long as broad black puberulous even or scarcely nodulose, not reticulate or veiny, 9–12-seeded; seeds small subglobose smooth even brown speckled with black, without any intermediate dissepiment.

a. *lata*; nearly or quite smooth, rarely pubescent; upper lfts. oblong, uppermost narrow-oblong mostly linear; fl. bright purple-crimson.—*V. conspicua* Novit. 22 or 544.—Herb. ann. Mad. reg. 1, 2, ccc. Vineyards about Funchal, waste ground, cornfields, open mountain pastures and grassy places in ravines and thickets everywhere, a common weed. Jan.–July.—St. at first in early spring dwarfish low and spreading, but soon ascending branched and ultimately climbing to the height of 2 or 3 ft. by the branched twining tendrils; slender thin and delicate, but wiry or somewhat hard and tough. Foliage thin dark somewhat lurid-smoky-gr. Lfts. of lowest 1. in 2 or 3 pairs small short broadly obcordate or rounded-ovobate, scarcely longer than broad; of the middle oblong-ovobate retuse; of the uppermost linear-oblong truncate; all prominently awned or mucronate, mostly quite smooth at least above, sometimes pubescent; mostly 3 or 4–6 or 8 rarely 12 lines long, and 1–2 or 3 rarely 4 lines broad. Stip. strongly and sharply laciniate-toothed, darkly impressed beneath, the barb at their base recurved. Fl. large handsome of a deep bright crimson-purple, the standard large and broad, not small and narrow as in *V. cordata*, at first solitary early in the year, then in pairs, and finally in clusters of 3 or 4 together towards the ends of the branches as the season advances; all distinctly stalked except quite the uppermost on the pl. or the lowest of the 2–4-fld. upper rac. Cal. pale or dark
purplish; sep. sub-equal, about the length of tube or a little shorter, small linear-acuminate. Pods finely but distinctly puberulous, dark coffee-brown or black, shining, about an inch long, \( \frac{1}{2} \) in. broad, subcylindric scarcely compressed erect or declining. Seeds 10–12 small nearly globose scarcely compressed, 1\( \frac{1}{2} \)–2 mill. in diam., brown speckled or mottled and streaked with black.

\( \beta. \) dumetorum; pubescent, lfts. all broader and shorter, the lower more roundly obovate or retuse oval, fl. bright purple-crimson.—Herb. ann. Mad. reg. 2, r.—Shady places amongst bushes, Rib. das Cales, 3000 ft., Apr. May.—Merely a luxuriant drawn-up local form of \( a. \) with more uniformly pubescent broader shorter thinner paler lfts., passing gradually into \( a. \), but distinguishable easily from any state of \( V. \) cordata with its much more robust coarse habit, stouter st., stiffer or more substantial lfts., small inconspicuous narrow solitary (in Mad.) fl., smooth pods, and larger flattened black seeds.

\( \gamma. \) lactea; like \( a. \), but smaller, with finer pubescent foliage, and fl. milk-w. or cream-col.—Herb. ann. Mad. reg. 2, rrr. Up the Caminho do Meio, Funchal, Sr. J. M. Moniz.—A very distinct and elegant little pl., with the remote linear-oblong upper lfts. and habit of small fine-leaved pubescent states of \( a. \); from which therefore, not having seen ripe fr., I am unable to distinguish it more than varietally, though the smaller size of the fl., besides their colour, and the somewhat more than usual degree of pubescence of the lfts., seem to indicate a wider difference. The lfts. of the lower l. are small obovate or obcordate, of the middle oblong, of the upper remote linear 4–6 lines long, one broad: none more than 3–6 times as long as broad.

Difficult as it is undoubtedly to define accurately the two foregoing sp., in consequence of the liability to occasional variation of most of their assigned characters, I cannot after many years' observation regard them as mere races or varr. derived from a single sp. They appear also respectively distinct from the allied European sp., \( V. \) sativa L., and \( V. \) angustifolia Sibth. (EBS. t. 2614), which however I have not enjoyed equal opportunities of studying in a growing state. The more slender habit, dark dull gr. mostly smooth foliage, thinner more oblong or oval lfts., of which the uppermost are often linear, stalked conspicuous 2–4-nate pea-like fl., narrow black puberulous pods, and small globose speckled seeds are the normal features of \( V. \) conspicua compared with \( V. \) sativa L. and \( V. \) cordata Wulf.

Its distinctness from \( V. \) angustifolia Sibth. (EBS. t. 2614) Sm.
E. Fl. iii. 282 ("not Roth, Willd., Rivin." Sm.) is much more questionable, resting principally on the large pea-like conspicuous brilliant-coloured crimson fl. with a broad expanded or dilated standard, and the mostly smooth dark dull-gr. foliage. So much of confusion and uncertainty prevails however with regard to the various pi. described under the name V. angustifolia, that I should be unwilling to perpetuate or perhaps add to it by its adoption in any of its various senses for the Mad. pi., even were it possible to establish the absolute identity of this with any one of them. The following synonyms are those however which certainly come nearest to V. conspicua var. a lata:


Mr. Forster in EBS. t. 2708 appears to me to have exactly reversed the right syn. of t. 2614 and t. 2708. The former at least, by its linear upper lfts., seems, rather than t. 2708 with lanceolate upper lfts., to be the true V. angustifolia "Sibth." Sm. E. Fl. iii. 282, to which Hooker had previously indeed, at t. 2614, referred it. Very possibly however t. 2708 is nothing more than a dwarf early 1-fid. state of t. 2614.

4. V. PECTINATA Lowe.

Slender with dark dull foliage, sparingly and minutely but inconspicuously puberulous, appearing almost smooth; st. thin slender wiry branched climbing rampant; lfts. in 4-6 (mostly 5 or 6) pairs awned or mucronate, all except those of quite the lowest 1. pectinate parallel linear very long and narrow 10-20 times as long as broad mostly acuminate-cuspidate or acute, the lower mucronate retuse, the lowest only oblong-obcuneate or obcordate and minute; stip. small half-sagittate laciniate-toothed, the teeth acuminate-subulate, pale-branded beneath; fl. solitary or binate all distinctly stalked conspicuous; cor. pea-like with the standard broad; cal. subpubescent, sep. linear-subulate nearly equal about the length of the tube; pods straight narrow subcompressed 8 or 9 times as long as broad black minutely puberulous slightly knobbed by the seeds, not reticulate or veiny, 10-12-seeded; seeds rather small nearly globose smooth even, tawny-y. thickly speckled with black, without any intermediate dissepiment—Herb. ann. Mad. reg. I, rr. Amongst Cacti on the verge of the sea-cliff about a mile and half out of Funchal to the eastward, outside the Quinta on the right hand
ascending to the Chapel of N. S. das Neves, Dr. C. Lemann, April 1837; Calhêta in the Rib. de S. Bartholoméo April 1860, Lowe; Ladeira da Cruzinha, Fayal, Sr. J. M. Moniz, Sept. 1860.—Habit and foliage more like that of a *Lathyrus* or *Ervo* (particularly *E. gracile*, Loisel.) than a *Vicia*; whole pl. apparently smooth to the naked eye, but minutely puberulous when closely examined. St. 1–3 ft. long very slender and wiry loosely branched and rampant. Lfts. remarkably long and narrow, 9–18 or 20 lines long, 1/2–1 line broad, regularly pectinate, broadest from the middle downwards, mostly finely acuminate and cuspidate, sometimes abrupt or retuse and mucronate, a few only of the lowest broader and shorter oblong-obcuneate or obovate-obcordate. Fl. as in *V. conspicua*, but somewhat smaller, and I have never seen them more than binate, the lower solitary. Pods 15–20 lines long, 2–2 1/3 broad, dark coffee-brown or black, somewhat knobbed. Seeds 2 1/2–2 1/2 mill. in diam. in my Calhêta ex.

Very distinct in form of lfts. and habit from its near ally *V. conspicua*, as expressed indeed by its first discoverer in the following words: “The very narrow-leaved *Vicia* which I gathered on the sea-cliffs east of Funchal, differs from any var. of the common *V. sativa* L. in having the broadest part of its lfts. towards the base. This is never the case in the other, however narrow the lfts. of some of its varr.” (Lemann in litt., Lond., May 24, 1844.) Afterwards however Dr. Lemann was led by Mr. Bentham’s high authority to regard it decidedly as a mere var.,—an opinion to which I am not prepared at present to assent.

5. *V. lutea* L.

Robust succulent leafy somewhat hairy; st. at first prostrate slender wiry, then ascending stout succulent scarcely climbing; lfts. in 5–8 pairs oblong mucronate or elliptic-lanceolate; stip. small, darkly branded beneath, simple ovate entire, the lower hastate or 1-toothed at the base; fl. nearly sessile solitary large conspicuous; cal. smooth, the 2 upper teeth shorter, 3 lower longer than the tube; all finely acuminate ascending; standard notched, smooth outside; pod short oblong broad and flatly compressed, mostly bulbous-hairy, spreading or deflexed, 4–6-seeded; seeds orbicular compressed smooth even.—EB. t. 481; Desf. ii. 165; Brot. ii. 151; Buch! 197. no. 391; Sm. E. Fl. iii. 284; DC. ii. 363; WB. ii. 108; Koch 216; Bab. 84.—Herb. per. Mad. reg. 2, §. Grassy banks in ravines. Apr.–July.—Subvarr.:

a. *purpurascens*; fl. pale sulphur, streaked and tinged more or less with v.–purple.—Cayados Ravine beyond Camacha abundant; W. Bank of the Rib. de João Gomes near Funchal, Dr. C. Lemann; with still more decidedly purple-tinged fl., Rib. de S. João, Funchal, Sr. J. M. Moniz.—Somewhat smooth, dark
shining gr. St. 1–2 ft. long procumbent and quadrangular below, succulent upwards and partly climbing by the branched tendrils, nearly smooth, sparingly branched except quite at the base. Lfts. in about 6 pairs, slightly hairy, those of the lower l. shorter broader and more abrupt than those of the upper. Stip. with the black impressed spot beneath large and spreading over the whole surface; in the lower stip. it is paler or frequently not present; they are also narrower than the upper with a single distinct spreading tooth at the base. Cal. pale green smooth; the 2 upper teeth equal, 3 lower unequal; the points of all curving upwards. Keel and wings of cor. pale sulphur; standard streaked with dark grey or dull v.-purple lines, more or less purplish at the base when fresh, but turning plain y. like the rest in drying. Pods about an inch long and 4 or 5 lines broad, usually more or less clothed with close-pressed hairs, but sometimes nearly or quite smooth: hairs issuing from a bulb or pustule.

β. pallidiflora DC. l. c.; more hairy, fl. nearly white.—V. lutea β. hirta WB. l. c.; Koch l. c.

Occasionally in vineyards, mm; in my own on the Levada de St. Luzia near Funchal a single pl. once only, July 19th, 1844.—Whole pl. more robust and hairy, sprinkled with scattered distinct whitish hairs, dark gr., with thicker longer st. 2–3 ft. long. Lfts. in 6–9 pairs. Upper stip. simple with a large black spot beneath, lower semi-sagittate with a small pale one. Fl. very pale sulphur, nearly white or cream-colour. Upper teeth of cal. connivent shorter, the 3 lower especially the lowest or middle one longer than the cal.-tube. Standard smooth outside, plain-col. i.e. without dark lines or streaks. Style strongly bearded beneath the stigma. Pods broad flat very hairy, appearing pustulose, each hair growing from a very large distinct bulb or pustule.

I am much inclined to concur with my able and accurate friend Mr. Newbould in believing that V. lutea Sm. EB. t. 483 was merely a smooth-podded state or var. of V. lutea L.

+++V. NARBONENSI S L.

St. branched ascending or erect not climbing by the tendrils; lfts. in 2–6 pairs large oval-oblong or ovate serrate or entire thick or juicy; smooth and shining; stip. broad acute semi-sagittate and sharply toothed, the lower simple and entire; fl. rather large; rac. 1–4- or 5-fld. very short; cal. smooth campanulate, the teeth unequal ovate or lanceolate acute shorter than the tube 3-nerved; pod oblong broad and flat smooth densely fringed or muriculato-pilose at the edges; seeds subglobose compressed. —Desf. ii. 166; DC. ii. 364.
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25. **LEGUMINOSÆ.**

a. lfts. sharply serrate.—DC. l. c. 365. *V. Narbonensis* Brot. ii. 151; β. *serratifolia* Koch 215. " *V. serratifolia* Jacq. Fl. Austr. app. t. 8; Sturm Fl. Germ. 1 fasc. 32" (DC).—Herb. ann. Mad. reg. 1, irr. Occasionally in vineyards about Funchal; in my own on the Levada de Sta Luzia. June, July. Slightly hairy but otherwise more like a bean (*Faba vulgaris* Moench.) than a *Vicia*, in size and glaucous hue of lfts. and in size and aspect of the fl.; also approaching it in the upright habit. Branches and petioles more or less hairy at least on one side, quadrangular, somewhat stout, at least not slender; and though the l. have each a branched tendril, not climbing. Whole pl. more or less sprinkled with short distinct hairs, 6–12 in. high. L. with their few large smooth or slightly hairy glaucous lfts., which are about 1 in. long and \( \frac{1}{2}–\frac{3}{4} \) in. broad, resembling those of the common garden-bean, but with a terminal branched tendril. Fl. axillary clustered dark blackish-purple (atro-purpureous) large, mostly 2–4 in a short bunch or rac. Pods (immature in my ex.) much compressed and thin or flattened, their edges serrulate with teeth terminating in a tawny-y. hair or bristle, "1\( \frac{1}{2} \) in. long, 4 lines broad" (Brot.).

†††24. **FABA Tourn.**


The only sp.—DC. ii. 354. *Vicia Faba* Linn., Koch 214. *Orobus Faba* Brot. ii. 147.—Herb. ann. Mad., PS. reg. 1, 2, cc. In vineyards, fields and gardens, cult. everywhere. Febr., March. —St. simple unbranched stout thick stiffly erect quadrangular bright gr., smooth like the whole pl. except the pods, 1–4 ft. high. Lfts. shining glaucous large and somewhat thick or succulent, in 1 or 2–5 pairs mostly irregularly alternate, oval or oblong entire mucronulate. Tendrils small or wanting. Stip. semi-sagittate sparingly and irregularly toothed large oval. Rac. 2–4- or 5-fld. shorter than the l. Cal. smooth pale gr. tubular, the teeth white-edged membranous with the midrib gr., the 2 upper short triangular-ovate connivent; 2 lateral twice as long, but not longer than the tube, lanceolate acuminate also connivent; lowest like the lateral but straight. Fl. rather large white or greyish with a large deep-black patch on each wing, in small nearly sessile axillary clusters, fragrant. Style pubescent, very distinctlv bearded beneath below the stigma. Stam. completely monadelphous. Pods thick coriaceous velvety slightly viscid 2–5 in. long turgid more or less compressed 3–6-seeded, when quite ripe black. Seeds large oblong more or less compressed, separated by a thin spongy dissepiment, light yellowish- or dark coffee-brown; the linear scar or hilum at one end.—Formerly more largely cultivated than at present since the destruction of the vines, to which the st., dug into the ground after the beans were gathered, served for manure.
LATHYRUS.

Pisum sativum L., the common Garden Pea, with w. fl. and unspotted seeds, is cultivated everywhere, and is in season for the table from Nov. (in Funchal) to May. P. arvense L., the Field Pea, known by its col. fl. (purple-violet standard) and angular compressed brown-spotted seeds, rarely and only accidentally occurs.

25. Lathyrus L.

§ 1. Eulathyrus Ser. in DC.; standard simple (without tubercles) at the base.—Annual; ped. 1-3-flowered. Lfts. none or in a single pair.

1. L. Aphaca L.

Smooth glaucous suberect scarcely or little branched decumbent or climbing by means of the tendrils; petioles leafless ending in a tendril; stip. large leaf-like ovate-sagittate or cordate; ped. 1-flowered; sep. equal lanceolate twice the length of tube or rather more.—Desf. ii. 157; EB. t. 1167; Buch! 197. no. 386; DC. ii. 372; Sm. E. Fl. iii. 274; WB. ii. 109; Seub. Fl. Azor. 49. no. 387; Koch 221; Bab. 84. Pisum Aphaca Brot. ii. 145. —Herb. ann. Mad. reg. 1, 2, §. —Borders of cornfields and waste ground to the E. of Funchal along the Canico road. Chestnut woods at the Mount, &c. March, Apr.—Remarkable for the entire want of lfts., which are replaced by the large broad leaf-like stip. Foliage bright light gr. often glaucous. St. upright but weak and climbing, 9-12 or 15 in. high. Whole pl. smooth and shining. Ped. about 2 in. long, rarely 2-flowered. Fl. y., for the genus rather small i.e. about 5 lines long; standard and wings full bright y., the former pencilled at the base inside with dark b. lines or streaks. Keel pale lemon-coloured or whitish. Bractlet on ped. always solitary; when, as occasionally, there are 2 fl. on the ped., the upper fl. only having one at the base of its pedicel. Pods 6-8-seeded oblong compressed subfalcate torulose reticulate, an inch long, 3 lines broad. Seeds suborbicular compressed smooth shining plain black, 1¼ line in diam.; hilum small oval.

2. L. sphäricus Retz.

Smooth not glaucous suberect branched from the base diffuse not climbing with simple awnlike tendrils; the branches 4-angular; lfts. in one pair linear-lanceolate or linear grasslike elongate finely attenuated at both ends; stip. linear semi-sagittate as long as or longer than the petiole; ped. 1-fld. short, mostly shorter than the leafstalk, produced into a long slender awn longer than itself; fl. rather small; cal.-teeth nearly equal narrow lanceolate acuminate longer than the tube; pod narrow elongate slightly compressed and torulose strongly nerved longitudinally smooth 9 or 10-seeded, slightly margined at the back; seeds globose slightly compressed smooth and even.—“Retz Obs. iii. 39”; DC. Ic.
Pl. Gall. Rar. t. 10. t. 32; DC. ii. 372 (excl. β); Koch 221. 
ii. 706" (DC.). L. angulatus WB. ii. 111 (not Linn.).—Herb. 
ann. Mad. reg. 2, 3, r. Curral dos Romeiros a little way above 
the bridge at the bottom, in steep stony places; Serra d’Agua 
Webb, 1828; by the road approaching the Curral das Freiras 
on the E. side, Dr. Lippold, 1837. May–July.—A small grass-
like pl. resembling L. Nissolia L. Root small fibrous with a few 
little tubercles. St. erect amongst loose stones and grass, con-
siderably branched towards the base but not bushy, the branches 
diffuse quadrangular throughout, not more than a foot long 
slender hard and wiry. Whole pl. quite smooth bright gr. Lfts. 
grass-like remarkably long and narrow, those of the upper 1. 
2–2½ in. long, ¼–¼ in. wide, finely acuminate. Upper l. with a 
long simple awn-like mostly straight not curling or prehensile 
tendril; the petiole of the lower ending in a short awn-like 
point. None of the petioles, not even the lowest, aphyllous. 
Each half of stip. very narrow and finely acuminate, the upper 
half often considerably longer than the leafstalk which is 3–6 
lines long. Ped. solitary axillary, produced into a long fine 
slender awn bearing at or below rarely above the middle of the 
whole length of the ped. and awn together a single, stalked fl. 
jointed to the ped. in fr.; the part below the joint or true ped. 
1–12 lines long, but mostly considerably shorter than the 
awn or leafstalk. Fl. rather small, about 4 lines long or the 
size of those of L. Nissolia L., dull vermilion. Pods 1½–2 
in. long 3 lines wide pale brown or fawn-col. smooth, with nu-
merous strong longitudinal nerves, and the dorsal or seed-bear-
ing suture narrowly margined, 8–12-seeded. Seeds orbicular 
rather than spherical compressed 2 lines in diam. 1 line thick 
dusky olive-brown obscurely spotted or speckled with black, 
quite smooth and even; hilum oval or ovate.

†††3. L. SATIVUS L. Chicharo.

Nearly smooth somewhat glaucous branched bushy suberect 
climbing by the branched tendrils; branches diffuse winged 
compressed; petioles narrowly winged linear; lfts. in one pair 
linear-lanceolate elongate acuminate; stip. oblong, or ovate-
lanceolate semi-sagittate shorter than the slightly winged leaf-
stalk; ped. 1-fld. longer than the leafstalk aphyllous; fl. large; cal-
teeth herbaceous lanceolate equal almost 3 times as long as the 
tube; pod short ovate or elliptic compressed irregularly reticu-
lated smooth, ceroed 2-winged and channelled at the upper edge 
or suture, mostly 3-seeded; seeds 2–4 compressed angular 
smooth even.—BM. t. 115; Desf. ii. 158; Brot. ii. 138; Fl. Gr. 
t. 695; Buch 197. no. 387; DC. ii. 373; WB. ii. 112; Koch 
222; Seub. Fl. Azor. 49. no. 388. L. sativus γ. coloratus Ser. in 
DC. i. c.—Herb. ann. Mad. reg. 1, 2, cc. A common crop cult.
LATHYRUS.

in fields below 2000 ft., either alone or amongst corn, Loo fields towards the Praia, to the E. of Funchal, &c. Febr.—May.—Bushy upright about 1 ft. high, the lower side-branches elongate straggling or spreading horizontally diffuse; dull gr. slightly glaucous smooth except a few scattered hairs occasionally on the edges of the stip., &c. Lfts. 1½ in. long, ¼ or ½ in. wide, finely acuminate. Stip. large leafy strongly semi-sagittate with mostly a single intermediate distinct tooth. Ped. an inch long, considerably shorter than the l. with a single terminal fl. on a short pedic. jointed to its apex, having 2 very minute bractlets at the junction. Pedicel ¼ in. long. Fl. scentless, always in Mad. dull greyish-b., about the size of those of *Pisum sativum* L. or *Lathyrus odoratus* L. (Sweet Pea). Standard broad 6-9 lines wide, dull greyish-b. paler towards the edges, with darker veins and a bright red-purple spot at the base behind, hidden by the wings, which close over the keel and are of a deep full indigo-b. with a red purple spot at the base of the hinder edge of each over against the similar spot on the standard. Keel nearly white, distorted, quite concealed by the adpressed wings. Pod pale brown or fawn-col. an inch long, ½ in. (including wings) wide, with both margins curved and 2 distinct sharp thin membranous wings on the back, each nearly ⅛ in. broad, and a deep intermediate channel. Seeds large angular compressed pale yellowish or greenish 2-3 lines in diam. quite smooth and even; hilum oblong-oval.

I have never seen the fl. either in Madeira or in the Canaries varying from the above description further than in the greater or less extent or intensity of blue in the wings and standard, leaving less or more of the edges pale or whitish, and in the latter case assuming, especially in dried specimens, somewhat of the character of a central suffused b. patch or spot. M. Seringe's var. *γ. coloratus* in DC. is therefore scarcely worth distinguishing.

Such fatal effects were produced in the latter end of the 17th and beginning of the 18th centuries in some parts of Europe by the use of the seeds of this pl., that the authorities were obliged to interfere and forbid its cultivation. In Martyn's ed. of Miller's Dictionary, the flour prepared from the seeds is said to make a pleasant light bread, which, if half the quantity of wheat flour has been mixed with it, is also perfectly harmless: but when used unmixed, those who have lived on it for some continuance are seized, it is said, with violent spasmodic attacks of rigidity of the muscles, followed by the total and incurable loss of the use of their limbs; and it is added that these effects
even extend to poultry and cattle (pigeons, swine and horses) fed upon it. These noxious qualities however, if not indeed due perhaps to the presence locally or temporarily of some such disease as the Ergot of Rye in the plant itself, seem to have depended in some measure on the nature of the soil, having been more powerful in plants produced in a rich strong and moist than in a poor dry one. At all events, in the light dry soil in which this plant grows mostly in Mad., and used chiefly though to some extent by the peasantry as an ingredient in "Sopas" or mixed with other food, these deleterious properties have never been remarked.

†††4. **L. Cicera L. Chicharo branco**, PS.

Nearly smooth somewhat glaucous branched bushy suberect climbing by the branched tendrils; branches diffuse winged compressed; petioles narrowly winged linear; lfts. in one pair linear-oblong elongate acuminate; stip. large leafy broadly lanceolate semi-sagittate as long as the leafstalk; ped. 1-fld. longer than the leafstalk awnless; fl. not large; cal.-teeth herbaceous lanceolate equal, almost 3 times as long as the tube; pod oblong straight-edged rather narrow compressed, irregularly reticulated, smooth, straight and merely channeled (not winged) at the back, mostly 4-seeded; seeds 3–5 compressed angular smooth and even. —Desf. ii. 158; Brot. ii. 137; DC. ii. 373; Koch 222. "L. sativus f. Lam. Dict. ii. 705."—Herb. ann. Mad., PS., reg. 2, cult. r. Subvarr.: 

1. *purpurea*; standard deep blood-crimson or purple. **L. Cicera L., Desf.?, Brot.?, DC., Koch 11. cit.; Fl. Gr. t. 694.**—Mad. cult. as a crop descending into the Rib. de Sá Luzia from the Mount; S. Vicente in fields towards the lower Forno de Cal at the bottom of the steep zigzag ascent to the Lombo de Vaca. May–July. —About a foot high. Habit, &c. of *L. sativus* L. but fl. considerably smaller with the standard of a deep rich (blood-red) purple. Pods an inch long 3½–4 lines broad pale brown or fawn-col., torulose, oblong with straight parallel margins, merely channeled slightly and not winged along the perfectly straight dorsal suture. Seeds 2 lines in diam. 3–4 compressed angular dark brown; hilum oval.

2. *cerulea*; standard blue (purple when dry!) wings and keel paler or white.—PS. cult. as a crop amongst cornfields on the hills; Serra de Dentro amongst corn on the way to the back of the Pico Branco. May, June.—Fl. rather small compared with those of *L. sativus* L. Pod 1 in. long 3–4 lines broad, pale straw-colour; the suture not winged but merely channeled, with raised edges only; mostly 4-seeded. Seeds 3–5 subquadrangular slightly compressed quite smooth and even, pale straw-
colour faintly and minutely streaked or mottled with dull ochre-y.

In habit, foliage, and stature *L. Cicera* L. agrees with *L. sativus* L., differing principally in the narrower oblong unwinged 4-seeded pods, larger stip. and smaller differently coloured fl.

5. *L. annuus* L.

Smooth branched climbing by the branched tendrils, branches rampant winged; lfts. in one pair linear-lanceolate long and narrow elongate acuminate nerved; stip. semi-sagittate very narrow linear much shorter than the leafstalk; ped. longer than leafstalk, shorter than l., mostly 1-rarely 2-fl.d.; fl. middle-sized; cal-teeth ovate-lanceolate not quite equal scarcely longer than the tube; pod narrow-oblong slightly compressed closely and distinctly reticulated smooth very narrowly channeled at the back 6-8-seeded; seeds globose smooth thickly granulate or warted.—Brot. ii. 141; Buchl. 197. no. 388; DC. ii. 373; Spr. iii. 262; WB. ii. 112; Koch 222.—Herb. ann. Mad. reg. 2 and upper edge of l, r. In bramble hedges in the neighbourhood of Funchal from 500 to 1500 ft., as by the roadside about a mile below the Palheiro, in a cross-road joining the Canico and Camacha roads about a mile out of Funchal, a little above the Palmeira, &c. March-May.—Habit somewhat of *L. odoratus* L., rather dull gr. not glaucous. St. climbing like the garden Sweet pea (*L. odoratus* L.) to the height of 3 or 4 ft., broadly winged upwards. Lfts. grass-like 4 or 5 in. long, about ¼ in. broad, attenuated at both ends. Stip. small very fine and narrow. Leafstalks an inch long broadly winged. Fl.y. scentless not inconspicuous but mostly rather smaller than those of *L. Clymenum* L. Ped. 1-rarely 2-fl.d., at first as long as, but presently much shorter than the l., minutely or obsoletely bractleted at the base of the pedicel, rarely awned by abortion of the 2nd fl. Fl. pea-like 5-6 lines long. Standard dull orange-y., streaked inside with red and veined, with a prominent plait or fold not tuberculate on each side at the base. Wings bright y. rounded. Keel greenish-y. very blunt and thick. Pods 2-2½ in. long 4 lines broad somewhat compressed straight mostly 8-seeded; when fully ripe of a pale yellowish brown and somewhat rough from the more prominent reticulating veins. Seeds perfectly globose nearly 3 lines in diam. elegantly warted or granulate all over, of a dark dull brown speckled irregularly with black, and having a slight glaucous bloom; hilum oval or elliptic.

††6. *L. Tingitanus* L.

Smooth dull gr. or glaucescent branched climbing by the branched tendrils; branches stout rampant flexuose winged; lfts. in one pair oval- or elliptic-oblong obtuse mucronulate, the up-
per lanceolate; stip. ovate-oblong or lanceolate semi-sagittate shorter than the leafstalk; ped. somewhat longer than 1, 1-3-mostly 2-3-fld.; fl. large remote; sep. unequal, 2 upper shortest ovate, 3 lower longer and narrower, all shorter than the tube; pod linear-elongate compressed subtorulose faintly reticulated smooth 6-7-seeded, the sutures narrowly bimarginate; seeds oval compressed smooth and even.—Jaq. Vindob. 18. t. 46; BM. t. 100; Desf. ii. 160; DC. ii. 374; WB. ii. 113; Seub. Fl. Azor. 49. no. 389.—Herb. ann. Mad. reg. 1 (upper part) rrr. Waste rocky ground above the Quinta de S. Miguel along the Levada de S'a Luzia, Funchal, “quite naturalized” (Sr. J. M. Moniz 1860). Apr., May.—A stouter more robust pl. larger and coarser in all its parts than any other of the Mad. Lathyri, and with broader shorter dark dull gr. or somewhat glaucous lfts. St. stout stiff quadrangular winged. Petioles about an inch long angular stout and stiff, produced into a long stiff naked stalk 1-3 in. long, and, then mostly 3-branched into long slender tendrils. Stip. large and leafy; broader than usual. Lfts. 1-2 in. long, 3-6 lines broad, many-nerved. Ped. 2 or 3 in. long erect stout. Fl. very large scentless dark atropurpureous red-purple, about an in. broad or long, placed when more than one remotely on the ped. Pods 3-4 in. long 4-5 lines broad, very smooth and shining pale yellowish-brown or fawn-colour. Seeds 3½ × 2½ lines in diam. dark rich reddish-brown mottled and streaked with black, perfectly smooth and even; hilum linear—about ½ circumference of seed.

Common in most of the Canary Islands, but assuredly of very recent introduction into Mad.

§ 2. Clymenum DC.; standard with a pair of compressed tubercles inside at the base, one on each side. Annual; ped. 1–few-flowered; lfts. several, mostly alternate, in the lower l. wanting.

7. L. CLYMENUM L.

Smooth more or less glaucous tall branched rampant, st. slender elongate climbing by the branched tendrils, winged 4-sided; lfts. in mostly 3–4 pairs often alternate narrow-oblong or linear-lanceolate slightly obtuse mucronate; stip. obscurely semi-hastate unequal lanceolate or ovate-lanceolate, 2–3-toothed at the base, the uppermost large leafy ovate; ped. as long as or longer than the l., 1–3-fld.; fl. rather large; cal. deep-cleft above; sep. unequal, the 2 upper short triangular remote diverging laterally, 3 lower narrower and longer parallel, all much shorter than the tube; style rhomboidally spathulate; pod narrow-oblong with straight margins subcompressed very narrowly and faintly channeled at the back, smooth and nearly or quite even, mostly 6–8–
seeded; seeds subglobose a little compressed subangular or straight and truncate at the hilum, smooth and even; hilum linear=½ circumf. of seed.—Desf. ii. 160; Brot. ii. 140; Buch! 197. no. 389; DC. ii. 375. L. tenuifolius Desf., DC. ii. cc.—Herb. ann. Mad. reg. 1, 2, c.—Subvrr.:

1. atropurpurea; standard dark claret-purple, wings blue.—Mad. in bramble-hedges, beds of Opuntia and waste ground from 300 to 1500 ft., by the Caniço and Palheiro road sides to the E. of Funchal, in the Rib. dos Cayados beyond Camacha, &c., c. March—May.

2. roseopurpurea; standard red-purple or rose, wings pale violet-blue; fl. and whole pl. sometimes smaller and more glaucous.—Mad. occasionally with subv. 1. a little to the E. of Funchal, above the Brazen Head, up the Caminho do Meio, &c., r. March—June.

3. albiflora; standard pale blush-rose or purple or nearly or quite w.; wings white.—Mad. between the Caniço road and Brazen Head; Levada do Bom Sucesso, Sr. Moniz; rrr. Apr., May.

Quite smooth and with the fl. scentless, but otherwise with much the habit or aspect of the common garden Sweet Pea (Lathyrus odoratus L.); the fl. presenting analogous phases of col. Whole pl. of a dull dark slightly glaucous gr. sometimes decidedly glaucous especially in subvar. 2. St. winged rather than 4-angular weak and slender 2 or 3 to 5 ft. high, branched throughout and climbing extensively. Leafstalks winged, the lower broadly so, dilated, leafless. Lower stip. none or very small; middle stip. lanceolate; uppermost broadly ovate, one much larger and broader than the other, scarcely or indistinctly semi-hastate but with one or more minute teeth at the base. Lfts. 1-2 in. long, 1-3½ mostly 1-2 lines wide, in 2-4 mostly 3-4 pairs often placed irregularly or alternately. Ped. 2-3 or 4 in. long, the lower 1-fld. shorter, upper rarely more than 2-fld. longer than the 1. Fl. rather smaller than in L. odoratus L. but with the same variations in colour, viz. with the standard dark mulberry, rose-purple, pink, or white. Cal. unequally cleft, 2 upper sep. broadly half-ovate or triangular divergent, 3 lower narrower approximate and parallel. Style short straight broad upwards, pubescent above, smooth beneath, rhomboidal-spathulate and abruptly contracted at the apex into a short inflexed point. Pods 6-10-seeded about 2 in. long and ½ in. broad, not much compressed, quite smooth and even i. e. not at all or very obscurely torulose and with both margins perfectly straight or even, very faintly and indistinctly or not at all reticulated, pale brown or fawn-colour; altogether much resembling those of L. odoratus L. Seeds 2 lines in diam. somewhat compressed and angular, perfectly smooth and even, dull blackish, being thickly
mottled or speckled with black on a dark-brown ground. In
subv. 2, the pods have often a dark discoloured stripe up the
middle of each valve.

A variable pl. altogether, and not alone in size and colour of
fl. The lfts. vary so much even on the same pl. at different
periods of growth, that it is impossible to employ the char. of
their greater or less breadth for the formation of two varr., and I
have therefore treated *L. tenuifolius* Desf. as a mere transient form.
The foregoing subvarr. may however be distinguished ordinarily,
though they also gradually blend together. In ex. of subv. 1
and 3 which have been 24 years in my herbarium, the seeds are
not as above described from fresh ex. in Mad., but plain dull
blackish brown globosely lenticular, with a slightly raised ob-
tuse keel or belt dividing them into two hemispheres, and not
smooth and even, but obsolesly and irregularly granulate.

8. *L. articulatus* L.

Smooth not glaucous dwarfish not branched except at the base,
not rampant; st. stout robust broadly climbing by the branched tendrils; lfts. in 2–3 pairs, mostly alternate
oblong-lanceolate or elliptic acute cuspitate; stip. semi-sagittate
unequal, the upper large leafy ovate-oblong or lanceolate; ped.
shorter than the l. 1–2–fl.; fl. middle-sized crowded towards the
ends of the branches; cal. rather large and subinflated, sep. short
triangular unequal, 2 upper approximate or converging, 3 lower
narrower and longer, all much shorter than the tube; style rhom-
boidally dilated upwards; pod narrow-oblong much compressed
or flat, strongly knobbed or laterally torulose substrangulate with
slightly sinuate margins, 4–6-seeded, marginate and 3-nerved
but flat and not channeled at the back or upper suture, smooth
faintly reticulate; seeds subremote large prominent quadrangular
compressed, smooth dark dull velvety-brown with black specks;
*hilum* linear ¼ circumf. of seed.—BM. t. 253; Desf. ii. 159;
Brot. ii. 139; DC. ii. 375; WB. ii. 110, 111?—Herb. ann. PS.
reg. 2, §. Here and there naturalized and cult. with *L. Cicera*
L. as a crop amongst corn occasionally on the hillsides; GD. 5
May, June. In 1832 the crops of the present pl. in PS. were quite
good and still in full fl., whilst those of *L. Cicera* L. were most-
ly ripe.—Habit as a crop more like that of *Vicia sativa* L. than
of either *L. Cicera* L. or *L. Clymenum* L., growing interwoven
or matted, with short dwarfish st. not above 12 or 18 in. high,
and branched only from the base or crown of the root. Whole
pl. bright full gr. St. and foliage altogether larger or stouter
and coarser than in *L. Clymenum* L., the former more broadly
winged. Petioles broadly winged, the lower leafless. Lfts. 3
or 4–5 or 6, rarely in pairs, 1–1½ in. long, 2–3 lines wide, strongly and distinctly cuspidate. Ped. mostly 2-fld. and somewhat crowded upwards. Fl. rather smaller than in L. Clymenum L. and more compact. Style pubescent above upwards and rhomboidal-pointed. Pod 2 in. long, ½ in. broad, beaded or articulated as it were on the sides by the prominence laterally of the seeds, and with both the margins slightly waved or strangled between the seeds, the dorsal or seed-bearing suture thick and tumid, not winged or channeled, reddish-brown or tile-colour. Seeds dull dark smoky brown mottled and streaked with black, appearing velvety but perfectly smooth and even, larger fewer more remote and flattened than in L. Clymenum L., 3 lines long × 2½ wide, oblong-quadrangular tumid compressed subcarinate. Subvarr.: 

1. atropurpurea; standard dark claret-purple. P*o S*o cult. and here and there naturalized.

2. rosea; standard rose. PS. in a little thicket of White Poplars by the unfinished Church of N. S. da Graça; GD. up the central valley.—BM. t. 253; Desf., Brot., WB. f. 11. cc.

Nearly allied to L. Clymenum L., but certainly distinct. It is altogether more dwarfish and robust in habit, with much stouter shorter st., not slender elongate rampant branched or straggling, shorter broader stiffer distinctly cuspidate lfts., shorter ped., smaller more compact fl. with a less dilated or expanded standard and almost always in pairs, fewer more remotely-seeded pods, which are strongly knobbed or beaded at the sides, and slightly waved at the edges by the prominent large flattened seeds, which are much larger than in L. Clymenum L.

There are no spec., Mr. Carruthers assures me, from either Webb or Bourgeau of L. articulatus L. in BH. In HH. Mr. Black tells me there is only a spec. marked "Canaries, Despreaux," which has been named by Planchon "L. Clymenum L.," and one sent by Bourgeau for L. Clymenum L., but which is certainly L. tingitanus L. Hence it is very doubtful whether L. articulatus WB. l. c. collected by Despreaux in Gr. Canary was really the true pl. Certainly I have never met with it in any of the Islands.

††9. L. OCHRUS (L.)

Quite smooth glaucous sparingly branched procumbent or diffuse; branches zigzag stout slightly climbing by the tendrils of the upper l. 4-sided broadly winged; leafstalks broadly winged, the lower leafless, the upper with 2–4 ovate or oval mucronate
lfts. and a short branched tendril; lower stip. none, upper large leafy semi-sagittate ovate or lanceolate; ped. 1-fld. much shorter than the l.; sep. short triangular unequal; style spatulate-rhomboidal acute; pod large smooth reticulate oblong compressed 2-winged at the back, even, 6-8-seeded; seeds large globose quite smooth and even; hilum linear¼ circumf. of seed.

—DC. ii. 375; WB. ii. 110; Koch 221. *Pisum Ochrus* L.; Brot. ii. 144; Fl. Gr. t. 689. “*Ochrus pallida* Pers.”—Herb. ann. PS. reg. 4, rrr. Summit of Pico Branco amongst grass and herbage in a spot frequented by shepherd-boys, and evidently introduced. Apr., May.—Habit of the common Garden Pea (*Pisum*) with stout succulent tubular flexuose diffuse trailing st. 1-2 feet long, branched chiefly at the base, and climbing only ultimately by means of the tendrils of the upper l. St. and petioles very broadly winged. Lfts. ½-1¼ in. long, ½-¾ broad, in pairs or alternate, subobtuse feebly mucronate. Ped. 5-12 lines long, stout, firm, jointed at the top, not awned, always 1-fld. Pedic. 4 or 5 lines long. Fl. pale dull y. Pods about 2 in. long and very nearly 5 in. broad brownish-fawn-colour smooth and shining, not in the least torulose. Seeds perfectly globose 2½-3 lines in diam. dull reddish-brown or tile-colour not shining.

†††Tribe IX. Phaseoleae.

†††26. PHASEOLUS L.

§ Pods compressed; annual, lfts. entire, ped. shorter than the l.

††1. P. VULGARIS L. *Feijão*. French Bean or Kidney Bean.

Twining smoothish; lfts. rhombic-ovate acuminate; rac. axillary stalked shorter than the l., fl. in pairs 2-bractleted; pods pendulous compressed elongate mostly straight subtorulose beaked; seeds oblong-reniform compressed or more or less globose and turgid, very variable in shape, size and colour.—Koch 226. *P. vulgaris* et *P. nanus* L., Brot. ii. 129, 130. *P. vulgaris*, Romanus (compressus DC.), oblongus, saponaceus, tumidus, hematocarpus, sphericus, gonospermos Savi, DC. ii. 392, 393. Varr.:

a. procera; F. de vara; st. elongated twining and climbing to a considerable height (10-15 ft.).—*P. vulgaris* Linn., Desf. ii. 155; Brot. ii. 129.—Hérb. ann. Mad. reg. 2, cult. ccc. Cultiv. principally in the north, S. Vicente, Bôa Ventura, S. Jorge, St. Anna, Porto da Cruz, &c., in the chestnut woods. Aug.—Oct.—Running up long rods or poles (varas) 8-10 ft. high, usually of Heath (*Erica arborea* L.), and forming perfect thickets and bowers of verdure of a light pleasant gr. Fl. light purple, lilac, rose, pale pink, pale ochre, cream-colour, or white, but not at all corresponding regularly in their tints (as I have ascertained experimentally) with the variations in the seeds. These are almost endless: but since they are employed popularly for distinction
by the country-people, they will best serve the same purpose for
the local botanist or horticulturalist, especially in the absence of
any other more fixed or constant characters.

Subvar. I. nephroperma; seeds oblong-reniform compressed
rounded at each end.

A. unicolor; seeds self-coloured uniform.—P. vulgaris A, Savi,
DC. 1. c.

1. Bluish- or raven-black. Feijão roxo; F. preto.
2. Atropurpureous or dark rich purplish liver-brown. Fl. pale
ochraceous. F. de pobre.
3. Violet or bluish passing into grey and brown. Fl. purple.
F. azul.
4. Liver-brown, often faintly mottled with dark brown = a.
II. A. 3.
5. Flesh-colour passing into brown. Fl. purple.
6. Dove-colour passing into fawn or pale brown, with a ful-
vous (orange-tawny) ring round the hilum. F. Coelho.
7. Fulvous or tawny-yellow with an atropurpureous ring
round the hilum. F. amarello. Cf. a. II. A. 2.
8. Pure white. Fl. white.—P. compressus B. Savi, DC. 1. c.

B. fasciata; seeds with dark interrupted longitudinal stripes
or streaks.—P. vulgaris B. Savi, DC. 1. c.

1. Violet or dark purplish-blue with obscure black streaks.
Fl. pale purple or flesh-colour.
2. Purple passing into flesh-colour and fulvous or fulvous,
with red streaks and specks. Fl. pale purple.
3. Fulvous flesh-colour, with liver-coloured streaks. Fl. pale
purple or flesh-colour.
4. Flesh-colour passing into brown, with black streaks or
stripes. Fl. purple.
5. Lilac-grey (i.e. cream- or dove-colour thickly and minutely
sand-speckled with v.-purple), with black streaks.
6. Cream-colour, with black streaks. F. rajado.—a) without
black specks; b) with black specks, F. letra.
7. Cream-colour, with v.-purple streaks and specks. F. ra-
9. Turgid; red with orange-tawny streaks.
C. variegata; seeds variously mottled or speckled, marbled or blotched (piebald).—P. vulgaris C. Savi, DC. 1. c.

1. speckled dark v. or raven-black and flesh- or dove-colour. Fl. purple. Corno de carneiro. a) dark, b) light predominating.

2. Speckled dark atropurpureous and whitish or cream-colour. Fl. purple. Corno de carneiro.

3. Speckled bright-red purple and pale flesh-col. or fulvous cream-colour or y. Fl. pale purple or flesh-colour. F. de gallo. a) purple with fulvous or cream-colour specks; b) cream-coloured with purple specks (see I. B. 7); c) white with purple specks and pure white, piebald.


5. Piebald, fulvous or dark tawny-y. and pure w.

6. Piebald, half and half atropurpureous and white. F. brasileiro.

7. Piebald, chiefly white with a large irregular atropurpureous blotch about the hilum. Pinta silgo.

8. Nearly all white, with a small distinct somewhat cruciate atropurpureous eye or mark about the hilum. Corresponds with II. C. 5 and III. C. 4.

Subvar. II. gonosperma; seeds rhomboidal subcompressed thickly and shortly oblong subangular obliquely truncate at the ends.

A. unicolor; seeds self-coloured uniform.—P. gonospermos Savi, DC. 1. c.

1. atropurpureous or purple. F. vermelho.

2. Fulvous or tawny-yellow rarely passing into dull drab-brown. F. amarello. = a. I. A. 7.


B. fasciata; seeds with dark interrupted longitudinal stripes or streaks.

1. Dove- or cream-colour with fulvous-y. streaks. F. menino.


4. Purple passing into flesh-colour and fulvous or fulvous with red streaks and specks. F. parreira = a. I. B. 2.
C. variegata; seeds variously mottled or speckled, marbled or blotched (piebald).

1. Dark-rich-claret nearly black obscurely mottled or subfasciated with dark fulvous or chestnut.
2. Atropurpureous or dark blood-red, dove- or cream-colour, and fulvous. *F. de bala*.
3. Fulvous or tawny-brown speckled with white. *F. amarelo.*
   a) light fulvous-y., *F. dourado*—11. C. 4; b) dark tawny-brown.
4. Piebald, half and half atropurpureous and white. *F. de Lisbóa; F. carrapato*.
5. White with an atropurpureous eye or mark about the hilum. *F. olho de peixe*.

Subvar. III. *sphaerosperma*; seeds subglobose turgid-ovate or globosely oval.—*P. hematocarpus, sphaericus* Savi, DC. 1. c.

A. unicolor; seeds self-coloured uniform.—*P. sphaericus* Savi, DC. 1. c.

1. Atropurpureous. Fl. pale ochraceous.
2. Dark rich liver-brown or chestnut. *Baga d'azevinho*.
3. Orange-tawny, i.e. bright fulvous. Fl. pale purple or flesh-colour. Passing into III. B. 1.

B. *fasciata*; seeds with interrupted stripes or streaks.

2. Dove-colour, tawny-flesh or fulvous with red streaks and spots; passing into III. C. 2.

C. variegata; seeds mottled or speckled, marbled or blotched (piebald).—*P. hematocarpus* Savi, DC. 1. c.

2. Tawny flesh- or dove-colour spotted and speckled with red, the red often confluent into streaks or blotches; passing into III. B. 2.
4. Nearly all white with a small distinct somewhat cruciate atropurpureous eye or mark about the hilum. *F. olho de peixe or de bala*—11. C. 5.
5. Altogether pure white. Possibly belongs to var. *B. nana* III.
Subv. II. passes by such imperceptible gradations into I. and III., that it is only here retained conventionally to avoid confusion, and because of _P. gonospermus_ Savi. The Portuguese, as may be seen from the recurrence of the same name under each of the above subvarr., depend alone on colour, neglecting shape, which indeed is often merely due to pressure caused by a greater number than usual of seeds in the same pod. On the other hand, the gradations of colour are perhaps equally fluctuating, numerous, and accidental.

In the valley of Porto da Cruz, the sorts most esteemed for productiveness are, 1. _F. rajado_, 2. _F. de Lisbóa_, and 3. _F. menino_.

The young green pods, used so much in England sliced and boiled as a vegetable under the name of French or Kidney Beans, are called by the Portuguese “Bajinhas,” but are not employed by them for food. The ripe seeds, “Feijoens,” called by the French “Haricots,” constitute however a great proportion of the daily food of the poor or labouring population, and are a favourite ingredient in their “Sopas” with all classes. The quantity produced annually, especially in S. Vicente, is prodigious.

β. _nana_; _F. rasteiro_ or _F. da vassoura_; st. short dwarfish, low and scarcely twining (6–18 in. high).—_P. nanus_ Linn.; Brot. ii. 130. _P. compressus_ a. DC. _P. oblongus, saponaceus_ Savi, DC. l. c.—Herb. ann. Mad. reg. 2, cult. ½.—Comparatively with a. little cultiv. in Mad. except at S. Vicente.—Varies with seeds, I. oblong-reniform compressed (_P. compressus_ a. DC.; _P. saponaceus_ Savi, DC. l. c.); II. seeds oblong-tumid, rounded or cylindric (_P. oblongus_ Savi, DC. l. c.); and III. seeds spherical or turgid-ovate (_P. tumidus_ Savi, DC. l. c.),—each subvariety presenting much the same phases of colour as those of var. _a. procera_.

Of β. I., two pretty small-seeded states, not exactly above enumerated under _a_. I. B or C, are the _F. de calção_, with small compressed reniform seeds 5 lines long × 3 broad, which are either, 1. light or dark liver-brown with black streaks or stripes, or, 2. black with minute liver-brown specks.

_P. multiflorus_ Willd., DC. ii. 392= _P. coccineus_ Desf. ii. 155 (misplaced by DC. amongst the ann. sp.), very distinct specifically by its per. roots, rac. longer than _l_. very long mostly curved or falcate pods, usually bright scarlet fl., and larger compressed reniform seeds mottled black and flesh-colour, known commonly in England by the name of “Scarlet Runner,” and called by the Portuguese Feijão, is seldom cultivated in Mad., where the roots, reported to be poisonous by authors, are said to be of 7 years’ duration.
LABLABIA.

++27. DOLICHOS L.

++1. D. LIGNOSUS L.

Nearly or quite smooth; st. per. suffrutescent woody below, branches twining slender wiry; lfts. glaucous beneath, rhomboidal-acuminate; ped. axillary longer than the l.; fl. in short crowded rac.; rachis, pedic., and bractlets of cal. subpubescent. —DC. ii. 397; Desf. ii. 156.

β. falcata; pod curved or falcate.—DC. l. c.; BM. t. 380. D. lignosus Holl’s List! in J. of Bot. i. 20, 40.—Shr. per. Mad. cult. reg. 1, 2, c. Forming arbours, or in hedges about cottages, especially in the North of the island. Throughout the year.—St. slender but very tough and wiry, thickly branched and inter-twining to a height of 10 or 20 ft. forming a close mass. Foliage neat and delicate, bright full gr., lfts. not coriaceous rather small shining. Fl. conspicuous deep rose-purple turning pale lilac as they fade, handsome but not large, scentless in short crowded long-stalked rac. Cal. gibbous or with a little short obtuse knob or spur above at its base, projecting upwards between a pair of minute linear-lanceolate adpressed bractlets; its lobes membranous towards the edges and thickly and shortly ciliate. Standard abruptly reflexed with 2 white parallel arched ribs, each about a line high, at its base attached all their length, the channel between them violet, and each produced downwards into a white stiff fleshy thickened or channeled spur, from which the gr. channeled spur-like claw of the standard arches strongly back. Stam. 1/9. Style flexuose densely bearded upwards on the upper side towards the small but distinctly capitate stigma. Wings rose-purple strongly reflexed and pushed back (not embraced) by the 2 keels or ribs at base of standard. Tip of keel dark atro-purpureous just appearing between the 2 broad deflexed wings. Pod about 1 in. long, ¼ in. broad, slightly falcate flat. Cult. merely as an ornamental pl.

++28. LABLABIA (Lablab Adans.).

++1. L. VULGARIS Savi.

Pods broadly scimitar-shaped, the upper suture straight; seeds oval slightly compressed and reniform, hilum obtuse at each end. —Lablab vulgaris DC. ii. 401. Dolichos Lablab L., Brot. ii. 124.


Subv. 1. Seeds dark chocolate or purplish black.

—2. Seeds brown or tawny speckled with purplish black.

Subv. 1. Seeds yellowish-tawny speckled with dull red or cinnamon.

—— 2. Seeds dull red or cinnamon speckled with yellowish-tawny.

Shr. per. Mad. cult. reg. 1, §. Fences around cultivated ground or gardens in or about Funchal, Machico, &c. Throughout the year.—A large coarse twining pl. forming thick mats of stout interlacing branches, with habit and foliage of Phaseolus. Lfts. ternate rounded-rhomboidal scarcely acute not acuminate, 3-4 in. long and broad, membranous but somewhat coarse and rough or scabrous, slightly pubescent on both sides especially along the veins and edges, rather dull gr. L.-stalks upwards and thick partial stalks pubescent. Stip. and stipels small linear-lanceolate acuminate spreading. Fl. purple in β, in γ. white turning as they fade cream-col., in distinct thickly-clustered whorls on round-stalked axillary 1-leafed erect smooth stiff rac. not longer than their attendant single ternate leaf, which is placed a little way up the stalk of the rac. Pedic. short and, like the cal. and rachis, a little pubescent at first, then smooth. Cal. tubular-campanulate 1⁄3, upper lobe broad faintly notched, 3 lower distinct ovate acute; the 2 opposite bractlets at its base as long as its tube, oblong or oblong-oval rather obtuse deciduous. Standard broad subreflexed, lilac-purple, or in γ. white; 2 upper lobes or appendages at its base oblong spoon-shaped, standing erect and free upwards like a pair of narrow ears, tightly and closely embracing the upper spurs or borders of the wings, as the paler or white 2 lower callosities or appendages, which are indeed merely spurs of the 2 upper, embrace the base of the keel and ovary, the claw of the standard itself arching strongly back from them as in Dolichos lignosus L. Wings bright rose-purple or in γ. w., closely adpressed and folding over each other and the keel, to which they also cohere at their base; not at all "spreading," as described by DC. 1. c., or reflexed as in D. lignosus L. Keel quite pale, or in γ. white, abruptly bent up at a right angle, or often less, at the origin of the free part of the stam. Stam. 1/9, the uppermost always in great part cohering to the sheath of the other 9, with its fil. thick or stout and winged or dilated at the base. Style stout compressed pale gr. fringed and bearded upwards on the upper side and velvety-pubescent all round towards the indistinctly capitate stigma. Ov. velvety, slightly hairy along the upper edge, with a very short minute crenate tube (torus) sheathing its short stalk. Pods spreading horizontally not pendulous, nearly sessile large broad flat, subfalcate, yet with the upper margin straight, the lower curved, 2 1⁄2-3 in. long, 1 in. broad,
broadest near the end, the lower margin there curving up abruptly to the short sharp deflexed or hooked point or beak, apparently smooth and shining, but whilst gr. and immature minutely more or less puberulous, and roughened across obliquely with thickly crowded minute raised linear granulations, the upper and in less degree the lower sutural margins being curiously muricate or verruculate with larger distinct, but still small, sharp points. Ripe pods pale yellowish-brown, altogether smooth and even, with the murication of the sutures indistinct and obsolete or inconspicuous. Seeds 3–5, mostly 4–5, separated by partial incomplete dissepiments, oval, more or less compressed, 5 lines long, 3 broad, 2\(\frac{1}{2}\) thick, very smooth and glossy but not shining, very variable in colour, with a large long white linear prominent raised bordered spongy hilum obtuse or truncate at each end, extending about \(\frac{1}{3}\)ths of its length from the base, or \(\frac{2}{3}\)ths of the whole circumference of the seed.

The foregoing description is taken from the more common purple-fld. var. \(\beta\); the seeds of which, according to Dr. Wight, are bitter, and but little used for food in India as in Mad.

The white-fld. var. \(\gamma\) differs in nothing but the lighter- or brighter-col. seeds and fl.; for I find neither the 2 bractlets of the cal. shorter, nor the wings more adpressed than in my var. \(\beta\)—the latter being in both varr. not only equally adpressed but mutually imbricated, and forming a vault over the keel, whilst the bractlets of the cal. are, alike in both, the precise length of its tube. The seeds of \(\gamma\). are said by Dr. Wight to be "highly esteemed and much used" in India. In Mad. those of neither sort are held in much repute.

The murications of the sutures are most conspicuous in the gr. or immature pods, and in fact nearly disappear in the ripe fr. Hence perhaps \(L.\) leucocarpos Savi, or at least its alleged synonym Dolichos Lablab Grtn., is not really distinct from var. \(\gamma\).

†† Suborder II. CÆSALPINIACEÆ.

†† Tribe X. Cassieæ.

††29. CÆSALPINIA L.

1. C. septaria Roxb.

Densely prickly all over, extensively trailing or climbing; 1. bipinnate, pinnae 4–8 pairs, lfts. in about 10 pairs oblong obtuse; rac. terminal erect pyramidal many-fld. velvety-puberulous; pods short broad oblong straight compressed puberulous 6–8-seeded.—Wight and Arn. Prodr. Fl. Ind. Or. i. 282; Wight Ic.
Pl. Ind. Or. t. 37.—Shr. per. Mad. cult. reg. 1, ½. Garden walls and fences about Funchal. Almost at all seasons.—An extensively climbing matted very prickly shr., with very long weak trailing angular straight shoots or branches clothed in every part (st., branches, main and partial leaf-stalks) except the rac. with short and small but very sharp and strong hooked prickles, clinging tenaciously to everything touching it. St. and main br. angular smooth; young shoots, buds, and rachis of l. pubescent, more or less ferruginous. L. 6–10 in. long; pinnae 4 or 5 in. long; lfts. 8–12 pairs, 9 or 10 lines long, 4 wide, smooth dark gr. above, paler beneath. Between each pair of pinnae a prickle inclining forwards, all the rest being recurved. Rac. pyramidal or oblong 6–12 in. long. Fl. rather large 1 in. diam. lemon-y. scentless. Sep. petal-like presently reflexed, gr. only in the middle, the rest lemon-y. Pet. shortly clawed remote spreading lemon-y.; 4 lower rounded or orbicular entire equal; 5th or uppermost small spreading or reflexed ovate or ovate-oblong, often irregularly plicate at the upper edge, its lower half divergently streaked or spotted with pale reddish or lateritious. Fl.-buds nodding like the fl. and pods, ovoid, compressed, the lowest sep. larger helmet-shaped imbricate over the 4 upper, all velvety-puberulous. Br. and bractlets lanceolate-acuminate leaf-like glandular-ciliate or serrulate velvety-puberulous caduceous, falling some time before the expansion of the fl. Pedic. ½ in. (9 or 10 lines) long slender velvety-puberulous and angular like the rachis. Stam. 10 distinct, but combined halfway up by their woolly hairs into a thick pyramidal column; fil. densely villose halfway up with white woolly hairs, their upper free part smooth pale gr. or y.; anth. large orange. Ov. silky. Style thickish gr. as long as the fil., pubescent, smooth and compressed upwards, abruptly truncate and hollow at the tip. Pods rather large broad oblong straight compressed minutely puberulous, 3 in. long, 10 lines broad, simply one-celled and hollow within. Seeds 6–8 roundish or subglobose, slightly compressed, pale olive-brown mottled with darker.

A very handsome climbing shr., admirably adapted for fences or training along the top of walls, forming with its formidable prickles an almost impassable barrier. The seeds were first sent to Mad. by Lady Amherst from the Calcutta Garden about 1824; it is now common in or near Funchal.

†††30. Cassia L.

§ I. Chamaefistula DC. Shrubby. Pod rounded subcylindric indehiscent, many-celled and slightly pulpy within. Seeds horizontal i.e. depressed or flattened vertically.—No
CASSIA.

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gland at the base of the petiole in any of the following sp.; anthers in all 2-porous.

††1. C. bicapsularis L.

Smooth; lfts. in 3-4 pairs obovate obtuse, the lower rounded with an ovate gland between the lowest pair; rac. axillary short erect crowded towards the ends of the branches, 3-6- or 8-fld.; pod subcylindric, a little flattened at the sutures, not striated.—DC. ii. 494; Vogel Syn. Gen. Cass. (Berol. 1837) p. 18; Holl in J. of Bot. i. 21. C. semmoides Jacq. Ic. Rar. i. t. 70.—Shr. per. Mad. reg. 1, cc. To the E. of Funchal for the distance of about a mile along the Caniço road, almost clothing the sea-cliffs, and enlivening them with its bright-y. blossoms at most seasons; in similar situations to the W. in several places and amongst beds of Opuntia towards Camera de Lobos, &c.; perfectly naturalized, yet not usually producing pods except in the hotter months; and in winter the pl. by their sickly y. foliage and abortive fl. prove themselves to be natives properly of even warmer situations than those to which they are exclusively confined in Mad. Throughout the year—A rather low shr. not usually above 3 or 4 ft. high, but occasionally, when meeting with support or shelter, rising to a height of 5 or 6 ft. Wood hard and strong. Foliage perfectly smooth and shining, bright-often y.-gr. Branches more or less drooping or declining weighed down by the thick heavy foliage. Lfts. slightly glaucous beneath, somewhat thick and fleshy stiff or coriaceous, very obtuse or rounded at the top with a very minute mucro, the lower smaller shorter and rounder often almost orbicular. Fl. or.-y., in upright axillary stalked rac. 2-4 in. long towards the ends of the branches. Stip. and bracts deciduous flat small narrow-lanceolate, the former spreading horizontally. Pods not often (especially in winter) perfected, 3-4 in. long, 4-5 lines thick, straight or slightly curved, indehiscent, slightly pulpy within, subcylindric, a little flattened at the sutures, and when fully ripe with a faint line or wrinkle of the parenchyme on each side parallel with the suture at about a line in distance from it, otherwise nearly even and not striated across. The sutable diam. is only from $\frac{1}{2}$-1 line less than the dorsal. Seeds depressed and flattened vertically, olive-brown, imbedded in a little greenish sweetish fleshy pulp, which is not however eaten in Mad., as it is said by Schmidt (Fl. Cap. Verd. p. 23) to be in the Cape de Verd Islands. Hence the sp. is misplaced by De Candolle in his section Chamesenna,—belonging by its indehiscent semi-pulpy pods to his former section Chamefistula.

††2. C. leevigata Willd.

Wholly smooth; lfts. in 3-4 pairs ovate acuminate smooth and shining, with an oblong-ovate gland between each pair; pod very smooth thick subcylindric subdepressed, the sutures either
plain and simple or impressed, the valves tumid, finely and closely striated transversely.—DC. ii. 491; Vogel Syn. 19.—Shr. per. Mad. cult. reg. 1, cc. In almost every garden about Funchal &c., and often seminaturalized in their neighbourhood in waste ground amongst vineyards, &c. Throughout the year.—A somewhat less bushy lower shr. than *C. floribunda*, 4 or 5 ft. high, with a more distinct st. and very smooth and shining, finely striated, less crowded, thicker or stouter stiffer branches. Wood very hard and firm. Foliage a light shining y.-gr. Stip. none or obsolete. Lfts. larger than in *C. floribunda*, 1½–2 in. long, 1 in. wide, in mostly 4 pairs. Fl. bright golden-y. rather smaller and less numerous in the axillary rac. than in *C. floribunda*, forming stiffer more erect and smaller terminal corymb. Pod about 3 in. long and ½ in. thick, 4 or 5 times the length of its pedic., very smooth and shining, depressed or flattened in a direction contrary to the usual mode, the sutural diam. being mostly less and never more than half the transverse, owing to the flatness or deep impression of the suture and to the tumidity of the dorsal portion of the valves, which are regularly and distinctly striated across. Seeds and dehiscence as in *C. floribunda*.

3. *C. floribunda* Cav.

Lfts. in 4–5 pairs oval or elliptic-oblong acute, on both sides and especially at the edges, like the petioles and young shoots, minutely pubescent, with an ovate gland between all except sometimes the uppermost and lowest pair; rac. axillary 3–12-fld. forming terminal leafy corymb; pod 3 times as long as its pedic. subcompressed subquadrangular, the suture raised and margined. —Coll. Mon. 88; DC. ii. 491; Vogel Syn. 19. *C. dispar* Willd. DC. 495?—Shr. per. Mad. cult. reg. 1, 9. Gardens and vineyards about Funchal chiefly at and in the neighbourhood of the Quinta do Valle. Throughout the year.—A somewhat bushy shr. 5 or 6 ft. high, at once distinguishable by its rank bituminous smell when bruised or handled. Lfts. in mostly 4 pairs, not all ovate but oblong and of equal diam. across at each end, acute but not at all acuminate, inequilateral unequal at the base, varying in their degree of pubescence but always more or less shortly pubescent especially at the edges. Fl. larger, in larger bunches, and of a much fuller and deeper y. than in *C. levigata* Willd. Pods about 3 in. long, somewhat 4-sided or quadrangular, with the 2 sutural faces as broad as the 2 dorsal, not channeled but a little raised and even, and separated from the latter by a slight ridge or border; the 2 dorsal faces slightly ridged or striated transversely by the numerous flattened dark-yellowish or tawny-olive seeds; not bursting lengthways, but when very old allowing the seeds to escape by transverse fissures of the thin dry membranous skin when brown and ripe. The seeds, as
in the 2 preceding sp., are flattened vertically or parallel to the transverse partitions, not as usually in Leguminosae laterally or parallel to the valves of the pod.

§ II. Chamasesema DC. Shrubby. Pod compressed dehiscent lengthways, not pulpy within. Seeds horizontal.

† † † 4. C. tomentosa Lam.

Fulvous-tomentose, the branches velvety ferruginous; lfts. in 4–8 pairs oval oblong more or less obtuse mucronulate densely tomentose beneath, shining and smoothish above, their edges thickened and subreflexed, with a gland mostly between each pair; rac. axillary short corymbose 3–6- or 7-fl.; pod compressed linear-oblong velvety-pubescent.—DC. ii. 496; Vogel Syn. 22. C. multiglandulosa Jacq. Ic. Lar. i. t. 72.—Shr. per. Mad. cult. reg. 1, 2, r. Here and there in gardens or about cottages. At the Mount, and at Prazeres, &c., to the westward. Throughout the year.—A bushy shr. 4–6 ft. high, with a distinct st. and handsome foliage. Branches flexuose strongly grooved or ribbed and angular, the younger densely clothed with fulvous ferruginous velvety pubescence like the petioles. Lfts. very dark full shining gr. and minutely downy above, pale and densely ferruginous-tomentose beneath. No gland at base of petiole. Fl. very handsome, rich golden- or or.-y., in stalked axillary close bunches shorter than the l. Pod 3–4 in. long, 4–5 lines broad, straight abruptly beaked or mucronate much compressed or flattened, the sutures slightly margined with a raised hem-like border on each side, quite dry or pulpless within. Seeds numerous horizontal i.e. flattened vertically, tawny or olive-brown.

C. occidentalis L., C. sulfurea DC., C. australis Sims, and C. glandulosa L. or C. Chamæcorista L. occur sometimes in gardens about Funchal; and I have myself occasionally raised the first-named sp. from W. I. (Jamaican) seeds. But none of these have ever showed any tendency to become diffused or naturalized.

C. ruscifolia Jacq. Ic. Lar. i. t. 71. (DC. ii. 498), given by its original describer as a Mad. pl., is probably not distinct from C. occidentalis L. In foliage it somewhat resembles C. leavigata or C. floribunda; but it has a wholly different habit, and the petiole is furnished with a gland at its base. The occurrence of Jacquin’s pl. in Mad. can have been in any case merely temporary or accidental.

The Judas-tree, Cercis Siliquastrum L., remarkable for its simple orbicular-heartshaped l., by which De Candolle considers it allied to Bauhinia, though placed by Endlicher at the end of Sophoreae, is a conspicuous and frequent ornament to gardens
about Funchal in March or Apr., forming a tr. 20 or 30 ft. high, covered with a profusion of brilliant deep-rose or peach-coloured subpapilionaceous blossoms produced before the new l.

†† Tribe XI. Ceratonieæ.

††31. Ceratonia L.


Unarmed; l. pinnate, lfts. coriaceous broadly oval obtuse flat with waved edges.—Desf. ii. 395; Brot. i. 307; DC. ii. 486; Koch 227.—Arb. per. Mad. reg. 1, 6. In gardens about Funchal and elsewhere; occasionally in the open country detached tr. here and there seminaturalized.—A large wide-spreading low dark evergreen tr., with a short thick much gnarled and rugged trunk, and long wide-spreading horizontal branches when old; more pyramidal compact and bushy when young. Lfts. in 2–4 pairs, very dark shining gr. above, paler and without lustre beneath, hard stiff and coriaceous, 1½–2½ in. long and 1¾–2 in. broad; their footstalks often reddish. Fl. and pods produced in bunches on short spurs from the thicker branches, and in old tr. even from the st. itself; the former in short rac., but without petals and altogether inconspicuous. Pod dehiscent, 4–6 in. long and ¼–¾ in. broad, straight pendulous compressed and flat, but half as thick as broad, with raised tumid margins, very hard and stiff; when ripe containing a fleshy brown pulp smelling like the lees of beer, and 6–10 remote roundish compressed dark-brown seeds.

†††32. Gleditschia L.


L. bipinnate or pinnate; lfts. linear-oblong subserrulate, sometimes partially combined; pods pendulous membranaceous very long and flat, more or less waved or twisted, many-seeded. —DC. ii. 479.

a. armata; armed with long stout simple or compound spines compressed and 3-fid at the base. G. triacanthos Brot. ii. Add. 483; Spr. iii. 918; DC. l. c.

β. inermis DC. l. c.; nearly or quite unarmed.—Arb. per. Mad. cult. reg. 1, 6. In gardens about Funchal. May, June.—A tall tr. with thin light and elegant deciduous foliage, inconspicuous fl. in short deciduous lateral spikes, and enormously large thin membranaceous shining dark-brown pods, about a foot long and 1½ in. broad, filled with a sweetish peculiar-flavoured pulp. Thorns in a. very large and strong, 1–3 in. long, branched at the base, very useful spikes for eating mulberries.
For analogous occasional forms and variations of the l. to those of the present pl. in G. sinensis Lam. see DC. Mém. des Légum. pp. 25, 117. t. i.

† † Suborder III. MIMOSACEÆ.

† † 33. Acacia.

† † 1. A. leucocephala (Lam.). Aróma branca.

Unarmed nearly smooth; l. bipinnate, pinnae in 4-5 pairs, lfts. in 12-15 pairs oblong-linear acute; leafstalk downy with often a gland below the lowest pair of pinnae; heads of fl. globose axillary stalked mostly in pairs; pod compressed thin, its stalk as long as the peduncle. —Link Enum. ii. 444; DC. ii. 467. Acacia glauca Holl's List! J. of Bot. i. 21 (not Willd.). Mimosa leucocephala Lam. Dict. i. 12.—Shr. per. Mad. reg. 1, r. Seminaturalized in beds of Opuntia above the Gorgulho to the W. of Funchal, and in gardens. Throughout the year.—A low shr. 3 or 4 ft. high. Foliage dark dull gr. Fl. dull creamy or dirty white slightly fragrant. Pods in large bunches very flat and membranous but firm and stiff, about 3 in. long and nearly ½ in. broad, dark brown.

A. dealbata Link, a small tr. remarkable for its very fine and delicate bluish-grey foliage with little golden balls of fl. in axillary panicked rac., and A. tophantha Willd., a shr. with dark lurid-gr. foliage and pale whitish crest-like fl., are also commonly cult. The roots in both run near the surface, throwing up suckers, and in the latter sp. they are strongly fetid. A. verticillata Willd., Oxycedrus Sieb., longifolia Willd., Melanoxylon R. Br., &c., with many others of the anomalously leaved Australian sp., are also not unfrequent in gardens, &c., particularly at the Mount, Camacha, &c., and like elevations of about 2000 ft., at which most Australian pl. (Banksie, Eucalypti, &c.) best flourish in Mad.

† † 34. Vachellia Arn.

† † 1. V. Farnesiana (L.). Aróma.

Thorny, spines in pairs short straight divergent stipulary; branchlets flexuose: young shoots, leafstalks, and ped. subpubescent; l. 2-pinnate, pinnae in 2 or 3-6 pairs, lfts. in 12-24 mostly 14-15 pairs, linear smooth, with a gland below the lowest and sometimes between the uppermost pair; heads of fl. globose axillary 1-3, often in pairs, unequally stalked; pod rounded tapering at each end.—Wight and Arn. Prodr. i. 272; Wight Ic. Pl. Ind. Or. i. t. 300; WB. ii. 122. Acacia Farnesiana Willd. DC. ii. 461. Mimosa Farnesiana L. Desf. ii. 393. Mim. cornuta Bowdich Exc. p. 32.—Shr. per. Mad. reg. 1, cc. Seminatural-
ized in beds of *Opuntia* above the Gorgulho to the W. of Funchal, and in gardens frequent. Throughout the year.—A shrub about 5 or 6 ft. high, remarkable for its straggling stiff dark-brown branches, scanty foliage, small 1. and lfts., and copious balls 4–8 lines in diam. on slender pubescent stalks ½–1 in. long of deliciously fragrant golden-y. fl. These retain their very peculiar fragrance even when dry, and are frequently scattered over or amongst clean linen sent home from the wash. Pods smooth dark reddish-brown very hard and stiff, round thick horn-like more or less curved or crooked, sometimes nearly straight, about 3 in. long and nearly ½ in. thick; falcate when young.

†††Order XXVI. AMYGDALACEÆ.

The Almond Family.

Fl. perfect regular. Cal. deciduous; sep. 5 combined into a tube below, not adhering to the ovary, imbricate in bud. Pet. 5 equal deciduous inserted on a disk or ring in the throat of the cal., convolute in bud. Stam. 15–30 inserted with the pet. Ov. a single free 1-celled 2-ovulate carpel. Style 1 terminal; stigma capitate. Fr. a more or less fleshy drupe, grooved or furrowed on one side, containing a single hard bony nut or stone enclosing mostly (by abortion of the other) only one seed or kernel with fleshy cot., straight embryo, and without albumen.—Gum-forming tr. or shr. sometimes spiny, with scaly buds. L. simple stalked. Stip. free deciduous. Fl. w. or pink mostly earlier than the l. Fr. edible. The presence of prussic or hydrocyanic acid in the l., bark, and seeds also characterizes this family.

†††1. AMYGDALUS. Drupe mostly velvety-pubescent, rarely smooth, not pruinose; shell or stone sinuously grooved or rugose.—L. conduplicate. Fl. earlier than l., w. or pink. (*Amygdalus* and *Persica* Tournèf., DC.)

†††2. PRUNUS. Drupe mostly smooth and pruinose or covered with a glaucous waxy coat (bloom), sometimes velvety; shell compressed even, one edge (the ventral) keeled or grooved.—L. convolute. Fl. earlier than l., mostly w. Fr. v.-blue, purple, or y. (*Prunus* and *Armeniaca* Tournèf., DC.)

3. CERASUS. Drupe globose mostly umbilicated at the base, smooth, without bloom; shell subglobulose, keeled and grooved on one (the ventral) edge, mostly even on the sides.—L. conduplicate. Fl. mostly w. Fr. red, y., or black (atropurpureous).

†††1. AMYGDALUS L.

†††1. A. COMMUNIS L. Almond. Amêndoa; the tr. Amendoêira. L. smooth elliptic-lanceolate serrulate; fl. solitary, cal. cam-
AMYGDALUS.

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panulate; fr. oblong or ovoidal compressed velvety-tomentose, subbklve, gr. when ripe; flesh thin subcoriaceous; nut oblong compressed even with narrow small fissures.—Desf. i. 393; Brot. ii. 249; DC. ii. 530; Koch 227.—Tr. per. Mad. cult. reg. 1, 2, c. In gardens and about cottages here and there chiefly to the W. of Funchal and below 2000 ft. Fl. Feb., March; fr. July, Aug.—A low somewhat straggling standard-tr. 20–30 ft. high, whitened in early spring almost before any l. appear with large snowy blossoms with a rose-purple eye. Fr. about an in. long, mostly splitting irregularly open longitudinally and exposing the nut, dry and juiceless, with the down adherent. Varr.:

a. alba; fl. snow-w. or pale blush, with often a pink eye. Varies with hard bony or soft spongy friable shells (Amendoas durazios ou mollares), sweet or bitter seeds or kernels (Amendoas doces ou amargas), and single or double fl.

b. rosea; fl. pink or rose-colour. Subvarr. as in a.

††2. A. PEBSICA L. Pécego; the tr. Pêcegueiro.

L. smooth elliptic-lanceolate serrulate; fl. mostly solitary; fr. globose with a lateral groove, velvety-pubescent or smooth, indehiscent, y., pale gr., or blush when ripe, mostly bright red on one side; flesh thick juicy; nut ovoidal rough with deep winding grooves and pits.—Desf. i. 392; Brot. ii. 249. Persica vulgaris Mill., Koch 227. P. vulgaris and P. laxis DC. ii. 531.—Tr. per. Mad. cult. reg. 1, 2, ccc. Gardens, vineyards, &c, everywhere, occasionally growing spontaneously. Fl. Dec.—March; fr. July—Sept.—A standard-tr. 20–40 ft. high, the deep pink or rose-coloured fl. appearing before the old l. have fallen, and long before the budding of the new l. L. more shortly stalked than in the Almond (A. communis L.). Kernels of fr. bitter, Varr.:

a. Fr. velvety-pubescent. Peach. Pécego. Persica vulgaris, a, β. DC. I. c.

Varies, 1) with soft melting flesh separating from the stone (Engl. Freestones; Port. P. mollares), and these again with mostly w. rarely y. flesh (P. mollares brancos e amarellos); 2) with hard crisp flesh closely adhering to the stone (Engl. Cling-stones or Pavies; Port. P. durazios) which are also with w. or more commonly y. flesh (P. durazios brancos ou amarellos). The Peaches about Funchal (chiefly hard Clingstones) are generally very bad, and much infested with the larvæ of various Diptera. The best of both sorts come from the westward or north, e. g. Campanario, Calhêta, Arco de Calhêta, Fajã d’Ovêlha, &c., or from Sta. Anna, S. Jorge, Fayal, &c.

Much less frequent than a. and mostly of very indifferent quality, with hard y. flesh firmly clinging to the stone. The better soft or freestone white-fleshed sorts (P. calvos mollares brancos) occur, however, occasionally to the westward ("Tabúa, Logar Debaixo, Arco de Calhêta", &c., Sr. Moniz).

†††2. PRUNUS L.

†††1. P. ARMENIACA L. Apricot. Damasco; the tr. Damasqueiro.

L. smooth orbicular-ovate or oval subcordate acuminate; fl. sessile; fr. velvety-pubescent globose with a lateral groove indehiscent orange-y.; flesh thick juicy.—Desf. i. 393; Brot. ii. 250; Koch 228. Armeniaca vulgaris Lam., DC. ii. 532.—Tr. per. Mad. cult. reg. 1, 2, ccc. Gardens, vineyards, &c., everywhere, rarely spontaneously.—Fl. Jan.—March; fr. June, July.—A standard-tr. 20–30 ft. high, distinguishable by the cinnamon-reddish hue of the young l. and shoots. L. firm, smooth and shining. Fl. snow-white appearing before the l. Fr. in Mad. usually small and very inferior in flavour, also, especially if eaten with the rind or skin, apt to cause diarrhoea, but making an excellent preserve. Kernels bitter. The sorts chiefly cult. are Damascos legitimos ou Alperches, D. brancos, D. churos ou Albricoques, Maracotôes, Francêzes, &c. The Damasco préto, Purple Apricot or Apricot-plum (A. dasycarpa Pers.), known by its small round velvety v.-purple plumi-like fr., also now and then occurs.

†††2. P. DOMESTICA L. Plum. Ameixa; the tr. Ameixieira.

Branches without spines, always smooth; l. lanceolate-ovate, a little pubescent beneath; ped. mostly pubescent and in pairs; cal. velvety within.—Desf. i. 394; Brot. i. 250; EB. t. 1783; Sm. E. Fl. ii. 355; Hook. Sc. i. 150; DC. ii. 533; Koch 228. P. communis y. Bab. 89.—Tr. per. Mad. cult. reg. 2, ccc. About cottage-fields and gardens, everywhere from 1000–3000 ft. Fl. April, May; fr. June, July.—A small standard tr. 15–20 ft. high with white fl. appearing together with or a little before the young l.

a. Fr. oblong; Subv.: 1) fr. v.-black, Ameixa préta, c; 2) fr. purple-r., Am. inearnada, cc; 3) fr. y., Am. amarella, c; &c.

b. Fr. globose; Subv.: 1) fr. v.-black, sweet, Abrunho, in fl. at Pº da Cruz and Arco de S. Jorge in the north, March, cc; 2) fr. purple-red, crisp-fleshy, Ameixa Inglêza, Orleans Plum, c; 3) fr. y.; 4) fr. y.-gr., Ameixa verde ou Rainha Claudia, Green Gage, r; &c.

I must leave other Mad. botanists to determine whether,
amongst some perhaps of the above recorded subvarr. of $\beta$. or otherwise, I have not overlooked $P$. insititia L., distinguished according to authors from $P$. domestica L. by its velvety-pubescent greyish young shoots or branches, l. downy beneath, finely pubescent ped., cal. smooth and subgranulated within, and always globose red or y. fr. It is the common wild Bucklace-plum of England, EB. t. 841.

3. Cerasus Juss.

§ Fl. in umbellate fascicles or bunches, earlier than the l. L. deciduous.


Arboreous; l. oblong-ovate abruptly acuminate drooping sharply serrate pubescent beneath; umbels sessile lax crowded round the leaf-buds; scales of fl.-buds all scarious not leafy; calyx-tube contracted at top, sep. entire; fr. heart-shaped-globose sweet.—Prunus Avium L., Desf. i. 394; Broth. ii. 252; Koch 229; Bab. 90. P. Cerasus EB. t. 703; Hook. Fl. Sc. i. 150 and Brit. Fl. (ed. 5) 92; Sm. E. Fl. ii. 354 (not Linn.). Cerasus Avium, Duracina and Juliana DC. ii. 535, 536.

3. Juliana Koch l. c.; fr. moderately large heart-shaped black, red, or yellowish, flesh soft moderately firm not acid.—C. Juliana DC. ii. 536.—Tr. per. Mad. cult. reg. 2, §. Chiefly to the W. of Funchal, Rib. Brava and Serra d‘Agoa, Canhás, Calhêta, &c., about cottages. Fl. April; fr. June, July.—This, the common cultivated garden Cherry, forms in Mad., as elsewhere, a mostly pyramidal tr. 20-30 ft. high, with upright or ascending branches, and rather large white fl., appearing with the l. "Outer scales of the leaf-buds deflexed" (Bab.). Fr. subglobose full bright-red sweet, on stalks 1½-2 in. long. Subvarr.: 1, Ceréja incarnada, Early Red, ripe in June; 2, Ceréja prêta, Black, immediately succeeding.

Var. γ. Duracina Koch (C. Duracina DC. ii. 535), the White Heart of the English, and Bigarreau of the French, with large y. heart-shaped very firm crisp-fleshed fr., has not occurred in Mad.

†2. C. Vulgaris Mill. Ginja (the tr. Gingêira).

Fruticose and stoloniferous; l. broadly oblong-ovate or oval doubly crenate-serrate smooth not drooping; umbels sessile few-fl. scattered; inner scales of fl.-buds leafy; calyx-tube not contracted at the top, sep. crenate-serrate; fr. globose.—Mill. Dict. no. 1. C. Caproniana DC. ii. 536. Prunus Cerasus Linn.; Broth. ii. 251 (at least in part); Koch 229; EBS. t. 2863;
Bab. 90. "Prunus austera Ehrh. and P. acida Ehrh. Beitr. vii. 129 and 139" (Koch).

Var. rustica; fr. subsolitary on rather short stiff stalks globose rather large dark dull blood-red approaching to black (atropurpureous), the flesh red, neither acid nor very juicy, slightly bitter.—Shr. per. Mad. reg. 2, 2. Fences of upland cottage-fields or gardens, on hill-sides, &c., from 1500 to 2500 ft.; Camacha, Curral das Freiras, Serra d'Agoa, &c., general. Fl. April, May; fr. July, Aug.—A low shr. rather than tr. throwing up suckers abundantly from the base, with straggling spreading or declining branches; rarely more than 10-15 ft. high, often considerably less. Fl. like those of the Common Cherry (C. Avium L.) w., appearing rather with than before the l. Fr. nearly the size of a Morella Cherry, which it resembles equally in shape and colour; its flavour rather peculiar, slightly bitter, yet agreeable, and, though rather insipid and not distinctly acid or very juicy, making a most excellent preserve. Fr.-stalks about an in. long.

A cognate var. from the same stock as our common English Morella Cherry (C. Caproniana 6. griotta Ser. in DC.), which, although much less acid and juicy, it resembles in lateness of season, succeeding at not less interval than a month or two the common "Cerêja" in Mad. (C. Avium L.). Though often growing apparently quite wild, and always without culture, it has probably been originally introduced from Portugal.

§. Fl. in racemes coetaneous with the l. Tr. or shr., in Mad. sp. evergreen with persistent coriaceous l.


L. ovate-lanceolate or ovate-oblong, acuminate serrate without glands; rac. axillary straight loosely spreading longer than the l. Prunus lusitanica Linn.; Brot. ii. 252. Cerasus lusitanica Ser. in DC. ii. 540.

β. Hixa Ser. in DC. i. c.; l. narrower and longer oblong abruptly acuminate; rac. elongate with laxer fl.—Prunus Hixa Brouss. ex Willd. Prunus lusitanica Buch 197. no. 381. Prunus (Padus) lusitanica WB. ii. 19. Cerasus Hixa WB. t. 38.—Tr. per. Mad. reg. 2, 3, rr. Almost extinct now in a wild state, but undoubtedly indigenous. Thirty years ago I found a fine tr. in full vigour in the forests of the Serra d'Agoa under Pico Grande, and on the path leading down to the bottom of the valley from the Caminho Central about a mile nearer the Jardim; also I have seen it in the Curral das Freiras on the right hand high above the road going down the Voltas; Rib. de São Martinho, a branch of the Rib. de João Gomes, near
Funchal, Sr. J. M. Moniz. This last habitat precisely accords with that assigned by Masson (in BH.) long ago, "ad ripas rivi- lorum Curral dos Romeiros." The tr. at the Palheiro are affirmed by the old gardener to have been all brought thither originally from the Santo da Serra; and those at the Mount, in the grounds of the Quintas do Bello Monte and de Prazer below the church, are doubtless, from their size and age, of the native stock. Old stumps of this tr. are met with occasionally in various other places. July, Aug.—A large tr. 40-60 ft. high, with a distinct trunk sometimes 6 ft. in circumference, and a close bushy head of dark shining evergreen foliage; loaded profusely with long rac. of white fl. with a yellowish eye, hanging or spreading loosely, and almost weighing down the branches. Besides the great difference in habit from the low rounded stemless form, branched from the base of the pl., in English shrub- beries and gardens, the l. are more oblong narrower and more pointed (about 5 in. long by 1½ broad), and the fl. less crowded on the rac., which are 6-8 in. long. Fl. strongly but not agreeably fragrant. Berries passing through red to nearly black, not poisonous, but scarcely wholesome or palatable, though occasionally eaten by children.

The wood of Las Mercedes near Laguna in Tenerife is chiefly composed of this tr., not attaining, however, nearly the size it reaches in Mad. I found it in full fl. in July.

The common "Laurel" (properly Cherry-laurel, Prunus Lauro-cerasus L.) of English shrubberies and gardens, which also belongs to this section of Cerasus, thrives well in Mad. in pleasure-grounds and gardens, principally at a height of 1500-2000 ft., and especially at the Palheiro; but it is by no means general or common.

Order XXVII. ROSACEÆ.

The Rose Family.

Fl. mostly perfect regular, rarely imperfect. Cal. persistent not adhering to the ovary; sep. 5-4 or 10-8, valvate in bud. Pet. 5-4 or 0 deciduous, inserted on a disk or ring at the base of the sep., imbricate in bud. Stam. indefinite inserted with the pet. Ovaries free. Carpels distinct indefinite, sometimes reduced to 1-2, mostly 1- rarely 2-many-ovulate. Styles mostly lateral and free, rarely connate. Fr. various, composed of the dry or drupaceous and juicy, 1-seeded and indehiscent distinct carpels, forming a head on the receptacle, or enclosed within the hardened or fleshy cal.-tube. Seeds exalbuminous; cot. fleshy; embryo straight.—Shr. or per. herbs. L. mostly compound, pinnate. Stip. united to the petiole, persistent. Fl. w., pink, or y. coæstaneous with the l. Fr. often edible.
Tribe I. **SANGUISORBEÆ.**

The Burnet Tribe.

Fr. formed of 1 or 2 rarely 3 or 4 dry distinct indehiscent 1-seeded carpels or ach. enclosed in the dry hardened rarely fleshy cal.-tube which is contracted at the top. Cor. often 0. —Mostly per. herbs with 1. pinnate or palmate. Fl. inconspicuous small. Fr. insignificant small, not edible.


2. **BENCOMIA.** Like Poterium, but tube of cal. in fr. even and somewhat fleshy, st. shrubby, and fl. in long cylindric spikes.

3. **AGRIMONIA.** Fl. perfect regular. Cal. 5-cleft, its tube turbinate without bractlets, 10-grooved, armed upwards with hooked bristles, in fr. hard and woody with the sep. connivent. Pet. 5. Stam. about 15 inserted with pet. above the glandular ring contracting the throat of cal. Style terminal; stigma small subbilobed. Ach. 1–2 enclosed in the hardened woody obconic setose cal.-tube. Seeds suspended.—Per. herbs, with interruptedly odd-pinnate 1. and small y. fragrant fl. in spikes or rac.

4. **ALCHEMILLA.** Fl. perfect irregular. Cal. 8–10-partite double, the outer row of alternate segments smaller, tube urceolate contracted at the throat. Pet. 0. Stam. 1–4 inserted on a ring in the throat of cal. opposite its outer smaller segments. Style lateral from nearly the base of the ov.; stigma capitate. Ach. 1–2 enclosed in the dry hardened naked cal.-tube. Seed upright or ascending.—Inconspicuous herbs, per. or ann. L. palmately lobed or cut. Fl. greenish small inconspicuous.

Tribe II. **DRYADEÆ.**

The Raspberry and Strawberry Tribe.

Fr. (an *eterio*) composed of several or many small dry or (in *Rubus*) succulent indehiscent carpels or ach. inserted on a dry or (in *Fragaria*) succulent receptacle. Cal. persistent below the fr. Stam. indefinite numerous.—Per. herbs or shr. with compound 1. Fl. conspicuous.
5. Potentilla. Cal. flat open cup-shaped double 5+5-rarely 4+4-partite, the outer segments smaller. Pet. 5 rarely 4 broadly rounded or heart-shaped. Stam. many. Style lateral short deciduous. Fr. dry of many small ach. placed upon a flattish convex hairy dry recept. Seed pendulous.—Mostly per. herbs or shr. L. compound. Fl. y., sometimes w., r., or atropurpureous, mostly cymose.

6. Fragaria. Cal., cor., and stam. as in Potentilla. Pet. 5 obovate. Style lateral marcescent. Fr. succulent composed of many hard dry carpels or ach. seated on an ovoidal or globose succulent or juicy deciduous recept. Seed pendulous.—Stoloniferous per. herbs. L. trifoliate. Fl. w. Fr. edible fragrant r. or w.

7. Bursa. Cal. flat open cup-shaped simple 5-partite. Pet. 5. Stam. many. Style nearly terminal marcescent. Fr. juicy composed of several or many succulent distinct or sub-confluent drupes seated on a convex or conical spongy soft or dry recept. Carp. hard bony wrinkled. Seed pendulous.—Shr. with prickly mostly rampant st. and leafstalks. L. palmate or pedate. Fl. w. or rose, paniculate. Fr. mostly scentless, often edible, black or dark v.-blue, rarely red or pale ochraceous-w.

Tribe III. Roseae.

The Rose Tribe.

Fr. (a hep, cynarrhode) composed of many indehiscent dry hard bony 1-seeded carpels or ach. enclosed in the enlarged fleshy or pulpy cal.-tube, which is crowned with the persistent sep.—Prickly shr. with pinnate l. and large conspicuous fragrant fl. Fr. scentless scarcely edible.

8. Rosa. Cal. simple 5-fid, tube urceolate contracted and annularly callous at the mouth, lined with bristles; sep. in bud subspirally twisted, often pinnate. Pet. 5 spirally imbricate in bud. Stam. many. Styles lateral free or united upwards. Carpels or ach. numerous small bony inserted on the inside of the cal.-tube.—Stip. attached to petioles. Fl. w., r., pink or purple, rarely y., often (by cult.) double. Fr. red, rarely black.

Tribe I. Sanguisorbeæ.

1. Poterium L.

1. P. verrucosum Ehrenb.
Herbaceous more or less hairy-pubescent; st. angular, hirsute
downwards; rachis of lower l. and lfts. beneath hairy-pubescent; lfts. sharply inciso-serrate, the lower roundish, the upper oval or ovate-oblong; heads solitary subglobose, fl. all perfect except a few of the lower; fl. scarcely longer than the spreading or reflexed subpersistent sep.; fr. large oval strongly and coarsely muricate-lacunose or reticulate-rugose.—Ehrenb. Ann. des Sci. iii. 263; WB. ii. 9. *P. megacarpum* Novit. 22 or 544. *P. Sanguisorba* Buch 197. no. 374 (not Linn.).—Herb. per. Mad. reg. 1, 2, c. Dry sunny hills, waste rocky places and road-sides, chiefly near the sea, everywhere; all about Funchal, along the Caniço road, W. bank of the Roxinha, &c., about S. Martinho, Pico da Cruz and P. de S. Antonio to the W., &c.; not often seen above 1000 ft. April–June.—Wholly without scent or flavour. Root strong tough woody. Fl.-st. about a ft. high, the branches slender stiff and somewhat straggling. Foliage rather dull gr., sometimes glaucescent, very variable in pubescence, rarely altogether smooth. L. 3–6 in. long odd-pinnate, the lower pubescent, upper nearly or quite smooth. Lfts. in 5–7 or 8 pairs, nearly sessile, sharply but coarsely or deeply serrate, the lower on the rachis small and irregularly placed, upper 5 or 6 lines long, 3–5 broad. Heads of fl. subglobose or hemispherical on long naked ped. (the ultimate branches of the st.), gr. not atropurpureous. Anthers pale ochraceous, with short pale slender flexuose fil. Stigmas short and small, deep-crimson. Cal.-lobes mostly 4, large broad oval smooth, not falling till the fr. is ripe. Fr. coated with the hardened adherent spongy deeply pitted cal.-tube, pale ochraceous or cream-colour, 2 lines long and nearly as broad, 2 or 3 times as large as in *P. Sanguisorba* L., oval not quadrangular, and with the prominent raised walls or edges of the pits irregularly jagged or toothed. Nut almost always single, ovate-globose, not angular, obsoletely rugulose, dark brown or black.

Entirely devoid of the peculiar grateful cool Cucumber-like smell and flavour of its near ally *P. Sanguisorba* L., which in old times in England, until the introduction of the modern Cucumber, rendered the last-named pl. of such repute.


1. *B. CAUDATA* (Ait.).

Shrubby dioecious without spines, hairy-pubescent or villose; young shoots, ped., petioles, rachis and lfts. beneath shaggy or villose; l. odd-pinnate in terminal tufts; lfts. in 4–6 pairs, oblong-ovate acute sharply serrate, glabrescent or smoothish above, whitish and villose beneath; stip. irregularly lacerate-pinnate; spikes axillary thick cylindric elongate cernuous or
nodding, lax downwards and mostly branched or compound.—WB. ii. 11. *Poterium caudatum* "Ait. Hort. Kew. iii. 354;" BM. t. 2341 (female pl.) ; DC. ii. 594.—Shr. per Mad. reg. 2, rrr.

**Male pl.**—A single ex. only, in the upper part of the grounds or chestnut-woods of the Quinta de Prazer below the Mount Church, formerly occupied by the late Robert Page, Esq.; cult. April, May.—A shr. about 5 or 6 ft. high, with long sparing straggling naked thickish very brittle branches full of pith, covered with a shining even greyish outer skin cracking or peeling off, leaving them cinnamon or chestnut-brown beneath, each terminating in a large thick tuft or rose of 1. The older branches are quite woody and stiff but remarkably brittle, snapping short off with the slightest force from their large quantity of pith. New shoots, petioles and rachis of 1., and ped. densely villose or shaggy with long white somewhat woolly hairs. L. not deciduous, but when dry and withered continuing in thick masses several years below the fresh ann. tufts of gr. l. at the ends of the branches. Base of petioles dilated sheathing broad and membranous, pale or whitish, fringed with hairs, short and ending abruptly upwards on each side in a small narrow laciniate stipulary lft., with several pairs of similar stipulary lfts. close together downwards, quite towards the base of the sheathing portion and apart from the upper terminal pair; all distinguished from the true lfts. by their pale colour, narrowness, and deeply jagged laciniate or lacerated outline. Lfts. in 4-6 mostly 5 pairs with an odd one, the lowest smallest and remote, all ovate-lanceolate equally serrate glabrescent or nearly or quite smooth and dark shining gr. above; beneath pale whitish opake and villose-pubescent, the hairs short close and inclining or almost adpressed, with prominent equidistant nerves. L. 6-12 in. long; lfts. \( \frac{1}{2} - 1\frac{1}{2} \) in. long, \( \frac{1}{2} - \frac{3}{2} \) in. broad. Spikes on axillary solitary erect stout villose stalks aggregate in the terminal tufts of 1., and mostly branched or compound, producing below the main spike several smaller lateral spikes; the main spike cylindrical, as thick as the little finger and 4-6 in. long, the end drooping in bud, mostly erect altogether in fl., of a pale light gr. more or less pale ochraceous according to the state of the anthers. Fl. densely crowded upwards, lax or remote downwards; bracts 3 rather large and conspicuous (exactly as figured in the female pl. BM., t. 2341) ovate-acuminate spreading silky-villos. Sep. pale gr. with whitish edges, broadly oval or roundish, concave at first, soon strongly revolute instead of reflexed, as rightly figured l. c. in the female pl., quite smooth. Anth. about 40 large roundish and flattened, pale ochraceous. Pollen issuing like a cloud of dust when the spikes are first shaken. Fil. extremely fine and delicate.

The above description was taken in April 1831 from a shr.
stated to be the remains of a tr. full 20 ft. high and with a
trunk as thick as a man's thigh. This tr. had been accidentally
broken down some years previously, owing to its extreme fra­
gility; and all that remained were shoots from the old stock or
root, forming a large spreading straggling bush with remarkably
brittle branches, snapping short off with the slightest force, and
of a dry quite woody substance, but with a large pithy cavity
inside. This individual still (1861) exists, growing close below
the upper boundary wall of the Quinta de Prazer, dividing it
from the Q. do Bello Monte above.

Female pl.—Rocks in the Curral das Freiras, April, May,
1861; brought by a countryman to Sr. Moniz, from whom I
have received excellent dried spec.—Habit exactly of the male
pl., but in these ex. much less hirsute or rather merely sub­
pubescent; the upper surface of lfts., sep., and fr. quite smooth.
L. odd-pinnate stalked, 3 or 4 in. long. Lfts. in mostly 4 or 5
pairs, ovate- or elliptic-oblong acute, sharply strongly and re­
regularly serrate, quite smooth above, pale or subglaucous beneath
and pubescent like their petiol. and rachis, \( \frac{3}{4} \)–1 in. long, half as
broad. Stip. with small irregular leafy lacerate or laciniate pinna
or lfts. Rac. axillary in the terminal bunches of l., slender,
slightly drooping, 3–4 in. long, a little shorter than the l.,
stalked, sparingly branched or compound at the base. Fl. distinct
numerous but not crowded, nearly or quite sessile. Bractlets
3 ovate or lanceolate acuminate membranous puberulous per­
sistent, nearly or quite half as long as the fr. Cal.-tube 1\( \frac{1}{4} \) line
long, half as broad, elliptic-oblong subquadrangular (the angles
presently obliterated) perfectly smooth and even. Sep. about
half the length of cal.-tube, broadly oval or oval-oblong, gr.
with thin pale edges, subpersistent smooth. Stigmas 3 forming
a short thick (in these dried spec. pale brown) tuft about half
the length of sep. Fr. resembling a very small young goose­
berry, reddish or purplish-brown globosely turbinate, approach­
ing more or less to oval or elliptic, fleshy, hard or firm, quite
smooth and even, about 2 lines long and half as broad, mostly
crowned by the persistent spreading or reflexed sep. and con­
taining 2 or mostly 3 carpels or ach., each enclosing one brown
seed.

In BM. t. 2341 the stigmas are bright crimson, and the 3
styles are much longer and more distinct than in my dried spec.,
which are however all rather in fr. than fl.

The claim of this pl. to be regarded as indigenous to Mad.
remained until very lately unsupported by any direct evidence.
It was first discovered by Masson in Tenerife, where it is now
extremely rare, and where I only once met with it, in the summer of 1858 at the head of the Barranco de S. Andrés, halfway between Laguna and Taganana, growing out of a perpendicular wall of rock by the roadside, without fl. or fr. But neither Masson nor any subsequent botanist, till quite recently, had ever found it wild in Mad. Nevertheless, in accordance with the line of reasoning followed with regard to *Rhamnus latifolia* Herit. *supra* p. 112,—viz. the little intercourse between the Canaries and Mad., the want of any other instance of such introduction thence in former years, the improbability of exception in the case of a pl. neither useful nor ornamental, and lastly the positive tradition on the spot that the male pl. growing in the Quinta de Prazer had been "brought from the Serra,"—I had all along regarded this cult. ex. as the relic of a truly indigenous Mad. sp., which possibly might still reward the researches of some future botanist, but which, if really become totally extinct—a condition which the dioecious nature and probable original rarity of the pl. might well have accelerated,—had but anticipated by a few years, like *Rhamnus latifolia* Herit., the probable speedy destiny of *Visnea Mocanera* L. fil., *Pittosporum coriaceum* Ait., *Prunus lusitanica* L., *Picconia excelsa* (Ait.), *Taxis baccata* L., *Juniperus Oxycedrus* L., *Goodyera macrophylla* Lowe, *Luzula Seuberti* Lowe, *Balantium Culeitana* (Sw.), *Lycopodium complanatum* L., and other like serviceable or excessively rare and local pl. The question is however now completely settled by the late happy discovery of a female pl. on its native rocks in the Curral, due to the unflagging energy of Sr. Moniz,—a discovery not less important in itself than in the confirmation it affords to the legitimacy of the claims of one or two other more or less apparently extinct sp. (e. g. *Centaurea Massoniana* Lowe, and *Rhamnus latifolia* Herit.) to a place in the Mad. Flora.

3. **Agrimonia** L.


Villose-hairy; 1. interruptedly pinnate; lfts. hairy or shaggy beneath, ovate-oblong coarsely serrate; cal.-tube in fr. obconic, ribbed or furrowed to the base, outer spines of its rim or top spreading.—Brot. ii. 292; EB. t. 1335; Hook. Fl. Sc. i. 147; Sm. E. Fl. ii. 346; Buch 197. no. 375; DC. ii. 587; Koch 245; WB. ii. 14; Seub. Fl. Azor. 48. no. 362; Bab. 91.—Herb. per. Mad. reg. 2, 3, ccc.—Chestnut-woods, ravines on grassy banks,
and roadsides, everywhere above 1000 ft. July–Oct.—Wholly scentless. Root strong woody. St. 1–2 ft. high stiff straight erect, mostly simple, leafy downwards, ending in a long erect virgate spike of distant nearly sessile scentless rather small pale-yellow flower, much elongated in fruit. L. about 4 in. long, with 3 or 4 principal pairs of nearly sessile leaves and an odd stalked terminal one about 1 in. long and ½–¾ in. broad, hairy but not glandular beneath, above pubescent; the rachis with a number of much smaller irregular intermediate sessile leaves. Stip. large leafy stem-clasping coarsely serrate like all the leaves. Sep. connivent in fruit, acute. Pet. flat oblong, soon falling. Tube of cal. hairy-pubescent or shaggy, strongly 10-ribbed or grooved nearly or quite down to its base; outer spines of its rim short and spreading at most horizontally, not deflexed, inner longer, ascending or erect; all hooked at the tip, giving the hard dry fruit a bur-like character.—Used remedially by the country people.

4. Alchemilla L.

§ Aphanes L.; alternate teeth of cal. very small; pl. ann.

1. A. arvensis (L.).

L. stalked palmate trifid fan- or broadly wedge-shaped, hairy beneath, lobes 2- or 3-5- or 6-toothed; fl. sessile agglomerate opposite to the L., sheathed by the large stem-clasping stip.—"Scop. Carn. i. 115," DC. ii. 500; EB. t. 1011; Hook. Fl. Sc. i. 56; Sm. E. Fl. i. 224; Koch 257; WB. ii. 12; Bab. 92. Alchemilla Aphanes Desf. i. 145; Broth. i. 159. A. vulgaris Holl! in J. of Bot. i. 21, 40 (not Linn.). Aphanes arvensis L.—Herb. ann. Mad. reg. 2 (upper part) and 3, c. Mountain pastures in the short turf almost everywhere, as about the Primeira Vista do Cural above the Jardim da Serra, the Lagôa at S. Antônio da Serra, above Camacha towards Pico das Árbores, towards the Pico do Areiño, &c., and rocky banks along the Levada in the Rib. da Metade, at the Rabaça, &c. April–June.—A small inconspicuous hirsutely pubescent plant, nearly hidden in the mountain turf, with minute scentless greenish flower, and small elegantly shaped foliage. St. prostrate or procumbent, 2–6 in. long with a knotted or jointed appearance. L. flat, fan-shaped, small, as broad as long. Stip. large leafy deeply cut, meeting round the st. and concealing or sheathing the fl. Fl. very small green, in little hairy tufts, opposite the L., not axillary, nearly or quite concealed by the stip. Cal. tubular-urceolate angular with 4 larger ovate inner, and 4 minute alternate outer segments.
Tribe II. Dryadeæ.

5. Potentilla L.

* Hairs of recept. shorter than the smooth carpels.


More or less hairy, st. flagelliform prostrate or procumbent, rarely rooting; lower stip. simple entire, upper 2–3-cleft; 1. all stalked, subpedately quinate or ternate, obovate-wedgeshaped, sharply and deeply toothed above the middle, below entire; fl. mostly tetramerous, pet. obcordate with a very short claw; carp. obliquely 3- or 4-ribbed or wrinkled on each side.—“Sibth. Fl. Oxon. 162”; Koch 289. P. nemoralis Nestl. Pot. 65. P. Tormentilla e. nemoralis Ser. in DC. ii. 574; Seub. Fl. Azor. 48. no. 359. P. Tormentilla β, Bab. 94. P. reptans Buch 197. no. 380 (not Linn.). Tormentilla reptans L., Sm. EB. t. 864; E. Fl. ii. 428; Hook. Fl. Sc. i. 164.—Herb. per. Mad. reg. 2, 3, ccc. Bare open mountain pastures and thickets, chestnut-woods, &c., everywhere chiefly from 1500–5000 ft. Throughout the year. —Very variable in size and luxuriance. Rootstock stout somewhat woody blackish. St. runner-like weak and slender branched dichotomously, either quite prostrate or trailing loosely and ascending amongst other herbage, 3–12 in. long; only occasionally and after fl. rooting at the joints. Stip. leafy often small or inconspicuous. L. always distinctly stalked. Lfts. 3–6 or 9 lines long, stalked, often smooth above, but always hairy beneath along the nerves and edges; coarsely serrated above the middle with a few lanceolate acute teeth. Fl. bright y. on long slender stalks from the axils with a leafy palmate-cleft br., intermediate in size between the fl. of P. reptans L. and those of P. Tormentilla Sibth. Pet. 4 very rarely 5. Sep. 8 very rarely 10, linear-lanceolate, as long as the pet., unequal, the outer or alternate narrower or smaller. Recept. hairy. Carpels smooth, with 3 or 4 faint indistinct oblique ribs or wrinkles towards the top on each side.

No pl. can be more constant in its char. than this is in Mad.; and I have seen no symptoms whatever of transition either towards P. Tormentilla Sibth. or P. reptans L. I consider it a good sp., agreeing therein with most of the older and one at least of the best modern practical working botanists, Koch, whose excellent observations on it I transcribe: “It differs from Potentilla reptans in the sharp lanceolate more spreading teeth of the l., in the mostly tetramerous fl., and in the carpels rugose on the back with a few tubercles, and not merely tuberculate; from the following, i. e. Potentilla Tormentilla Sibth., in the stalked
1., the smaller stipules, the fl. twice as large, but especially in its mode of propagation: for the st. in autumn put out roots from the joints with a bunch of 1. and then decay, leaving alone the rooted joints which form so many distinct pl.” (Koch 240.)

I still possess a spec. of a small dwarf state of this pl. gathered in July 1828 “in montosis Maderensisus” by my late friend Webb, and named by him Potentilla verna.

“P. anserina L.” Holl’s List, in J. of Bot. i. 21, 41, is doubtless a mere slip of the pen for the present pl. not otherwise mentioned by him, but which could not possibly have escaped his notice. The true P. anserina L. is certainly not found in Mad. Seubert mentions it, however, in his Flora Azorica as common in dry pasture-ground and by roadsides in the Açores.

Potentilla reptans of Buch’s List is likewise a plain pen-slip for Tormentilla reptans L. or the present pl., which it is remarkable has not been found in any one of the Canarian Islands, though it occurs in the Açores. Mad. thus appears to be its southern limit.

6. Fragaria L.

Strawberry.


Lfts. membranous soft hairy, the 2 lateral sub sessile; hairs of petioles and ped. spreading, of pedic. adpressed upwards or erect; sep. in fr. spreading or reflexed; fr. globose or ovate, not contracted or barren at the base.—Desf. i. 402; Broth. ii. 349; Buch 197. no. 379; Hook. Fl. Sc. i. 162; EB. t. 1524; EBS. t. 2742; DC. ii. 569; Sm. E. Fl. ii. 414; Seub. Fl. Azor. 48. no. 357; WB. ii. 13; Koch 254; Bab. 96.—Herb. per. Mad. reg. 2, 3, ccc. Chestnut-woods, banks and mountain slopes, especially in thickets of Vaccinium, everywhere from 1500-4000 ft.; abounding particularly on the heights above the district of Porto da Cruz, and in the Valleys of Rib. Frio, Rib. da Metade, Rib. do Fayal and S. Vicente. Fl. throughout the year, chiefly in early spr.; fr. April-July.—A small humble sparingly stolon-bearing gregarious pl. nearly concealed amidst surrounding herbage. Fl.-st. short erect 2-6 or 8 in. high scarcely or little higher than the 1., bearing scarcely more than 2-4 small white fl. L. mostly radical stalked; lfts. hairy-pubescent of a soft texture, obovate-cuneate coarsely serrate, bright gr. above, whitish or a little silvery beneath; the middle one subpetiolate, the side ones more or less sessile. Stolons few and short, seldom more than a ft. long, produced from the root-stock after fl. Fr. small globose or ovate-globose not con-
tracted at the base, deep scarlet or blood-colour; the carpels all smooth and even, continued down quite to the base of the receptacle.

The fr. is collected mostly by the children of the country-people, especially those of the Porto da Cruz district, and brought for sale in Funchal early in the morning daily during the season in small baskets neatly covered with chestnut-leaves, their contents being sold for from "half a bit" (2½d.) to twice as much each. The supply is most abundant in May and June. The fr. though small and acid is remarkably high-flavoured, especially late in the season.

The ordinary English varr. of Garden Strawberry are also cultivated in the neighbourhood of Funchal and elsewhere from 1000-2000 ft. above the sea; e.g., the Roseberry, Keans Seedling, Black Pine, Carolina, Chili, &c., but not the Old Scarlet (F. virginiana Mill.) or the Hautboy (F. elatior Ehrh.). Of these the white or blush-coloured Chili Strawberry (F. Chilensis Ehrh. var. [β. ananassa Duch ?]) thrives apparently the best, the fr. attaining an unusual excellence and flavour.

I have a note of a Fragaria gathered at the Mount in May 1828, with "sep. erect after flowering," and so referred by me at the moment to F. collina Ehr., but which was probably a mere aberrant F. vesca L. However the true F. collina Ehr. with sep. close-pressed to the fr., and the latter contracted and barren, i.e. without carpels, at the base, should be also carefully looked for in Mad.

7. Rubus L.

Bramble, Blackberry, or Raspberry.

* Shrubby; barren st. of year (y.-st.) arched or declining, often rooting at the end.


Y.-st. arched, rooting at the end, angular furrowed and like the petioles minutely stellately downy and very prickly; prickles large compressed declining or deflexed from a long base; lfts. 5-nate or 3-nate all stalked ovate-oblong acuminate, sharply and finely but unequally serrate and plaited at the edges, hard and coriaceous, glazy-white and closely tomentose beneath; pan. long narrow, its branches equal short few-fld., the lower remote axillary, upper crowded 2-3-fld. corymbose, all naked (without glands or setae) but minutely stellately downy and armed with
numerous strong hooked prickles; pedic. and cal. closely tomentose naked unarmed, sep. reflexed; pet. roundish-obovate clawed twice the length of sep.—Weihe and Nees Rub. Germ. t. 20; Bab. (ed. 4) 99. **R. fruticosus** L., Desf. i. 401 (var.); Brot. ii. 347; EB. t. 715; Buch 197. no. 377; Hook. Fl. Sc. i. 160; Sm. E. Fl. ii. 399; Bab. (ed. 1.) 94; Hook. E. Fl. (ed. 5) 96; Seub. Fl. Azor. 48. no. 355. **R. fruticosus** a. major **WB.** ii. 15, **R. fruticosus** 1, Koch 233.—Shr. per. Mad. reg. 1, 2, 3, ccc; PS. reg. 1, rrr; GD. reg. 2, rr.—In Mad. everywhere below 4000 ft., and forming the ordinary fences to vineyards, fields, cottage gardens, &c.; in PS. only near the large tank or fountain at the W. end of the town, forming a hedge in a lane leading northwards; in GD. up the central valley here and there on the mountains. Fl. March–Sept.; fr. July–Oct.—St. unless supported nearly or quite prostrate all their length, rooting and then arching only towards their end; otherwise (as in hedges) 5–8 ft. high, numerous, shooting up successively year after year from the rootstock; dark-reddish-purple, naked or without glands and setae, and appearing smooth but mealy or powdery, as if mouldy, from the very minute short close-pressed stellate hairs; clinging tenaciously by the very sharp and numerous large compressed strong and rigid prickles with which the whole pl., except the ped. and cal., is beset. Lfts. stalked, distinct, not laterally imbricate, dark shining gr. and smooth above, strikingly white and covered with a close hard glazy stellate-downy coat beneath, but not otherwise hairy, except that the downy coat is somewhat loosener freer on the main ribs; all oblong more or less, and of a stiff dry substance, with finely serrate full or plaited often deflexed edges, the terminal or middle lft. largest and longest, abruptly acuminate with the point bent downwards or decurved, 2–3 in. long and 1½–2 broad. Cancellating or reticulating cross-veinlets on the under surface of the lfts. very regular distinct and prominent. Stip. seated a little way up the petiole above the axils, long linear-subulate erect. Pan. prickly leafless, in fr. elongate cylindric. Fl. about the size of a shilling or nearly an inch in diam., uniformly in Mad. as in the Canaries different shades of lilac-rose or pink, varying much in intensity from deep full pink to the faintest blush, but never white. Pet. obovate, attenuated at the base. Sep. cottony-w., reflexed in fl. and fr. Fr. shining black, of many grains or drupes, juicy and sweet.

Luxuriant pi., growing in moist or shady spots, have sometimes the hard close tomentum beneath the lfts. greenish and inconspicuous, though still discernible with a good lens; and the lfts. are less coriaceous and not discolorous, or dark gr. above and white beneath.

The Portuguese have a prejudice against the fr. (**Amoros**
da sôlca) as indeed against the Mulberry, deeming it unwhole-
some. It yields however a fair substitute for English Currant-
jelly.

This troublesome and far too common pl. is very valuable
for fencing purposes, and it is not less universally employed
thus in Mad. than in the Canaries. Its all but absolute exclu-
sion from Porto Santo seems therefore the more remarkable.

The fossil leaves figured and described by Dr. Heer in his
very valuable and interesting Memoir on the Fossil Pl. of S.
Jorge (4to, Zurich, Nov. 1855), p. 28. t. ii. f. 1, 2, under the
name of Corylus australis, appear to be impressions of the under
surface of terminal lfts. of R. discolor. On the other hand fig. 3,
by its freer coarser larger serrature and absence of cancellating
or reticulating cross-veinlets, is rather an impression of the
upper surface of a lft. of R. grandifolius.

2. R. CONCOLOR Lowe.

Differing from R. discolor in its smaller or more slender and
less stout, straighter and declining rather than hooked and de-
flexed prickles, in its lfts. (coriaceous) being merely somewhat
derer gr. and more or less pubescent but not at all or very
seldom closely tomentose- or glazy-white beneath, in its more
numerously fl., broader or larger and closer often corymbose
panicles, in its dull w., not in the least pink or blush, pet. or
fl., and drier insipid fr., with rather fewer and larger grains
or drupes.—Shr. per. Mad. reg. 3, rr. Thickets of Vaccinium,
Heath, and Laurus by the roadside between the Paul da Serra
and the Cruzinhas on the road to Seixal or Porto Moniz, for
about a mile before reaching the Cruzinhas. Also in thickets
about half a mile below the Tanquinhas, on the ascent to the
Paul from S. Vicente. June, July.—Perhaps only a local form
of R. discolor, due to the high elevation (scarcely below 4000
ft.), or shady humid nature of its place of growth. I know no
other sp. however, except indeed its apparently still nearer ally,
R. rhamnifolius W. and N. (EBS. t. 2604), with which it
can be properly compared; and I must therefore commend it
to the careful study of Mad. botanists on the spot, to determine
whether it really is distinct from both R. rhamnifolius and R.
dicolor, or whether, if not the former sp., it is a mere sylvan
state or form of the latter. The arched barren y.-st. with its
l. precisely resembles that of R. rhamnifolius as figured in EBS.
t. 2604.


Y.-st. arched angular furrowed and, like the petioles and
partial leaf-stalks, perfectly naked smooth and very prickly;
prickles very numerous compressed strongly hooked, declining or deflexed from a long base; lfts. quinate, rarely ternate, sub-pedate oval or ovate-oblong acuminate, coarsely doubly-serrate, soft and membranous, quite smooth and naked on both sides, bright gr., scarcely paler beneath; partial 1.-stalks long, the 2 outer combined at the base; pan. large elongate oblong compound downwards, its rachis and branches thickly clothed with purple or reddish glandular hairs or setae, with here and there a fine small prick; pedic. and cal. similarly glandular-hairy, unarmed; sep. reflexed; pet. obovate-oblong obtuse, shortly clawed, at least 3 times the length of sep.—Prim. 32. R. pedatus Sol. MSS. !; Buch ! 197. no. 378 (non Sm.).—Shr. per. Mad. reg. 3, and upper part of 2, c. Wooded banks and thickets; first ravine W. of the Allegria above S. Roque near Funchal; Rib. das Caïadas; Céara at S. Antonio da Serra; above the Quinta at the Jardim da Serra; in Rib. Fro, Rib. de Metade, Serra d’Agoa, Rib. de S. Jorge, and all the principal ravines of the North. Fl. June–Sept.; fr. Aug.–Oct.—Altogether vastly larger than the common Bramble (R. discolor W. and N.), with much longer stouter arching y.-st., often 20 ft. long, rising high over the surrounding bushes, magnificent large bright-gr. foliage, and immense pan. of large snow-white fl. St. mostly gr. or only reddish-purple here and there, the strong vigorous y.-st. very stout and thick, much elongated, angular and furrowed but not deeply; all armed on the angles with numerous, rather small or slender, deep-red or purple hooked compressed prickles, by which they catch and cling tenaciously; altogether smooth and shining; the fl.-st. only towards the pan. becoming sprinkled with short red or purple glandular hairs. L. with long smooth shining very prickly stalks, bearing 5, or upwards close below the pan., 3 or 4 lfts. or even only 1. Lfts. very large, the terminal one being often 5 or 6 in. long and 3 or 4 broad, the whole 5 forming a circle often 2 or 3 ft. in circumference; all on long very prickly stalks, that of the largest terminal lft. being from 1–3 in. long, those of the four or two lateral lfts. shorter, and always in the quinate 1. the stalks of the two side-lfts. are more or less, sometimes very distinctly, combined at the base; the lfts. a little heart-shaped at the base, and with a finely acuminate point; of a thin, not at all stiff substance, shining bright full gr. on both sides, being scarcely paler beneath, and seldom at all dark above, quite smooth and naked on both sides, but with several small fine prickles on the midrib beneath, and with the cancelling cross-veinlets of the under surface obsolete indistinct irregular remote and inconspicuous; the edges coarsely but distinctly doubly-serrate, the serratures altogether larger and freer than in R. discolor. Stip. leafy stalked narrow lanceolate finely acuminate erect or erecto-patent, mostly quite entire, rarely remotely toothed, seated at the base of the leaf-
stalk, pale gr., sometimes a little hairy. Pan. a foot or more long, many-fld., with subdivided branches. Br. linear or lanceolate pale gr. glandular-hairy. Fl. pure but dead white, very large and handsome, when fully open about the size of a dollar or nearly 2 in. in diam., fragrant. Sep. reflexed in fl. and fr., ovate acuminate concave, without prickles but copiously glandular-hairy, pale gr. with whitish edges. Pet. large, with a short claw, very fugacious. Fil. white. Anth. pale greenish-y. Styles greenish. Fr. large oblong subcylindric obtuse, about ¾ in. long, of numerous small equal-sized grains or drupes, more like a Raspberry than Blackberry, deep shining black, rather firm hard dry or juiceless, and either acid or insipid. When half-ripe it is of a peculiar bright mulberry-red colour. The ripe fr. is longer and more obtusely pyramidal or cylindric, with much more numerous and smaller grains, of a firmer drier substance, less juicy and more acid, than in the common Blackberry (R. discolor W. and N.); and it is, when ripening, of a much brighter red colour.

"Ulmus suberosa Mönch" of Heer's Fossil Pl. of S. Jorge, p. 28, t. i. f. 24, is the impression of a side-lft. of this Rubus; and not only t. ii. f. 3, of "Corylus australis," but his "Psoralea dentata Dec. ?" p. 33, t. ii. f. 28, are also, most probably, impressions of the upper surface of side-lfts, of the same, the "little points" or dots of the latter exactly corresponding with impressions of the fine granulations or ultimate reticulate compartments on the upper surface of the lfts. of either R. grandifolius or R. discolor.

It is fair to state, however, that as Ulmus campestris L. (U. suberosa var. Ehrh., Moench) flourishes cult. at an elevation of 3000 or 4000 ft. at Osorio near Teror and at San Mateo in Grand Canary, there is no strong à priori reason against its former existence in Mad., though at present it is cultivated with small success at Camacha or the Mount, scarcely exceeding the size of a dwarf tr. or bush.

The Raspberry (R. Idaeus L.) is occasionally cultivated; but it is with difficulty preserved alive for more than two or three years, even at the elevation of the Mount, and is very unproductive from the first.
Tribe III. *Roseae.*

8. *Rosa* L.

*Rose.*

§ Leaves and shoots without glands or *setae.*

a. Styles distinct.


Branches naked smooth; prickles uniform strong hooked compressed remote or scattered; lfts. 5, 7, 9, subcoriaceous, mostly smooth and naked without glands, simply or doubly serrate; stip. adnate persistent; fl. aggregate; sep. pinnatifid deciduous.—DC. ii. 613; Koch 250; Bab. 112; Brot. ii. 340 (in part); Lindl. *Ros. Mon.* 98; Hook. *Fl. Sc.* i. 157 (in part); Hook. *Br. Fl.* (ed. 5) 106; *Sm. E. Fl.* ii. 394; *WB.* ii. 16.

a. *glabra* Desv.; petioles with a few scattered prickles, nearly or quite smooth; lfts. naked and quite smooth, keeled, simply serrate, elliptic-ovate or oval, more or less pointed at each end; pedic. and ovate fr. quite smooth.—DC. l. c. *R. canina a,* Lindl. *Ros. l. c.*; *Hook. Br. Fl.* l. c.; Bab. l. c. *R. canina a. vulgaris* *WB.* l. c. *R. canina* *EB.* t. 992.—Shr. per. Mad. reg. 2 (upper part) and 3, §. Ravine W. of the Allegria near Funchal; ravines between Camacha and S. Antonio da Serra; descent from the Mount into the Rib. de S*ña Luzia*; about the Primeira Vista do Curral and the Jardim da Serra; plentifully in the upper part of S. Vicente and of the ascent to the Paul da Serra below the Tanquinhas; Rib. Frio, da Metade, &c. June, July.—Almost precisely the genuine common English Dog Rose with more or less pale-pink- or blush-coloured fl., in Mad. always nearly white, with the faintest tinge possible of blush, and fragrant. Upper or flowering branches only here and there or not at all prickly. Lfts. mostly shorter broader and rounder or less elliptic than in the English pl., being rarely twice as long as broad, often much less, and scarcely or not at all pointed at the base; very smooth and shining, full gr., a little paler beneath, not in the least glaucous or pubescent; their serratures simple erect, subconnivent upwards. Styles short, distinct to their very base, sometimes quite smooth, sometimes villose-hairy, and thus not confirming a remark of Dr. Lindley (*Rosar. Monogr.* 103) quoted in *Hook. Fl. Scot.* 158, to the effect that, the further to the south the pl. is found, the smoother are its styles, and that they are entirely without hair in Madeira. Só in another var. (*R. canina* y. *Armideae* *WB.* ii. 16, which is very nearly if not quite identical with *R. sarmentacea* Woods, *EBS.* t. 2595 = *R. canina* β, *Hook., Bab.,&c.*) which I found
abundantly in the woods ascending to the Cumbre in the Island of Palma, one of the Canaries, on the new road (Camino nuevo) from Sta Cruz de la Palma to La Banda, in full fl. at the beginning of June, 1858, at a height of 3000 to 4000 ft., the styles vary in different fl., even on the same branch, from quite smooth to villose-hairy.


Branches naked smooth long and trailing; prickles uniform strong hooked compressed scattered; lfts. 3 coriaceous naked, without glands, very smooth and shining, simply serrate; mid-rib, rachis, and petioles prickly; stip. free setaceous or subulate, deciduous; fl. solitary; sep. simple acute or with a spathulate tip; fr. oblong orange-red, and with the pedic. thickly echinate. —Mich. Fl. Bor.—Am. i. 295; Lindl. Ros. Mon. 125; DC. ii. 600. R. nivea a, DC. ii. 599. R. sinica Ait. Hort. Kew. ed. 2. iii. 261 (not Linn.) ex DC.; Lindl. Ros. Mon. 126, t. 16; BM. t. 2847. R. ternata Poir. Dict. vi. 288 ex DC.—Shr. per. Mad. reg. 1, ccc. About Funchal on walls and arbours, straggling often into waste ground, everywhere; forming a beautiful and frequent covering to graves in the English cemeteries. May, June.—Erroneously called in Mad. “the Macartney Rose.” Yearly shoots often of great length, 12-18 ft. or more, simple prostrate or trailing. L. evergreen. Lfts. ternate hard and stiff. Fl. single large, fully 3 in. in diam., delicate pure white, scentless. Fr. very singular with its horizontal but not pungent spines standing out all round like those of the husk of a Spanish Chestnut (Castanea vesca Grtn.).

b. Styles combined.


Branches naked smooth very long and trailing; prickles uniform, rather small or slender, hooked compressed scattered; lfts. 5 or 7, without glands, soft pubescent, smoother shining and rugulose above, elliptic-ovate, simply and finely serrate; rachis and petioles prickly, softly and thickly hairy; stip. adnate persistent pectinate-toothed hairy; fl. in thick crowded corymbose pan., small, very numerous; branches of pan., br., pedic. and cal. pubescent; fl.-buds globose-ovate; sep. “ovate entire” (Lindl.).—“Thunb. Fl. Jap. 214; Willd. ii. 1077; Ait. Hort. Kew. ed. 2. iii. 265” (ex Lindl.); DC. ii. 598.

γ. carnea Red. and Thor.; fl. pink, double.—DC. l. c. R. multiflora BM. t. 1059; Lindl. Ros. Mon. 119.—Shr. per. Mad. reg. 1, 2, ccc. In fences by roadsides and near cottages and houses everywhere, growing without any culture as if wild. May, June, but partially till Oct.—Yearly shoots often of pro-
digious length, 20–30 ft., simple arched or trailing. L. ever­
green. Lfts. soft, thickly hairy-pubescent beneath. Fl. about an in. in diam., of a lovely delicate pink or rose-colour, but nearly or quite scentless, produced in vast profusion in thickly crowded terminal corymbbs all over the pl., very double, and yet with well-formed stigmas, but never fertile or producing fr.

The comparatively scentless common Pink China or Ever­
blowing Rose (R. indica L. a, DC.) called by the Portuguese “Rosa Ingleza,” and the old English cottage-garden semi-double very fragrant deep blush-pink Damask Rose (R. damascena Mill. γ, DC.), with running roots, and gr. stems, called “Rosa Portugueza,” both occurring everywhere in gardens, are also often seen in hedges and waste ground on the outskirts of en­
closures about houses, growing wholly without culture.

The other sp. seen most commonly cult. in gardens are the Tea
Roses (R. indica L. δ, DC.); the small dark blood-red or atro­
purpureous Everblowing Rose “R. do Rato” Port. (R. indica L. 6, DC., R. semperflorens Curt. BM. t. 284, R. Bengalensis Pers. and Holl’s List in J. of Bot. i. 21, 41); the white Rose­
Unique (R. centifolia L. γ, DC.); the old English pink Moss­
rose “R. de Musgo” Port. (R. centifolia L. ε, DC.); the com­
mon white or Maiden-blush (R. alba L.); the White Lady
Banks’s (R. Banksia R. Br.); the old double dark blood-red and semi-double Red or striped red and white York and Lan­
caster Roses “R. de Alexandria” and “R. raiada de Alex­
andria” Port. (R. gallica L., Buch 197. no. 376; R. gallica varr. 1, 2, 3 Brotn. ii. 342, 343; R. gallica δ, ε*, and ε, DC. =
R. gallica β, BM. t. 1794), and the curious scentless R. mi­
crophylla Roxb. BM. t. 3490, with muricate fr. and Briar-like foliage. Many other sp. and varr. also occur. But these, like R. sulphurea Ait. with its fine large double y. fl., and R. moschata Mill. (R. de Mosquêta) with its large ample panicles of delicate pure white semi-double fl. possessing a most deli­
cate though not powerful fragrance, are comparatively rare, and are entirely confined to a few gardens about Funchal or Quintas in the country.

Prof. Lindley (Ros. Monogr. 122) says of R. moschata Mill., “This is one of the few sp. found in the N. of Africa, extend­ing across the continent from Egypt to Mogadore and thence to Madeira, whence it was brought by Sir George Staunton, and by him communicated to Mr. Lambert.” And he pro­ceeds to speak of it as “found wild” in Spain, though it has little of the habit of a European Rose. In Mad. it is cer­
tainly not indigenous, and is indeed only a rare inmate of gardens, showing no tendency whatever to become naturalized or even common.
Order XXVIII. POMACEÆ.

The Pear and Apple Family.

Fl. perfect regular. Cal. persistent, sep. 5 imbricate in bud, tube adhering to the ovary. Pet. 5 (rarely 0) imbricate in bud. Stam. 15-30 inserted with pet. in the throat of cal. Ovary of 5-1- mostly 2-ovulate cells or carpels coherent with each other and with the cal.-tube. Styles as many as carpels, stigma simple. Fr. a 5- or 1-4-celled pome or apple, fleshy or succulent, crowned with the persistent sep. Seeds 1-2 (rarely more) in each cell with a cartilaginous or bony endocarp, ascending; cot. mostly flat simple; albumen 0.—Tr. or shr. with scaly buds. L. mostly simple sometimes pinnate. Stip. free mostly deciduous. Fl. w., blush, or pink, mostly earlier than the l. Fr. edible.

1. CHAMÆMELES. Cal. truncate minutely 5-toothed, tube urceolate. Pet. 5 erect crumpled and erose. Style 1. Ov. 1-celled, each cell containing 2 erect ovules. Fr. (a Haw) obovate or oval, crowned by the withered sep., umbilicate but closed at top and concealing the upper end of the single bony 1-seeded nut or carpel. Cot. leafy convolute.—L. simple coriaceous evergreen.

2. PYRUS. Cal. 5-fid or 5-toothed, tube urceolate. Pet. 5 suborbicular. Styles 5-2. Ov. 5-2-celled, each cell 2-ovulate. Fr. fleshy umbilicate at top but closed and crowned with the dry persistent sep.; cells 5, each 1-2-seeded formed of the cartilaginous or coriaceo-membranous endocarp. Coat of seeds (testa) cartilaginous; cot. fleshy plain simple.—Small tr. L. simple or pinnate deciduous. Fl. in umbellate bunches w. or rose, often fragrant. Fr. mostly edible.

†3. CYDONIA. Cal. 5-cleft, the segments almost leafy, tube campanulate. Pet. 5 suborbicular. Styles 5. Ov. 5-celled, each cell many-ovulate. Fr. fleshy closed umbilicate, crowned by the enlarged persistent sep.; cells 5 cartilaginous, each many-seeded; seeds mucilaginous subhorizontal; testa cartilaginous; cot. simple.—Shr. with simple l. and subsolitary fl. Fr. mostly pear-shaped cottony.

1. CHAMÆMELES Lindl.  


The only sp. of its genus.—Lindl. in Tr. Linn. Soc. xiii. 104, t. 11; Lowe ibid. xvi. pp. 393-396; DC. ii. 631; Spr. Syst. ii. 460. Crataquus coriacea Sol. MSS. in BH.; Buch 197. no. 382.—Shr. per. Mad. reg. 1, rr. Sea-cliffs and perpendicular sides of ravines on the S. coast, almost exclusively in the neighbourhood of Funchal, and never above a mile or two from the sea. Edge of the cliffs along the Caniço road to the E.
half a mile out of Funchal. Rib. de João Gomes, about half-
way up from the Roxinha to the bridge across its stream in the
Curral dos Romeiros. Second ravine beyond the W. end of
the Praia towards Camera de Lobos, and on the W. side of the
Porto Novo Ravine between Canico and Sª Cruz, along the
Levada about 2 miles up, Dr. C. Lemann. Fl. Dec.—March,
mostly Dec., Jan.; fr. Dec.—A low bushy shr. 3—5 ft. high,
having somewhat the form or aspect of the Pyrus japonica Hort.
(Cydonia Pers., DC.; Chaenomeles Lindl.), or still more of the
Pomegranate (Punica Granatum L.), with the shining foliage
and bright-reddish or flame-col. young shoots and l. of the
latter. Branches strong stiff woody but rather brittle, with a
smooth greyish ash-col. bark. L. evergreen coriaceous hard stiff
and brittle, spathulate or retusely obovate, attenuated into their
short stalks, faintly or obscurely and remotely crenate, dark
shining gr. above, pale and slightly glossy beneath, altogether
smooth, solitary and alternate only on the young shoots, soon
becoming clustered by development of secondary leaf-buds on
the spurs and older branches. Stip. extremely minute and in-
conspicuous, short lanceolate reddish and certainly not decidu-
ous. Fl. white racemose, with a strong disagreeable smell re-
sembling somewhat that of the fl. of the Barberry (Berberis
vulgaris L.). Rac. terminal on short lateral leafy shoots or
spurs along the whole length of the previous 1- or 2-year-old
branches, 2—4 in. long erect with a few small l. downwards and
6—15 fl. on short upright pedic.; the rachis and pedic. like the
young shoots and l. with a few scattered hairs. Pedic. with
several short subulate reddish minute bracts. Sep. short minute,
reddish in the bud, downy inside. Pet. rather small roundish
with a rather long abrupt claw, much crumpled and jagged or
erose, white, with the claw and a stripe up the outside of each
(especially in the bud) bright red; in the expanded fl. horizontal
and remote, being separated by a space as wide as the breadth
of each pet. Stam. 10—15 inserted in a simple ring close to the
base of the pet. about halfway down, at first bent in over the
style, afterwards erect; fl. white smooth as long as the pet.;
anth. large at first pale y., then brownish. Style short; stigma
subcapitate dilated lobed margined. Ov. obovate downy at top
fleshy with 2 hard oblong erect ovules close together in the
centre. Fr. (a Haw) rarely matured and very long in ripening,
much resembling that of the common Hawthorn (Crataegus
Oxyacantha L.) but a little more oblong or elongated and of a
rich cream-colour or pale yellowish-white, \( \frac{3-4}{8} \) in. long, \( \frac{2-3}{8} \) in.
broad, oblong-turbinate or globosely oblong and somewhat pear-
shaped, flattened or truncate at top with a small hollow in the
centre which is nearly concealed by the converging dry and
blackened sep., altogether smooth and shining. Flesh about
\( \frac{1}{16} \) in. thick, mealy insipid but slightly bitter, white when first
cut or broken, but changing almost immediately to reddish-rusty-brown if the cut or fracture be transverse, not otherwise. Nut hard bony even, not rough or furrowed, with a slightly prominent suture up one side, ovate or elliptic, one-celled, containing a single loose narrow-elliptic kernel invested with a thin light-brown skin. Kernel pale-greenish internally; its cotyledons foliaceous, beautifully convolute, appearing in a transverse section like 2 leaves or laminae rolled together spirally.

The fl. are produced profusely, but are rather dull and inconspicuous, the light-gr. cal.-tube or germen and anthers predominating over the small remote white wrinkled pet. Notwithstanding their profusion, very few fr. attain maturity, and that only after a very long period. In one instance the fr. of Dec. fl. remained in June in the same gr. immature but full-grown state which they had attained in March, and did not ultimately ripen till Dec. following, i.e. a full year after their first formation. The convolution of the cotyledons has supplied an interesting fact in confirmation of the close alliance of this tribe of Rosaceae to Calycanthaceae (and so to Granataceae) indicated long ago by Dr. Lindley. See Linn. Trans. li. cc. This connexion with Granataceae (the Pomegranate) is curiously borne out externally by the habit and foliage.

"Buxo" is properly the common garden Box (Buxus sempervirens L.), and is only occasionally or conventionally applied to the present pl. with the distinctive epithet "da Rocha."

The Medlar (Mespilus germanica L.), "Nesperêira" of the Portuguese, occurs here and there in gardens above 1500 ft., but is rare. The Japan Medlar or Loquat [Eriobotrya japonica (Thunb.)] "Nesfêra de Japão," introd. about 30 years ago, is now common, producing abundantly its gratefully acid amber-col. fr., which is about the size and shape of a walnut, from Nov. to April, from the level of the sea to 3000 or 4000 ft.

2. PYRUS L.
Pear and Apple.


L. simple ovate serrulate more or less downy beneath, smooth above, petioles about the length of the l.; fl. in simple corymbs; ped. and cal. smooth or pubescent; styles distinct; fr. turbinate, sometimes nearly globose, not umbilicate at the base.—Desf. i. 397; Brot. ii. 328; EB. t. 1784; Sm. E. Fl. ii. 361; DC. ii. 633; Koch 260 (var. a); Bab. 114.

γ. sativa DC. ii. 634; unarmed.—Tr. per. Mad. reg. 2, ccc.
Commonly cult. everywhere, but principally in the parish of Caniço and the Valley of Machico. Fl. Dec.–Apr.; fr. July–Sept.—A pyramidal tr. 20–40 ft. high. L. mostly quite entire, smooth and shining when adult. Fl. snow-white scentless, appearing just before the l. Fr. very variable in size, shape, colour, flavour and season, but mostly more or less attenuated into the footstalk and not umbilicated at the base.

The pears in Mad. are in general of indifferent quality, and even the best English sorts become stony, dry and flavourless. The sorts most esteemed or commonly cult. are, according to Sr. Moniz, Pêras Flamengas, P. de Refêgo, P. Bojardas, P. Carvalhaes, Bergamotas, Furneiras, Formigas, Saramanhas, Quanquans, &c., with upwards of 20 others.

†††2. P. MALUS L. Apple. Peréiro or Macêira.

L. simple ovate shortly or abruptly acuminate crenate or obtusely serrate, white and tomentose beneath, petioles not half the length of the l.; buds tomentose; fl. in sessile umbels, ped. and cal. tomentose, styles combined downwards; fr. globose umbilicate at the base, fleshy, mostly sweet.—Brot. ii. 329; DC. i. 635. P. Malus ß. tomentosa Koch 261; Bab. 114. Malus communis Desf. i. 398.—Tr. per. Mad. reg. 2, ccc. Everywhere cult. in gardens. Fl. March, April; fr. Aug.–Oct.—A low spreading tr. 15–30 ft. high, with a strong branched root. Young shoots, l. beneath, and cal.–tube downy or cottony. Fl. blush-pink in bud and on first opening, fading into nearly white, fragrant. Fr. never hard, harsh, or austere, mostly depressedly globose and even hollow at the crown, always more or less umbilicate at the insertion of the usually short footstalk.

Even the best English sorts (such as the true Golden Pippin, introduced by a former British Consul Mr. Veitch, and thriving well at the Jardim) retain their excellence for a short time only after being gathered: and the generality of Apples in Mad. may be pronounced of very inferior quality. The best (Péros finos) are the Macãas Barraes (a large much depressed golden–y. apple), Reinetas, Cara de Dama, Pino d’ouro, &c. Other inferior sorts of more common occurrence are Péros de vime, P. dos Canhas, d’estópa, batoques, doces, &c.

Without personal study and investigation it may seem rash, in opposition to the stream of most practical botanists, to endorse the idea of De Candolle, that the original stock of the garden Apple (P. Malus DC.) is specifically distinct from our common English wild Crab (P. acerba DC., P. Malus a, Koch and Bab. li. cc., P. Malus EB. t. 179). It may serve however
to confirm this view, that the former tr. appears to extend much further south than the latter, which certainly is totally wanting, either wild or cultivated, in both the Madeiran and Canarian Archipelagos, as, from Brotero's *Flora Lusit.*, it also seems to be in Portugal. Whether the nearly sessile fr. of the former, contrasted with the long-stalked fr. of the wild Crab (*P. acerba* DC.) and certain garden Apples (e.g. the Golden Pippin) possibly derived from it, might not also, in addition to the lanuginose young leaves and germens, indicate a specific difference in the original stocks, is a further question. There is certainly an appreciable difference in the mode of growth or ramification, as well as in the habit of the two plants.


*β. Maderensis*; shrubby low bushy leafy; l. short, lfts. often subobtuse; pan. short subsessile buried in the l. erect in fl. and fr.; fl. fragrant.—Shr. per. Mad. reg. 3, rrr. In close thickets of *Vaccinium* at a height of 5500 ft. from 500 to 100 yards below the Icehouse of the Pico do Areeiro, on the left-hand of the road or path where it passes along the N. side or base of the last conical peak 500 yards to the S.E. of the Icehouse, and down the last little valley crossed immediately before arriving at the same; Sept. 1838, June 1844, about 20 tr. or bushes. Serra de S'ª Anna towards Pico Ruivo, Sr. J. M. Moniz, 1855. Fl. June; fr. Sept.—Rather a shrub than tr., with numerous erect straight st. or suckers from the rootstock forming a thick bush, and not rising above 6-8 ft. in height, though the main st. are often as thick as the arm or leg. L. scarcely more than 3 or 4 in. long. Lfts. in 6 or 7 pairs with an odd one, oblong, often rather obtuse, about 1 in. long and ½ in. broad, somewhat stiff or rigid, evenly serrate, shining dark gr. above, paler and slightly pubescent on the midrib beneath, the main and partial l.-stalks being also, with the rachis (which is furnished with a gland at each pair of lfts.), slightly downy. Buds, ends of young shoots, and l. beneath greyish-downy, the latter not cottony beneath. Fl. pure white with a delightful fragrance as agreeable and powerful as that of the common Hawthorn (*Cratoxy Lucas* L.), in dense many-flld. short-stalked large ample terminal corymbose panicles. Branches of corymb, pedic. and cal. downy. Pet. concave. Stam. incurved. Styles very
Fr. (wrongly called "berries") bright scarlet or orange-red, apple-shaped i. e. globose and level or flattish at top, the size of large peas or about $\frac{3}{2}$ in. in diam., in corymbose erect panicles shorter than the l., with a nauseous slightly bitter taste, mostly only 1-seeded. Seed small compressed brown.

Almost precisely the genuine Mountain Ash of England, Wales, and Scotland, with exception only of the shorter pan. more im­bedded or embosomed in the l., and perfectly erect, not drooping or weighing down the branches, both in fl. and fr.,—characters which are however quite in conformity with the smaller or shorter l. and more thickly-leafy dwarfish stunted shrubby habit of the whole pl. The fl. are also really fragrant, not disagreeably strong and sickly-scented as in the English pl.

Though growing apparently quite wild, and far away from and above all trace or range of cultivation, the apparent con­finement of this pl. to two spots only in Mad. far apart and much resorted to by sportsmen (who in former years, being often Scotch, might possibly have introduced so national a pl. into these two localities, their favourite haunts in search of game) throws some uncertainty on the propriety of regarding it as a truly indigenous sp. And the suspicion is sustained, not only by the fact of its non-discovery in the Canaries or Açores, but by the entire ignorance of the country-people in Mad. of its existence in the island, and by their want of any common name for so (to them) remarkable a tree. Moreover, if it really were a native pl., or even one of more than comparatively recent introduction, its apparent restriction to two remote confined localities would seem more strange, considering the abundance of Blackbirds (Turdus Merula L.) in such districts, and the greediness with which in England they devour the fr. and so disseminate the pl.

All this however is pure conjecture or suspicion only: and on the other hand, besides its exhibiting very appreciable varietal differences from the Scotch or English pl., there stand the two significant facts—that it does not occur anywhere in gardens or as otherwise cult. in Mad., and that the closely allied Pyrus Aria (L.) Ehrh. or Sm. has been discovered by Webb in Tenerife under very similar circumstances, viz. growing "almost only in two spots very remote from each other" (WB. Hist. iii. i. p. 22).

Nothing either way can be inferred from the fact of its having
escaped in Mad. the search of Masson and all other botanists; for, though apprised of its existence "in the neighbourhood of the Ice-house" by an old sportsman in 1826, it is so difficult to find, growing in detached solitary bushes not rising higher than the dense thickets of Vaccinium in which they lurk and are completely buried, that it eluded my repeated search till Sept. 1838, when the ripe fr., making it a little more conspicuous, first betrayed it.

On the whole, and considering the possibility of its having merely eluded observation hitherto in other localities also, I am drawn to the conclusion that this form or var. of Mountain Ash is really indigenous, and not a mere recent modification of the introduced British or European pl.

3. Cydonia (Pers.) Lindl.


L. ovate or oval, obtuse at the base, abruptly acute, quite entire, tomentose beneath; fl. solitary subsessile; cal. and globose pear-shaped fr. tomentose.—Pers. Ench. ii. 40; DC. ii. 638. Pyrus Cydonia Linn., Desf. i. 397; Brodt. ii. 330.

y. oblonga Mill., DC. 1. c.; l. oval or oblong; fr. subglobose.—Shr. or low tr. per. Mad. reg. 2, p. In gardens cult. here and there, and quite naturalized in abundance on open hill-sides about S. Antonio near Funchal, particularly across the valley to the S.W. of the Church. Fl. April, May; fr. Sept.—Mostly a low bush 3–8 ft. high, with numerous slender tough flexible twig-like branches much used for riding-switches, smooth and shining downwards, tomentose towards the ends. L. on short footstalks, quite entire, very soft when young and tomentose; afterwards somewhat hard or stiff and naked or smooth above. Fl. large white, more or less rose or blush. Sep. glandular-serrulate. Fr. irregularly globose or short and thick, more or less knobbled, of a uniform golden-y., austere hard and un- eatable with a slight garlic taste, but very fragrant, and making a delicious marmalade, which is in particular request amongst the Portuguese, especially as a remedy in colds and sore throats.

Order XXIX. GRANATACEAE.

Fl. perfect regular. Cal. coriaceous, tube turbinate adherent to ov., lobes 5–7, valvate. Pet. 5–7. Style 1, stigma capitate. Stam. indefinite free. Fr. (a balaust) coated by the cal.-tube and crowned by its lobes, indehiscent or bursting irregularly, internally cellular, divided by a horizontal diaphragm into two unequal stories, the upper 5–9-celled, lower 3-celled, the divi-
sions membranous. Seeds numerous distinct, each coated with a crystalline-pellucid pulp. Albumen 0. Cot. leafy, convolute spirally.—Small somewhat thorny tr. or shr. Young shoots 4-angular. L. simple, mostly opposite on the young shoots, fasciculate or clustered on the old, not dotted, without stip. Fl. axillary towards the ends of the branches.—The Order contains only a single genus.

††1. PUNICA. Character that of the Order.

1. PUNICA L.
Pomegranate. Roméira.

††1. P. GRANATUM L.

Subarboreous; l. lanceolate or oblong-lanceolate.—DC. iii. 3.

a. rubra DC. l. c.; fl. deep scarlet; seed-pulp bright garnet-
or ruby-red.—P. Granatum Desf. i. 392; Broth. ii. 247; BM. 1832 A. and B.; Koch 264.—Shr. Mad. reg. 1, and lower part of 2, §. Hedges by roads in the neighbourhood of Funchal principally to the westward, as on the road to S. Antonio by the hill of S. João, and just before coming to the Church of S. Martinho, &c., perfectly naturalized. In gardens it becomes more of a tr. Fl. Sum.; fr. Aut.—More of a shr. than tr. except in gardens, 10-15 ft. high, with straight erect cinnamon-coloured squarish younger branches often spinescent or ending in a long sharp bare point. Young shoots and l. reddish or flame-col. L. shortly stalked opposite or alternate, often fascicled, shining bright green, perfectly smooth like the whole pl., 1-2 in. long, \( \frac{1}{2} - \frac{3}{4} \) broad, somewhat stiff and coriaceous, not entirely deciduous in Mad. Fl. very handsome with their bright-scarlet shining cal. and crumpled pet., nearly sessile or very shortly stalked, 1-3 together in the upper axils. Fr. obovate-globose, uniform y., the size of a pear or apple, with a hard leathery coat, contracted at top into a short neck crowned by the large spreading stiff starlike sep. The fr. (Romãa in Portuguese) has little to recommend it but its beauty. The eatable part or juicy pulp surrounding the seeds is acid but insipid, with only a slight flavour of Red Currants (Ribes rubrum L.).

The dwarf narrow-leaved Pomegranate (P. nana L., DC.), with single fr.-bearing or double fl., is also often seen in gardens. The fr. of the single-fld. pl. is as large as, or sometimes larger than, that of P. Granatum L., of which it is perhaps a mere var.

END OF PART II.
PART III.

Order XXX. MYRTACEÆ.

The Myrtle Family.

Fl. perfect regular. Cal.-tube adnate to the ovary 4–6-lobed mostly 5-lobed, the lobes valvate in bud, sometimes cohering and falling off like a cap or calyptra. Pet. as many as and alternate with sep. quincuncially imbricate or convolute. Stam. numerous or twice as many as pet., free or partially combined; anthers simple ovate, cells bursting longitudinally. Carpels 4–6 mostly 5 concrete coated by the cal. Style 1. Fr. various. Seeds without albumen; cot. fleshy not convolute.—Tr. or shr. L. mostly opposite entire with a marginal nerve, without stipules, pellucid- or glandular-dotted (except in Psidium, Eucalyptus, &c.), mostly aromatic. Fl. mostly white or purple.

Tribe I. MYRTEÆ.

The Myrtle Tribe.

Sep. and pet. 4–5. Stam. free. Fr. berry- or drupe-like.

†††1. Psidium. Cal.-tube globose or turbinate, the limb or rim broad undivided in bud, afterwards irregularly split 2–5-fid. Pet. 5. Stam. many inserted on nearly the whole breadth of the cal.-limb in a broad ring. Ovary 5–20-celled, cells imperfectly or partially 2-partite by a double-edged placenta. Fr. a pome-like fleshy or pulpy many-seeded berry coated by the cal.-tube and crowned by its limb, the cells and partitions more or less obliterated. Seeds rather small imbedded somewhat irregularly in the pulp with a very hard bony shell; radicle longer than the very small cot.—Chiefly S. American tropical tr. or shr. L. opposite not dotted. Ped. axillary 1–3–5-fl. Fl. white. Fr. sapid eatable pulpy within, with a fleshy pungent-aromatic rind (cal.-tube).
2. Myrtus. Cal.-tube subglobose, limb equally and regularly 5–4-partite. Pet. 5–4. Stam. few or many free inserted at the base of the cal.-limb in a narrow ring. Fr. a 2–3-celled subglobose (dry) berry crowned by the persistent cal.-limb. Seeds small several (rarely 1) in each cell with a somewhat bony shell and the radicle twice as long as the very short semicylindric cot.—Shr. or small tr. L. opposite pellucid-dotted. Ped. axillary 1-fl. Fl. white.

† † † 3. Jambosa. Cal.-tube globose or turbinate, limb equally and regularly 4-fid, lobes rounded. Pet. 4. Stam. very numerous long stiff. Ovary with several cells and many ovules. Fr. pome-like umbilicate at top and crowned by the cal.-limb 1–3- or 4-seeded; flesh or rind thin grumose, pulp none. Seeds large subglobose or (by compression) angular, with a thin horny shell and very large fleshy or horny thick cot. welded or locking partially together and concealing the radicle.—Tr. of tropical E. Indian origin. L. opposite pellucid-dotted coriaceous. Fl. white with long tassel-like filaments, in lateral and terminal cymes. Fleshy coat of fr. eatable.

† † † 1. Psidium L.

† † † 1. P. pyriferum L. Guava (Common or White). Goiaba; the tr. Goiabeira.

Arborescent, trunk short oblique smooth torose, branches short stout crooked, the young shoots square straight stiff thickish; l. broadly oval-oblong, scarcely twice as long as broad, somewhat obtuse or truncate at each end, rugose and ribbed or lineate with prominent parallel nerves, hard and stiff; pubescent beneath; ped. 1–3- mostly 1-fl. very short; fr. mostly globose or globosely oval, rarely obovate or turbinate or shortly pyriform, flesh soft sweet and melting.—Linn. ! Sp. Pl. (ed. 2) 672; Lour. Fl. Coch. i. 309 (descr. opt.); Lam. Enc. iii. 16 (Goyavier commun ou blanc); Lindl. in Bot. Reg. t. 1079 (fr. unusually depressed); DC. iii. 283. P. fol. lineatis obtusi-unculis, ped. 1-floris Hort. Cliff. ! (in BH.) 184. Guajava fiororum angulis 4-angulis, fr. oblongo Trew. Ehret. 12. t. 43 (l. too narrow and pointed, fr. globose and turbinate or shortly pyriform on same branch). Guajava alba dulis Commel. Hort. Med. Amstel. i. 121. t. 63 (fr. oval-globose but fl. acuminate)? Merian Surin. 19. t. 19 (fr. globose). Cuyavus domestica Rumph. Amb. i. 140. t. 47 (fig. bad, l. acute and fr. distinctly pear-shaped)? Pela Rheed. Mal. iii. 31. t. 34 (fr. obovate or turbinate, l. obtuse); Malacca Pela ib. 33. t. 35 (fr. globose, l. obtuse). Malph. prunice affinis pomifera, &c., Sloane ! Hist. Jam. ii. 161; fr. majore albo, &c., ib. 163; ejusd. Herb. in BH. vol. 7. p. 87; 55. p. 48; 88. p. 19;
PSIDIUM.

100. p. 121 (upper spec.); 235. p. 36; 258. p. 29; 297. p. 57; 315. p. 81.—Tr. cult. Mad. reg. 1, ccc. Gardens everywhere below 1000 ft. and occasionally a straggler from them in waste rocky ground in the neighbourhood of Funchal. Fl. June, July; fr. Nov.—March.—A stout low stiff or stunted-looking tr. 10–20 ft. high, with a thick short oblique or crooked torose remarkably smooth pale fawn-coloured or reddish st. and sturdy crooked short stout stiff irregular mostly upright or at least not loosely declining branches. Bark very smooth and fine pale reddish-cinnamon, deciduous like that of the Plane (Platanus). L. stiff but not coriaceous, very shortly stalked, 4 or 5 in. long, 2–2½ broad, at first subacute but soon becoming obtuse or truncate at each end, rugose with strong equidistant regular straight parallel side-ribs, rather dull dark gr. above, pale and like the petioles and ped. finely and shortly downy or velvety more or less beneath. Ped. axillary solitary very short, rarely more than 1-fl. Fl. w. like those of common Myrtle but stiffer and larger. Fr. 1½–2½ in. in diam., mostly globose or globously ovoid, very rarely turbinate or shortly and thickly pyriform like a Bergamot pear, and though sometimes a little flattish at the poles, I have never seen it depressedly spherical as in Bot. Reg. t. 1079; it is flatly umbilicate at top and crowned with some at least of the somewhat enlarged persistent sep. and covered like an apple with a very thin smooth inseparable skin of a uniform bright golden-y.; within it is more or less deep fleshy-pink or salmon-colour, sometimes quite pale, of a soft melting fleshy rather than pulpy consistence and with a peculiar foxy smell but agreeable fresh sweetish taste, not however at first relished by most people. Seeds numerous flattened subreniform or roundish-obovate very hard and bony pale straw-colour slightly mucilaginous.—The fr. makes excellent Guava-jelly, but the process requires considerable care and nicety, the syrup in boiling passing very rapidly from a too liquid into a too stiff or tough consistence.

The Linnean names of this and the following sp. are unfortunate, leading to the notion of a pear-like shape being the ordinary or distinctive instead of a merely rare and casual form of the fr. in the common garden Guava. Thus I have myself unjustly criticised Holl for referring the “apple-shaped” Mad. Guava of his List (J. of Bot. i. 21, 41) to “P. pyriferum L.”

+++2. P. POMIFERUM L. Red or Wild Guava.

Shr. or subarborescent, with straight subelongate or slender loose drooping or declining branches, the younger square and finely downy or velvety-pubescent; 1. distichous elliptic-oblong or lanceolate-oblong acute or pointed at each end, more than
twice as long as broad, ribbed or lineate, hard and stiff, pubescent beneath; ped. 1-3- often 8-ft. moderately long; fr. globose somewhat hard and auster, flesh firm and dryish.—Linn.! Sp. Pl. (ed. 2) 672; Lour. Fl. Coch. i. 310; DC. iii. 234. Goyavier sauvage (vulg. G. rouge, G. des Savannes) Lam. Enc. iii. 17. Guajava alba acida fr. rotundiore Pluken. ! Almag. 181. t. 193. f. 4. Cyjavarus agrestis Rumph. Amb. i. 142. t. 48. Merian Surin. 57. t. 57. Guajava rugosa acida Hort. Lugd. Sloane! Herb. in BH. vol.7. p.87 (on a loose sheet); ejuds. (Gardens, Holland) 79. p.100; 86. p.85 (ped. 1-fl., fr. immat. subpyriform !); 91. p.93; 162. p. 239; 206. p. 4; 235. p. 36.—Shr. cult. Mad. reg. 1, rr. Occasionally in gardens about Funchal, raised, as at the Achada by the late Mrs. Penfold and by myself, from W. Indian seeds. Fl. June; fr. Jan.—Rather a large spreading shr. than tr., without a decided trunk though 10–15 ft. high, with longer weaker easy-flowing drooping or declining branches and more regularly distichous and close-set narrower always somewhat pointed 1. than P. pyriferum L. Young shoots, 1. beneath, petioles and pedicels minutely more or less velvety. L. shortly but distinctly stalked 3 or 4 in. long, 1-1¾ in. wide, their petioles ¼ in. long, somewhat abruptly acute, yet with the very point or tip itself blunt or sphaelate. Ped. ¾ in. or more long, in Mad. mostly 1-fl. Fr. always globose small hard, not more than 1 in. in diam., crowned with the much enlarged sep., pale lemon-y, or even green when ripe or at least when quite deep red inside, with the flesh somewhat hard dry and auster and of a deeper red or flesh-col. than is usual in P. pyriferum, and though stronger tasted, very inferior in quality, having much the same relation to it as the Crab (Pyrus acerba DC.) has to the Garden Apple (P. Malus L.). I have indeed sometimes doubted whether the two sp. should not be united, as by Raddi, into one (P. Guaiava Radd.); but the seedlings of both retain their proper characters.

The Araça (P. littorale Raddi) with small yellowish-gr. pear-shaped fr., and the Cattley Guava (P. Cattleyanum Sab. BM. t. 2501) with small globose dark crimson or blood-red fr. tasting like Hautboy Strawberries, are also not uncommon in gardens about Funchal, the latter having been introduced by myself in 1833 or 1834. The Araça is a tall tr.; the Cattley Guava a mere bushy shrub. Both have the branches round, with shining coriaceous 1. of which the younger are cinnamon-red or reddish in the Cattley Guava, the early bearing of which, added to the profusion and excellence of the fr., renders it a valuable acquisition. Seedling pl. begin to bear in their 3rd
or 4th year whilst quite small, producing afterwards an abun­
dant and never-failing sometimes double crop.

2. MYRTUS L.

Myrtle.

1. M. COMMUNIS L. Murta.

Very smooth; 1. ovate or lanceolate acute coriaceous shining; ped. solitary 1-flowered about as long as the 1. with a pair of deciduous linear bractlets at the base of the fl.; cal. 5-fid; pet. 5; stam. many.—DC. iii. 239; Desf. i. 391; Koch 278.

a. latifolia (Common or Broad-leaved Myrtle); 1. 1-2 in.
long, the upper lanceolate opposite, lower ovate subalternate, all distinct or subremote and acuminate; ped. long filiform.

Subv. 1; ped. not longer than 1.; berries black globose.—
M. communis e. hispanica L.1; DC. l. c. M. communis Buch 197. no. 373; Brot. ii. 246; Fl. Gr. t. 475.—Shr. or small tr.
Mad. reg. 2, 1 (upper part), f. Dry sunny rocks and slopes, chiefly on the sides of ravines. Banks of the Curral dos Ro­meiros; of the Serra d’Agua and of the Cayados Ravine beyond Camacha, forming in some parts thickets with Heath and Lau­rels. Two or three miles up the Machico Valley abundant, and becoming tr., several of which stand by the roadside about a mile above S. Christovo. Several fine and very old tr. also grow on the edge of the seaciffs (about 900 ft. high) at a place called Larano, E. of Porto da Cruz. March–Oct., but at most seasons.—Generally a low bush 3–6 ft. high, but occasionally a tr. with a straight gnarled and knobby st. as thick as a man’s thigh or more (5–10 in. diam.) with a rough greyish here and there cinnamon–reddish bark and bushy head, 20–25 ft. high. Foliage evergreen of a dark bright shining gr., the young 1. and shoots reddish. Smaller branches cinnamon–brown straight slender but stiff erect virgate. L. when bruised finely aro­matic, the lower ovate twice, the upper lanceolate 2½–3 times, as long as broad. Ped. filiform, about 3 the length of 1., soli­tary but often, before its fr. is ripe, a 2nd fl., with shorter ped., is developed from the same axil. Pet. white inside, reddish or crimson outside especially in bud, concave reflexed. Sep. broadly half-ovate large short persistent, at first obtuse, after­wards acute, in fr. erect or spreading. Berries black globose about 3 lines diam. flatly umbilicate at top, dry and uneatable. Seeds 3–6 rather large flattened subreniform hard pale yellow­ish shining.

The use of the young leafy shoots and twigs for strewing the streets of Funchal at processions has doubtless caused its dis-
appearance from many places in that neighbourhood where former botanists and travellers have described it as forming thickets. In some places (Serra d'Agoa, &c.) the young shoots and l. are also used for tanning leather.

The subv. (M. communis a. romana L.) with long slender ped. considerably longer than the l., does not occur in Mad.

The dotted surface of the fossil leaf, figured by Prof. Heer, under the name of Pistacia Phaeacum p. 32. t. ii. f. 25, forbids entirely its reference to Pistacia, or indeed to any pl. of the Order Terebinthaceae (see p. 113 supra), and establishes a better claim for its reference to Myrtus communis a. latifolia Subv. 1. than remains in the impressions ff. 21, 22 of the same plate referred by Prof. Heer unhesitatingly to the last-named pl.

†††β. parvifolia (Narrow- or Small-leaved Myrtle); l. not above \( \frac{1}{2} \) in. long ovate crowded; ped. much shorter than the l.

The common Garden and Cockscomb Subvarieties of this, distinguished at once from \( a. \) by the small crowded l. scarcely \( \frac{1}{2} \) in. long and shortly stalked fl., called by the Portuguese "Murta da India," occur frequently in gardens: the former (M. communis ϱ. tarentina L., DC.) rising sometimes into a tr. 20 ft. high with a trunk 4–9 in. in diam. or 1–3 ft. in circumf.; the latter (M. communis ϱ. belgica L., DC.), a mere shr., known by its monstrously flattened or dilated terminal shoots.

The "Pitanga," Eugenia brasiliana (L.), (E. Michelli Lam., DC.; Myrtus Brasiliana L., Plinia rubra L., and P. pedunculata L. fil. BM. t. 473) with its Myrtle-like habit and fl., and elegant pendulous scarlet fr. the size of a large cherry depressed and ribbed like a melon, with a fine acidulous but resinous (turpentine) flavour, containing 1 or rarely 2 large flat pale or whitish seeds, is also very common in gardens about Funchal, bearing profusely almost all the year round.

††† 3. JAMBOSA Rumph., DC.


Panicle cymose terminal; l. narrow-lanceolate acuminate at each end.—DC. iii. 286; BM. t. 3356. Eugenia Jambos L.; BM. t. 1696.—Tr. Mad. reg. 1, 2 (lower part), cc. In gardens chiefly about Funchal and seminaturalized here and there by roadsides, or in waste grounds and hedges. Fl. March–May; fr. Aug., Sept.—A fine tr. 20–40 or 50 ft. high, with thick rich dark-gr. shining evergreen foliage enlivened in May and June
by the bright cinnamon-red of its young l. and shoots. L. coriaceous evergreen 6–8 in. long, 1–1 ½ wide. Fl. large in thick trichotomous tassel-like bunches at the ends of the branches, greenish-white at first, then cream-col. scentless. Fr. very beautiful, pale buff or apricot-y, mostly tinged with rose or purple on one side, with a strong scent and taste of rose-water, about the size of a walnut globose more or less turbinate, the flesh not above 2 or 3 lines thick and of a somewhat spongy dry or grumose substance, sweet but vapid and soon palling on the palate, resembling a sweet dry spongy apple steeped in rose-water. The large hollow space inside is not quite filled by a large round single, or by 2 or 3 partly round partly angular brown seeds with very large thick gr. cot. closely welded together.

The fr. is scarcely ever admitted to the table, but is left to be eaten by children or devoured by swine.

J. Malaccensis (L.) BM. 4408 with its fine large stiff coriaceous Magnolia-like l. nearly a foot long and 4 in. broad, resembling strongly those of Pleiomeris or Myrsine canariensis (Willd.) and crimson fl. and fr. (the latter pear-shaped or rather clavate) produced on the old wood or branches below the l., also occurs in a few gardens about Funchal.

Order XXXI. ONAGRACEÆ.

Fl. perfect mostly regular. Cal. tubular wholly or partly adnate to the ovary, 2–5-lobed, lobes mostly 4 valvate in the bud. Pet. as many as cal.-lobes, rarely 0, inserted at top of cal.-tube, alternate with its lobes, twisted in bud. Stam. twice or half as many as pet. and inserted with them. Ov. 4- or 2-celled with a central placenta. Style 1 filiform, stigma capitata or lobed. Fr. a berry or capsule with mostly 4 cells. Seeds without albumen small and mostly numerous.—L. simple opposite or alternate sometimes whorled, without dots.

††Tribe I. FUCHSIAEÆ.

The Fuchsia Tribe.

Fruit a berry.—S. American shr. or tr. L. opposite or whorled. Fl. crimson or rarely white, scentless.

††L. FUCHSIA. Cal. combined with the ovary below, free above and produced into a 4-lobed coloured tube, constricted and falling off together with the cor. at its junction with the ovary. Pet. 4 convolutedly imbricate forming a short cup, rarely 0. Stam. 8. Ov. crowned with an urceolate disk. Style filiform, stigma capitata. Berry 4-celled
many-seeded. Ovules in 2 rows in each cell.—Pedic. axillary or racemose; fl. drooping, sometimes 5-fid, with 10 stamens.

Tribe II. ONAGRAE.

The Willow-herb or Evening-primrose Tribe.

Fruit a capsule; cells many-seeded.—Flaccid quickly withering herbs, with rose, flesh-col. or nearly white, and y. fl. Cal-lobes soon falling.


+++3. *Onoothera*. Like Epilobium, but cal. tubular above the ovary, caps. oblong-linear (thicker and shorter) and seeds not bearded.—Fl. mostly y., rarely purple or white, often fragrant; pet. flaccid, of short duration soon withering. Not specially aquatic herbs.

Tribe I. Fuchsia.

The Fuchsia Tribe.

1. *Fuchsia L*.


Branches smooth; young shoots with the petioles and midribs of l. beneath slightly hairy; l. opposite or in threes ovate or lanceolate acuminate rather remotely denticulate with red veins and midrib, very shortly stalked; pedic. axillary smooth filiform longer than the drooping fl.; cal.-lobes lanceolate acuminate twice the length of the pet. which are closely convolute into a short tube; cal.-tube cylindric constricted both at top and bottom, much shorter than its lobes; stam. and style long exserted; stigma simple oblong-clavate.—Ait. Hort. Kew. ii. 8; BM. t. 97; DC. iii. 38. *F. Magellanica* Lam. ex. DC.—Shr. per. Mad. reg. 1, 2, ccc. Forming hedges and on walls and in waste ground about cottages and gardens, completely naturalized, everywhere. Throughout the year.—A low bushy shr. 3 or 4 ft. high with dark lurid often purple-reddish foliage, perpetually enlivened by its numerous peculiarly elegant pendulous bright cr. fl., or rather by their corolla-like deep-cr. cal.; the pet. forming a dark violet tube-like cup inside, not visible on the bush regarded generally. Fr. shortly oblong black with
a claret-col. juice, sweet but insipid, quite harmless, a favourite food of turkeys, and eaten sometimes by children.

_F. gracilis_ Lindl. (_F. decussata_ Sims BM. t. 2507, not Ruiz et Pav.), _globosa_ Lindl. (BM. t. 3364), _fulgens_ DC. (BM. t. 3801), _corymbiflora_ Ruiz et Pav. (BM. t. 4000), &c. and _Schyzia arborescens_ (Sims) BM. t. 2620 are common in gardens; but, though introd. 20–30 years ago, have shown as yet no tendency to become naturalized.

**Tribe II. Onagraceae.**

The Willow-herb or Evening-primrose tribe.

2. **EPILOBIUM L.**

**Willow-herb.**

§ _Lysimachion_ Tausch. DC.; fl. regular; cal. with a short free tube above the ovary, pet. 2-lobed or obcordate, stam. and style erect. L. opposite, the upper alternate.

(a) Stigmas free spreading. Stem rounded. Stolons none; rosettes autumnal sessile.

1. _E. parviflorum_ Schreb.

Softly pubescent; st. round erect villous-downy with short spreading cottony pubescence; l. sessile lanceolate from a rounded base, rather closely and sharply denticulate or serrulate, the lowest shortly stalked; rac. erect; fl.-buds ovoid mamillate, sep. lanceolate simply acute; seeds minutely granulate obovate-oblong truncate at top, blunt or rounded at the base.—EB. t. 795; Hook. Fl. Sc. i. 117; Sm. E. Fl. ii. 214; DC. iii. 45; WB. i ii. 7; Koch 265 (var. a); Bab. 117. _E. molle_ Lam. Enc. ii. 475; Spr. ii. 232. _E. palustris_ Willd. (not Linn.). _E. villosum_ Curt. _E. hirsutum_ B. L. _E. pubescens_ Broth. ii. 19.—Herb. per. Mad. reg. 1, 2, 3 (chiefly 2), c. Moist banks and rocks; Rib. de Sta Luzia, Rib. da Metade, Serra d’Agoa, &c.; scarcely below 2000 ft. except on wet seaciffs, as on the road between P° da Sol and Magdalena, S. Vicente and Seixal, S. Vicente and P° Delgada especially at the Passo d’Areá where it is very abundant. June–Aug.—St. stout firm and stiff, mostly red or purplish, 12–18 in. high, perfectly round without lines or angles, leafy throughout and mostly simple or a little branched at top only, mostly erect altogether, but sometimes decumbent though never rooting at the base, thickly clothed with crisped entangled spreading cottony pubescence. Whole pl. of a dull somewhat greyish or hoary gr. Stolons none. L. sessile but neither decurrent nor amplexicaul, truly lanceolate being rounded but not broadest at the base, softly and closely downy all over. Fl.
inconspicuous small pale rose or flesh-col., mostly rather smaller
than in Brit. or Canar. ex., but sometimes as large or with pet.
reaching 1½-2 lines beyond tips of sep. Stigmas even in the
bud distinctly 4, in the open fl. spreading. Caps. subpubescent
2 in. long, with the valves strongly recurved when ripe.

E. montanum b. pubescens Raddi Obs. in Antol. ii. (Florence
1821) was most probably the present pl., the true E. montanum
L. not having occurred in Mad. to any other botanist, and
Raddi's List of Mad. sp. being most incorrect in its nomenclature
throughout.

2. E. LANCEOLATUM Sebast. et Maur.

Finely pubescent but appearing nearly or quite smooth; st.
slender erect simple or branched only upwards, round or very
obscurely angular, minutely pubescent; l. distinctly stalked shining
oblong-lanceolate wedge-shaped or narrowed at the base into the
footstalk, entire downwards, sharply and distinctly but subre-
motely or irregularly toothed or serrulate upwards; top of rac.
drooping in the bud; fl.-buds ovoid mamillate; sep. lanceolate
simply acute; seeds minutely granulate obovate-oblong sub-
acute at base.—Sebast. et Maur. "Fl. Rom. Prodr. 138. t. 1. f. 2;"
Koch 1022; EBS. t. 2935; Bab. (ed. 4) 117. E. montanum
Lemann! Herb. Mad. (not Linn.).—Herb. per. Mad. reg. 2, rrr.
"Curral das Freiras, Dec," Dr. C. Lemann.—A slender delicate
pl. 10 or 12 in. high, smooth to the naked eye, with small re-
mote narrow l. St. slender finely pubescent erect. L. appear-
ing to the naked eye quite smooth, very shortly though dis-
tinctly stalked, narrow-lanceolate and narrowing gradually into
the short footstalk at their base, sharply and distinctly though
(nearly ripe in spec.) 2 in. long linear fine and slender. Seed
(not quite ripe) finely tuberculate blunt at top, a little pointed
at bottom. (From Lemann's single Mad. spec.)

My attention was first drawn to this as a Mad. pl. by a pencil
note—"E. montanum L. (Curral das Freiras, Dec., Lemann)"
—written by the late Dr. Charles Lemann in my MS. Catalogue
of Mad. pl. lent to him in August 1848 for the completion of
his own list. On referring to his Herbarium at Cambridge
through the kind offices of Prof. Babington, I found (and de-
scribed) the spec. to which he thus referred, named as above in
his own handwriting, with the word "roseum" in pencil ap-
pended by Mr. Bentham to its label. I concur however in
Prof. Babington's opinion that it is E. lanceolatum Sebast.,
though in Dec. 1858 I searched in vain for it in the Curral
das Freiras, and could find nothing but E. tetragonum L. In
hope of helping others in Mad. to a more successful result I subjoin some other details of the sp. chiefly from Mr. Borrer's excellent account and Mr. Salter's beautiful figure of it in EBS. 2935:

Stolons none. Rosettes with long spreading bright gr. sulcate l. Whole pl. often reddish. St. obscurely and very bluntly angular chiefly towards the base, clothed with a minute ascending curved pubescence. L. dull gr., smooth to the naked eye and generally more or less shining, yet covered on both sides with microscopic curved ascending hairs. Leafstalks somewhat winged. Fl. small, at first w., then pale rose, their veins colourless. Lobes of stigma short, sometimes closed sometimes separate.

(b) Stigmas cohering into a club-shaped mass. St. angular with raised lines.


3. E. TETRAGONUM L.

Smooth or with only the upper parts of the st., the fl.-buds and caps. minutely adpresso-pubescent; st. erect from the base slender leafy 4-angular virgate simple erectly branched and minutely adpresso-puberulous upwards only; l. mostly altogether smooth and shining, sometimes minutely puberulous at the edges and on the midrib, narrow-ligulate or strap-shaped rather than lanceolate, rounded but not broadest at the base, sharply and evenly serrulate throughout; the lower and a few of the upper stalked, the intermediate quite sessile subdecurrent with a rib running from each leafy margin down the st.; rac. erect corymbose; fl.-buds ovate-oblong; sep. lanceolate acuminate; cal. and caps. like the upper parts of st. adpresso-puberulous, the latter long and slender; seeds minutely granulate oval-oblong rounded at the base.—Brot. ii. 17; Hook. Scot. i. 117; Sm. E. Fl. ii. 215; DC. iii. 43 (excl. var. 2); Koch 207; Bab. 118; Gren. et Godr. i. 579. E. obscum Holl! (not Schreb.).—Herb. per. Mad. reg. 1, 2, r. Moist banks and rocks in ravines on seaciffs, &c.; Rib. de Sta Luzia at the origin of the Levada de S. Roque above the Mill; seaciffs a mile out of Funchal along the Cânico road by the ladder descending to the beach, and on the road from Ribeira Brava to Ponta do Sol; Curral dos Romeiros halfway down from the Mount to the bridge under high rocks on the left hand; Rib. da Janella on rocks by the roadside ascending from the beach; seaciffs S. Vicente on the road to Seixal. June, July.—Whole pl. nearly smooth and quite distinct in habit and appearance, with its simple stiff straight erect virgate st. branched at top only, long
narrow thickly and evenly serrulate l. and corymbose fl. or fr., from the other Mad. Epilobia. St. 6–18 in. high hard firm and slender, round below, angular but not always square upwards, quite straight and mostly entirely erect, but if accidentally from situation a little procumbent yet never rooting at the base. L. 1–4 in. long 2–4 and 5 or even 8 lines wide with subparallel margins and so rather ligulate than lanceolate, the lower obtuse, the upper gradually more acute, the intermediate not wedge-shaped narrowed or entire at the base, but perfectly sessile with their leafy basal margins distinct full or plicate (not auriculate) and narrowly decurrent; the upper l. at the origin of a branch or fl. are often distinctly stalked like all the lower l. In my Mad. ex. the l. are quite smooth, but in some luxuriant Can. spec. from Palma they are minutely puberulous at their edges and on the midrib as sometimes in *E. obscurum* Schreb. Fl. much smaller than in *E. parviflorum*, pale pink or rose. Stigmas cohering into an oblong club. Caps. very long and slender 2–2½ in. long, 2 mill. broad, corymbose crowded towards the top of the st. and all ripening nearly together; their valves spreading but scarcely curled or rolled back.

Although omitted by Webb and Berthelot, this is also a Canarian sp., found by myself in the great Caldera of Palma, and by Bourgeau in Gomera (Bourg. Pl. Can. no. 747 in BH).

2. *Stolons aestival prostrate filiform with remote small leaves* (Bab., Grenier).

4. *E. obscurum* Schreb.

Smooth except st. upwards, buds, caps., edges and midrib of upper l. which are finely adpressedly pubescent; st. ascending procumbent and rooting at the base, much branched and angular but not regularly square upwards, round below; l. rather broadly subovato-lanceolate acuminate narrowing gradually from a rounded broadish base, all quite sessile not decurrent but with two strong ribs running down the st. from their base, faintly and remotely denticulate and except the mostly very minutely puberulous edges and midrib smooth and shining; rac. erect leafy, fl. axillary scattered subremote, buds ovoid-oblong, sep. lanceolate acute; caps. short pubescent with strongly recurved valves, the lower ripening long before the upper; seeds minutely granulate oblong-obovate pointed at the base.—Bab. 118; Holl's List in Hook. J. of Bot. i. 21? *E. tetragonum* S. obscurum Pers. Ench. i. 410; DC. iii. 43. *E. virgatum* Koch 266, 1023 (in part); Gren. et Godr. i. 578 (chiefly).—Herb. per. Mad. reg. 3, rr. Moist banks and rocks in ravines; Rib. da Metade along the Levada; Fajã do Corte in the Curral das Freiras under Pico Ruivo. July–Sept.—At once distinguished
from *E. tetragonum* L. by its broader or shorter more remotely and obscurely toothed l., loosely branched or straggling decumbent or ascending st. and branches often rooting at their lower joints, and short remote scattered not corymbose crowded caps. The stolons unfortunately I have neglected in Mad. to observe. Pl. mostly robust and leafy, but sometimes weak and slender, much and stragglingly branched upwards or when in fl., 1–2 ft. high. St. compressible or more herbaceous than in *E. tetragonum* L. and less regularly square or sharply angular, the leafy margins of the l. not decurrent. L. 1½–3 in. long, 5–8 lines wide, rounded and distinctly broader at or near the base than elsewhere and equably attenuate therefrom into a fine drawn-out point, neither ligulate with parallel, nor lanceolate with curved margins widening above the base or in the middle, as in *E. tetragonum* L. Fl. as small as or smaller than in *E. tetragonum* L. pale rose subremote axillary along the branches or scattered in long erect leafy rac. Caps. 1–1½ in. long, 2 mill. broad, ripening in succession all along the branches and not corymbose crowded upwards, the lower ripening and shedding their seeds long before the upper.

"E. obscurum Schreb." of Holl's List may possibly have been the true pl. But a spec. from him gathered in June 1827 was certainly *E. tetragonum* L. And hence my remark in Hook. J. of Bot. i. 41, before I had found the much rarer *E. obscurum* Schreb. in Mad., that by "E. obscurum Schreb." I supposed Holl to mean *E. tetragonum* L.

*E. obscurum* Reich. Ic. Bot. Crit. ii. 89. t. 199. f. 341 with narrow regularly and closely serrulate l. and long slender corymbose caps., is rather true *E. tetragonum* L.

††3. *Œnothera* L.

Evening-primrose.

§ *Onagra* Ser. in DC.; stigma 4-cleft, fr. linear-oblong 4-angular, valves linear.

††1. *Œ. longiflora* Jacq.

St. erect simple or sparingly branched and with cal. and caps. pustulate-villous; l. denticulate pubescent; cal.-tube very long; pet. 2-lobed half the length of cal.-tube, longer than the style and stam.; caps. very long swollen in the middle contracted at the top.—BM. t. 365; DC. iii. 47; Holl's List in J. of Bot. i. 21. —Herb. ann. Mad. reg. 2, rrr. On the site of an old garden and Quinta at the Mount, formerly belonging to the late Mr. Murdoch, half a mile W. of the Mount Church, perfectly natura-
lized; and a weed in gardens in the neighbourhood of the same. May, June.—Remarkable for the enormous length (2 in. or more) of the cal.-tube. St. 3 or 4 ft. high stout long simple or with few straggling branches. Foliage small and scanty. L. lanceolate distinctly toothed. Whole pl. especially the st., cal. and caps. villose. Fl. 2½ in. in diam. bright full golden y. turning orange-brown in withering. St. strongly, cal. and caps. less conspicuously pustulate or warted at the base of the hairs.

Œ. suaveolens Desf. (Flor de Manteiga, Port.) distinguished by its simply and finely pubescent st. cal. and caps. here and there sprinkled with a few longer hairs, nearly or quite entire minutely puberulous but smooth-looking l., large fragrant lemon-y. fl. with pet. (1½ in. long) as long as cal.-tube and twice as long as the style and stamens, and with the sepals cohering more or less and reflexed mostly all together on one side, is sometimes seen in cottage gardens chiefly in the north, and has been for some years almost a weed in the garden of D“Manoel Joaquim da Trinidade” at S. Vicente, without however spreading beyond its walls.

§ Œ. TETRAPTERA Cav.

St. subdiffuse branched and with cal. and caps. villous-hairy; l. lanceolate irregularly sinuate-toothed and often subpinnatifid downwards subsessile hairy-pubescent; cal.-tube very short; pet. obcordate entire, stam. and style shorter than pet., anth. and stigma long and narrow; caps. stalked obovate-clavate 8-ribbed 4-winged villous.—Cav. Icon. iii. 40. t. 279; BM. t. 468; DC. iii. 50.—Herb. per. ? Mad. reg. 1, r. Vineyards and waste ground about Funchal, especially below the Quinta do Valle, perfectly naturalized; also at the Mount, S”Moniz. May–July principally.—A low sparingly branched pl. Branches diffusely spreading 6–12 in. long. Foliage greyish dull gr. Fl. large handsome; pet. an inch long, pure white at first, turning deep rose in withering. Caps. very remarkable in shape, with 4 abrupt prominent wings.

“Circea lutetiana L.” of Holl’s List in J. of Bot. 1. 21, 41, was doubtless either a mistake for something else (possibly Achyranthes argentea L.), or from admixture of Portuguese with Mad. specimens. No such pl. has occurred to any other botanist in Mad., nor has it been found either in the Canaries or Açores.
32. LYTHRACEÆ.

Order XXXII. LYTHRACEÆ.

Fl. perfect regular. Cal. tubular or bell-shaped free 8–12-lobed, lobes in two rows, the inner valvate in the bud. Pet. half as many as sep. inserted at top of cal.-tube alternate with its inner lobes and quickly falling, sometimes none. Stam. inserted below the pet. within the cal.-tube 4–12 very variable in number. Ovary free 2–4-celled. Caps. membranous free covered by the cal.-tube 1–4- (mostly 1-) celled with a central placenta, many-seeded. Seeds without albumen small. Cot. leafy flat.—Herbs, small shr. or tr. with no peculiar properties. Branches often square. Stip. none. L. simple entire mostly opposite. Fl. axillary or racemose mostly purple, rose-col., or white.

Tribe I. SALICARIEÆ.

The Loosestrife Tribe.

Cal.-lobes remote, with or without inner intermediate teeth. Seeds simple.—Small shr. or subaquatic herbs.

1. LYTHRUM. Cal. tubular cylindric with 8–12 teeth, the 4–6 outer broader erect. Pet. 4–6. Stam. equal or double the number of pet. inserted at or below the middle of cal.-tube. Style filiform. Stigma capitate. Caps. oblong 2-celled.

1. LYTHRUM L.

§ Hyssopifolia DC.; fl. axillary solitary.

* Stam. about as many as or fewer than the pet. i. e. 4–6.

1. L. HYSSOPIFOLIA L.

St. branched chiefly at the base or simple erect, branches ascending or decumbent, leafy flowering almost from the base; l. alternate crowded sessile lanceolate-linear attenuate or contracted at each end; fl. inconspicuous small much shorter than the l. subsessile; ped. very short erect in all stages with 2 minute linear-acuminate bractlets at top; cal.-tube rounded faintly ribbed smooth; the outer teeth very narrow; pet. 5–6 oblong-ovate half or ½ length of cal.; stam. 4–6 included.—Desf. i. 372; Broth. ii. 244; DC. iii. 81; WB. ii. 5; Seub. Fl. Azor. 47. no. 354; Koch 274; Bab. 115. L. hyssopifolium EB. t. 292; Sm. E. Fl. ii. 344.

β. acutifolium DC. l. c. 82; l. rather acute.—L. thymifolium Hoffm. ex DC. (not Linn.).—Herb. ann. Mad. reg. 2, r. ; ND. reg. 1, r. In damp shady spots. Near the head of the Levada which conducts water out of the Rib. de St'a Luzia to the Quinta of the late Webster Gordon Esq. at the Mount; N. side of the
Church of S. Jorge and descending from the Ilha into the Rib. de S. Jorge; plentifully in cornfields &c. all the way up the valley above Seixal called the Chaô da Ribeira; about the Church and Pilgrims’ House at S. Antonio da Serra; also in great luxuriance and abundance round the edges of a pool in the middle of the ND. about 100 yds. W. of the ruined house. May–Aug.—Wholly smooth. St. quadrangular branching from the base, sparingly branched or simple upwards, 9–18 in. long; main st. erect, the branches lying partly flat the ends ascending, reddish on the upper side, flexible or weak and flaccid but peculiarly tough, and almost woody at the base. L. rather dull gr. thickly crowded upwards and fastigiate at the ends of the shoots, irregularly alternate, 6–9 lines long, 1–2 broad, more or less lanceolate, attenuate downwards to the base, more so upwards, all quite entire and more or less acute. Fl. all up the branches from their very base, very small and insignificant pale pink or flesh-col., one from each axil, scarcely more than 2 lines long together with the very short round ped., or about ¼ length of 1. Cal. 3 millim. or 1½ line long, tube slender 1 millim. broad at top, rounded not angular or so strongly ribbed as in L. Graefferi Ten., pale gr.; the 5 or 6 outer teeth opaque herbaceous dark-gr. red or purple at the tip narrow linear-lanceolate spreading; the alternate inner teeth much shorter broadly ovate membranous erect. Pair of bractlets at base of cal.-tube scarcely 1 millim. long, membranous very narrow and minute. Pet. obovate 1 line long, half as broad. Stam. and style not exserted beyond the cal.-tube, the pale whitish anthers being only just visible within its throat. Stam. 4–6 inserted opposite the shorter broad membranous erect inner cal.-teeth, their fil. nearly equal. Style 1 line long straight round smooth; stigma capitate. Ov. a little compressed smooth the length of the style, 2-celled; cells with many ovules. Caps. as long as or just longer than the cal.-tube.

Brotero’s description applies exceedingly well to the present pl. DC. however mentions, l. c. p. 82, that his syn. is referred by Link to L. meonanthum Link—a pl. which I am unable to trace out. Steudel also refers Brotero’s syn. to Link’s pl.

** Stam. twice as many as pet. i.e. about 12.

2. L. Graefferi Ten.

St. prostrate or procumbent rooting at the base, ultimately elongated trailing naked and suffrutescent downwards, flowering only upwards; 1. alternate crowded sessile or subsessile ligulate or linear, rounded or subcordate at the base; fl. conspicuous nearly as long as the l.; ped. very short erect in all stages, with a pair of minute linear-acuminate bractlets at top; cal.-tube angular
**LYTHRUM.**

_strongly_ ribbed smooth, the outer teeth half-ovate or lanceolate; pet. 6 obovate the length of the whole cal.; stam. 12, 6 very short, 6 longer more or less exserted.—Ten. Fl. Nap. iv. 255, t. 142; DC. iii. 82; WB. ii. 6; Seub. Fl. Azor. 47. no. 353. _L.junceum_ Buch ! 197. no. 372; Sol. MSS. ! Prim. 82. _L.flexuosum_ Holl ! in J. of Bot. i. 21, 41.—Herb. ann. Mad. reg. 1, 2, 3, ccc; PS. reg. 2, rr. In watery springy places on seaciffs, in beds of ravines, about springs and in hollows amongst hills and mountains in Mad. everywhere; in PS. only at the Fonte das Pombas and in beds of streamlets beyond Camaxa. May–Oct. —An altogether larger pl. than _L. Hyssopifolia_ L., with stouter longer often greatly elongated trailing st., broader l. and larger handsome fl. St. sharply 4-angular scarcely branched except at the base, 1–4 ft. long slender weak and trailing far amongst the surrounding bushes or herbage, purplish and thickly leafy upwards, light brown naked and woody downwards, flexible throughout. Whole pl. quite smooth. L. dull rather than glaucous gr. varying much in breadth but always broadest close to or at the base and thence gradually contracting upwards so as to be rather ligulate than lanceolate, 6–9 or 10 lines long, 1–3 ft. long slender weak and trailing far amongst the surrounding bushes or herbage, purplish and thickly leafy upwards, light brown naked and woody downwards, flexible throughout. Whole pl. quite smooth. L. dull rather than glaucous gr. varying much in breadth but always broadest close to or at the base and thence gradually contracting upwards so as to be rather ligulate than lanceolate, 6–9 or 10 lines long. Fl. crowded towards the leafy ends of the branches, conspicuous, bright rose-purple, 4–5 or 6 lines long or more than twice the size of those of _L. Hyssopifolia_ L., with the outer teeth of cal. mostly broader and shorter. Pet. distinctly clawed 3–3½ lines long, 1–½ broad, erose and crumpled at the edges. Stam. always 12, 6 long more or less exserted, 6 short included, the shorter opposite the broad inner membranous cal.-teeth: hence it is the 6 longer which are wanting in the preceding sp. Anthers bright chrome-y. Caps. shorter than the cal.-tube. Seeds often abortive.

Apt to vary considerably in most of the above characters, often becoming, late in the summer or aut., almost shrubby with very long woody branches and smaller fl., which have narrower outer cal.-teeth and the style and longer stam. almost included or only just apparent in their throat. It is an elegant pl., adorning with its bright rose fl. moist and plashy places in the mountains everywhere.

_L. acutangulum_ Lag. Gen. et Sp. 16. no. 211 is probably this sp., but his _L. flexuosum_ no. 210 seems distinct.
†††Order XXXIII. CUCURBITACEÆ.

The Gourd or Pumpkin Family.

Fl. regular often imperfect unisexual, 1–2–ceious. Cal.–tube adnate with the ovary 5–lobed, lobes or sep. imbricate in bud. Cor. 5–cleft, or with 5 pet. more or less united together and with the cal. at the base, rarely distinct, reticulately veined, valvate in the bud. Stam. 3–5, more or less combined or cohering, rarely free. Anthers mostly sinuous. Style short; stigmas 3–5, 2–lobed. Ov. inferior 3–5–celled many-seeded, or 1–celled 1–seeded; placentas pseudoparietal. Fr. a more or less fleshy or juicy gourd (pepo), berry or drupe. Seeds ovate or oval mostly compressed arillate; cot. leafy; embryo straight flat at or near the upper end of the seed; albumen 0.—Succulent herbaceous often monoeccious or dioecious pi., with long shoots trailing or climbing by their extra-axillary tendrils. L. alternate stalked large or broad, palmately nerved. Stip. none or obsolete. Fl. reticulately veined, y., w., or greenish rarely rose or purple, scentless, axillary, either solitary or fascicled and stalked, or in axillary rac. or corymbs. Fr. mostly large, often eatable, but sometimes poisonous.

Tribe I. CUCURBITÆÆ.

The Pumpkin, Cucumber, and Melon Tribe.

Anthers sinuous S-like. Fr. a gourd. Seeds numerous, with a watery or pulpy ultimately dry or membranous aril, attached to the inflexed or involute placentas or sides of the carpels.

†††1. Cucurbita. Fl. monoeccious axillary mostly solitary stalked. Cal. 5–fid, lobes distinct remote herbaceous, base hypocrateriform united to cor. Cor. 5–fid, lobes united considerably above edge of cal.–cup. Male: anthers united or cohering into a compact oblong head or column rather longer than its stalk, their fil. connivent and combined together into a single pyramidal stalk, the whole exserted much above the cal.–cup. Fem.: throat of cor. more or less closed by a lobed fleshy crown. Styles mostly 3 combined downwards; stigmas mostly 3 large thick ovate bilobed distinct. Fr. a many-seeded gourd, openly or flatly and widely umbilicate at top. Seeds flat bordered; coat (testa) shelly.

†††2. Lagenaria. Fl. monoeccious axillary mostly solitary, stalked. Cal. 5–fid or 5–partite, lobes distinct remote herbaceous. Cor. 5–partite, lobes distinct down to edge of cal–tube or ovary. Male: cal. 5–fid, base tubular–campanulate united to 5–partite cor.; anthers cohering into an oblong–
oval head or column much longer than its stalk not exerted beyond the cal.-tube, their fil. connivent combined. FEM.: cal. and cor. 5-partite, base none or reduced to a very narrow rim or ring, sep. and lobes of cor. distinct down to and sessile on the ov. or very narrow rim or ring at top of it, throat of cor. open simple; stigmas 5 large distinct united on a short single obconical stalk. Ov. lageniform or hourglass-shaped, the lower part sterile, upper 3-celled. Fr. a many-seeded gourd flatly umbilicate at top. Seeds flat very distinctly bordered, truncate and auricled or bituberculate at top; coat (testa) shelly.

Tribe II. SICYODEAE.

The Chocho Tribe.

Anthers sinuous S-like. Fr. a fleshy drupe. Seed single solitary pendulous; placenta not inflexed, aril none or indistinct.

††3. SECHIUM. Fl. monoecious. Cal. 5-fid, lobes distinct remote herbaceous, base hypocrateriform united to cor. 10-ribbed or torulose. Cor. 5-partite, base cup-shaped with a ring of glandular pores or cells, lobes distinct or divided down to edge of cal.-cup. MALE: fl. in axillary rac., anthers umbellate distinct, their fil. united nearly to the top into a single stalk. FEM.: fl. solitary at base of male rac.; style 1 simple. Stigmas combined into a flat-topped calyptriform head. Ov. 1-celled 1-ovulate. Fr. obovate or clavate compressed with a nearly closed constricted sphinctral transverse umbilical cleft at top. Seed flat not bordered; coat (testa) leathery-membranous.

Tribe I. Cucurbiteae.

1. CUCURBITA L.

Gourd or Pumpkin.

††1. C. MOSCHATA Duch. Abobora preta.

Hirsutely tomentose or hirsute; l. large hoary dark lurid-gr. mottled or marbled with white, somewhat stiff and harsh, hispid, not prickly, 5-lobed cordate, lobes acute sharply toothed with acute and shallow or deep rounded sinuses; ovar. pubescent rounded even; fr.-stalk strongly 5-angular and 5-lobed at its insertion; fr. very large mostly globose flatly and obtusely ribbed prunose, flesh deep orange scarcely fibrous, seeds pale brown (drab) shining ovate.—Duch. “Dict. Sci. Nat. ii. 234;” DC. iii. 317; Naudin in Ann. Sci. Nat. (sér. 4) vii. 47. C. Pepo A.
(La Melonée) Duch. in Lam. Enc. Méth. ii. 152.—Herb. ann. Mad., PS., cult. reg. 1, 2, ccc. Gardens and fields chiefly below 1000 ft. everywhere. Fl. at most seasons; fr. Sept., Oct.—This, the ordinary and most esteemed kind of Pumpkin in Mad., is at once distinguished by its very dark lurid speckled foliage and thickly hirsute st. and petioles. St. prostrate spreading from 20 to 40 or 50 ft. long, \( \frac{3}{4} \) in. thick, sparingly branched angular or ribbed, very dark lurid gr., stout tough and cord-like, hardened and woody downwards, hispid but not at all prickly-strigose, and like l. and petioles thickly hoary-villous or hirsute upwards. L. about 12 in. in diam., the disk spreading horizontally at right angles with the footstalk, hispid shining. Male: fl. scarcely more than 3 in. in diam., somewhat smaller than in C. Pepo DC. (A. de Machado), orange-y.; cal.-cup or torus flat and shallow and like the sep. thickly villous-hoary or pubescent, the hairs hiding the nervation of the former; sep. always erect and adpressed to the cor.-tube or cup, flat thin or leafy and herbaceous to the tip, dark gr. linear acute. Cor.-cup with only 20 principal ribs viz. 3 to each segment and a single simple intermediate one from each sep.,—instead of 25 viz. 3 to each segment and a double or 2-forked intermediate one, as in the female fl. of the present and as in both male and female fl. of the two following sp.,—the whole inside clothed with short subglandular y. hairs, and the ribs outside hoary-villous. Stam. 3, their fil. thick smooth short distinct combined into a stalk not more and sometimes less than half the length of the oblong truncate anther-column, which is 8–10 lines long and 2–3 thick. Fem. fl. large 4–5 in. in diam. orange-y. perfectly sessile on the oval-globose quite even (not ribbed or angular) finely downy 3-celled ov., which is pale gr. mottled with 10 paler interrupted streaks. Cal.-cup very flat and shallow subpentangular, its segments or sep. like the cup itself dark gr. subfoliaceous not withering at the tips, spreading horizontally, very narrow, linear-acuminate or linear-subulate and very remote, \( \frac{1}{2} \) in. long, with a pair of nerves forking from the base of each, one to each of the pet. or segm. of cor., which are 4 in. long from the base of the sep., with the midrib excurrent at the tip. Cor.-cup with 25 principal ribs, having an additional nerve on each side the 3 main ribs of the segments forking from the base of the sep.; the inside clothed, especially downwards, with y. glandular pubescence; the throat nearly or quite closed with a smooth shining pale y. waxlike fleshy tumid irregularly 5-lobed or divided crown, which is surrounded and tightly embraced by an outer inflexed faintly 3-toothed or sinuate smooth membranous ring or shallow cup, and composed of five large thick prominent conspicuous waved or plaited wart-like lumps or tubercles (abortive anthers) distinct but not remote from the 3-partite style-column. Styles 3 smooth combined downwards. Stigmas
3 very large ovate-oblong bilobed distinct deflexed orange. Fr.-
stalk strongly 5- (rarely 6-) angular rather than ribbed or
sulcate, dilated and distinctly 5- (sometimes 6-) lobed at its
insertion, the 5 or 6 lobes being regular and quite independent
of the number of ribs on the fr. Fr. varying considerably in
shape size and colour, but normally its form is spherical, de-
pressed flat or umbilicate at top and bottom, and more or less
distinctly though irregularly and always very flatly and obtusely
ribbed. From this it passes through globose to ovoid or ob-
void (La Melonée ou Courge muscade des Marsellais Naud. l. c.
51. t. 2. B. ff. 3, 4), oblong (sometimes contracted in the middle),
pear-shaped, or even clavate (Abobora da Rocha; la Courge ber-
bère ou bedouine Naud. l. c. 52. t. 2. B. ff. 1, 2); and the nume-
rous ribs, always broad and flattened, are often obsolete. The
normal colour is a uniform dull dark gr., or when quite ripe
orange-y. with more or less of a pink or salmon-col. tinge; and
both these colours are seen perhaps still more frequently united
in large irregular broad clouds or patches on the same fr. in its
intermediate stages of maturity; the plain gr. and or. fr. occur
continually also on the same pl. The whitish or glaucous bloom
is never wanting in the ripe fr., and the skin is of a peculiarly
fine smooth thin and even texture, wholly free from warts or
thick. When half-grown or before maturity the fr. is of a
peculiar dark blackish bottle-gr.; whence, and from the dark-
col. l., probably, the name "A. preta" or Black Pumpkin. The
flesh when ripe varies from salmon or orange-flesh-col. to deep
carrot-red, being in the latter case peculiarly sweet or saccharine
with a melon-like scent or flavour. There is always a large
hollow cavity inside. Seeds shining minutely rugulose, pale or
drab-brown, shortly ovate, 9 lines long, 4½-5 broad, very dis-
tinctly bordered, the border raised and darker-coloured.

The fr. varies in size from 10 to 20 in. in diam. (transverse or
axile), and in weight from 20 to 80 pounds (usually 30 or 40).
The best-flavoured in Mad. of this sort are perhaps those pro-
duced on banks or slopes immediately at the back of the hot
shingly beach of Magdalena, a village on the S. coast about 15
miles to the W. of Funchal.

Those who have only tasted the ordinary European Gourds or
Pumpkins i.e. the fr. of C. maxima Duch. (les Potirons of the
French, a sort not cult. in Mad.) or of C. Pepo L. (to which
belong our English "Vegetable Marrows") can have little notion
of the superiority for culinary and confectionary purposes of the
fr. of C. moschata; which, however, even in Mad. vary much in
excellence; those of Magdalena being, as before said, celebrated
as the sweetest and most sapid. The soup made from the ripe
fr. most resembles that of the best carrots. But boiled when young i.e. from 2–4 in. in diam., and served up like Vegetable Marrows or Asparagus, they form perhaps one of the most delicate of vegetable esculents. Candied slices of the ripe fr. are also a favourite though insipid confect.

The importance of this esculent and its congener in these and the Canary Islands can be scarcely overrated. What the Potato ever was in Ireland are Aboboras in these latitudes to all classes. For at least six months in the year (Aug.–Jan.) they constitute almost one-third of their daily nourishment: and from their facility of combination by boiling with fatty substances, together with their large supply of saccharine beside their farinaceous material, afford a most nutritious food, evinced by the surprising muscular powers of the Mad. peasantry.

The young l. and shoots when bruised or handled exhale a strong odour of musk: but the fr. has only occasionally any such scent or flavour.

There are two distinct forms or subvarr. in foliage of this sp.: one with the l. broadly angular-lobate, lobes simple short triangular, wider downwards, with acute shallow sinuses; the other with the l. deeply palmate-lobate, the lobes distinct, contracted downwards, with wide open sinuses, and compound or again themselves lobed.

*Abobora da Rocha* or *La Courge berbère* Naud. is a var., said to be constant from seed, with lageniform, pear-shaped, or long clavate fr., of which the thinner stalk-like part or base is solid and barren, the head or club only hollow and fertile. Seeds rather larger and paler drab, viz. 10 lines long and 5 broad.

+++2. C. **Pepo** Ser. in DC. *Abobora (or Boganga) de Machado or de Catóa.*

Prickly-strigose or setose; l. ample very large rather deep full gr. immaculate stiff very harsh and prickly 5-lobed cordate, lobes broad acute sharply-toothed with acute shallow sinuses; ovary subglabrous ribbed subangular; fr.-stalk strongly 5-angular ribbed and sulcate, irregularly many-lobed at its insertion; fr. large oblong or oval subangular strongly and abruptly ribbed shining without bloom, flesh pale fibrous, seeds w. elliptic-oblong narrow. —DC. iii. 317 (not Linn.); Naud. in Ann. Sci. Nat. (sér. 4) vi. 29. C. **Pepo B. polymorpha** 8. oblonga (Les Giraumons et
les Citrouilles) Duch. in Lam. Enc. Méth. ii. 152, 155.—Herb. ann. Mad. cult. reg. 1, 2, ccc. Gardens and about cottages chiefly above 500 ft., rather less universal than *C. moschata* and earlier in season.—A far inferior sort, larger and coarser in all its parts than the preceding, with very large stiff sharply but broadly and not deeply lobed l. 12-18 in. in diam. not set as usual at right angles horizontally upon their petioles, but rising obliquely and more or less uprightly from the top of them into a sort of funnel shape, of a uniform full (not speckled lurid) gr., more naked and shining or less hispid but much more harshly scabrous and prickly-strigose than in the last-named sp. The whole pl. is also of an altogether coarser more thickly shortly and irregularly branched and leafy habit, with branches leafstalks and principal nerves of l. (especially beneath) pale gr. succulent and naked, but sprinkled with stiff sharp pungent conical erect distinct short bristles. Male fl. very large, often 4-5 in. in diam., orange-y. Cal.-cup or torus bristly moderately deeply cup- rather than bell-shaped, a little contracted at top subventricose strongly 10-ribbed subpentangular; sep. thick and fleshy-herbaceous to the tip, very long (more than an inch) and narrow, acuminato-subulate, sprinkled with short stiff bristles from a conical base or tubercle, somewhat spreading or erecto-patent. Cor.-cup strongly many-ribbed or nervied, having in addition to the 3 very strong gr. central ribs and 2 lateral of each segment several other intermediate smaller but sufficiently conspicuous nerves,—the whole inside smooth, but the ribs outside minutely pubescent and sprinkled with bristles. Stam. 3, their fl. very broad and large downwards nearly smooth or only partially and very minutely glandular-puberulous, forming a stalk rather shorter than the anther-column which is about 9 lines long and 3 thick. Female fl. rather smaller than the male, sessile on the oblong subangular strongly many-ribbed subglabrous or only very minutely and inconspicuously puberulous 3-celled ovary, 10 ribs of which are broader and stronger, 5 or more of them running continuously down the ped., which is very strongly ribbed, with deep grooves between the 5 main ribs, and bristly. Cal.-cup very short and quite flat or shallow, fleshy coarsely 10-ribbed bristly, its sep. short 4 lines long subulate bristly not withering at the tips, spreading or deflexed. Cor. very strongly 30-ribbed or thereabouts, with 5 more prominent ribs to each segment, the ribs bristly; the whole inside bristly-villous or pubescent; throat with a prominent erect very minutely puberulous stiff fleshy outer crown, thin and subtrilobed or sinuous at the edge, embracing a lower 5-lobed thick-edged waxy plicate inner one (abortive stam.) surrounding but distinct from the very thick short smooth 3-cleft style. Stigmas 3 very large distinctly 2-lobed velvety or spongy deep orange. Fr.-stalk strongly 6-angular and 6-sulcate, with 5
principal but other intermediate ribs in the deep grooves between them, and irregularly multangular and not merely 5-lobed at its insertion, but with angles nearly as numerous as the grooves between the ribs of the fr. Fr. oblong subclavate about twice as long as broad, 12–18 in. long and 6 or 8–12 or 14 in. in diam., smooth even (not warted) shining, entirely without bloom, slightly 10-angular, strongly and abruptly 10-ribbed, especially round the footstalk, where the ribs become very distinct regular narrow prominent and cord-like, 5 being alternately more abruptly so than the rest; colour an olive-gr. more or less mottled with bright golden-y., the ribs often entirely y., and sometimes the golden-y. prevails altogether over the gr. Flesh very pale yellowish salmon-col. A large hollow space in the middle. Seeds w. elliptic-oblong narrow very distinctly bordered and minutely rugulose, 10 or 11 lines long, 4 or 5 broad.

Though frequently cult., this sort is held in much lower estimation than the former, from which it is distinguished immediately by the funnel- or cup-shaped form and sharp lobes of the unspotted l. and by the coarse stiff prickly habit of the whole pl. The fr. is indeed of far inferior quality both in flavour and consistence, being at once more fibrous and insipid: nor does it usually attain so large a size, nor can it be preserved nearly so long as the Abobora preta.

Naudin in his valuable memoir on Cucurbita above quoted, divides this sp. by the fr. into the following artificial groups or varr.: each being again subdivided into subvarr. a, b, c, &c.

1. Les Courgerons; fr. middle-sized (8–12 in. in diam.) spherical depressed at the poles or with the axis shorter than the diam.

2. Les Citrouilles; fr. large or middle-sized (28–10 in. long) ovoid obovoid or elliptic, the axis not much exceeding twice the diam.

3. Les Girawmons; fr. large or middle-sized elongate, the axis distinctly exceeding twice the diam.

4. Les Patissons (a vaguely defined polymorphous group); fr. small or at most middle-sized, depressed or spherical. St. short upright.

5. L' Orangin or Courge orangine (= Cuc. aurantia Willd. and perhaps entitled to rank as a sp.); fr. small spherical. L. small indistinctly and obtusely lobed.

6. Les Barbarines (an ill-defined arbitrary group); fr. small variable in shape, &c., inedible. L. small very distinctly lobed.

7. Les Coloquinelles and Cougourdettes (scarcely separable from 6. and = Cuc. ovifera L., pyxidaris Duch., &c.); fr. small variable
in shape, &c., inedible, with a hard shelly coat. L. small very distinctly lobed.

The usual Mad. forms of this sp. belong to the 2nd of these groups, "Les Citrouilles proprement dites," and are referable especially to the subvar. "b. La Citrouille de Touraine" Naud. l. c. p. 36. t. 2 A. ff. 2, 11.

The common English "Vegetable Marrow" is rarely cult. in Mad. It is placed by Naudin in the 3rd of the above groups, Les Girauons, and constitutes his subv. "c. La Courge à la moelle" p. 38. l. c.


Hispid-pubescent; I. not large light-gr. immaculate soft and flaccid hispid-velvety indistinctly 5-lobed rounded-cordate, lobes equal regular rounded short obtuse minutely denticulate subentire with distinct open rounded sinuses; ov. downy rounded even; fr. middle-sized oval, very smooth and even, hard solid shining, without bloom, speckled gr. and w. or pure w., flesh pure w. firm solid, seeds black shining broad roundish-oval.—Naud. in Ann. des Sci. (sér. 4) vi. 53.

a. picta; fr. elegantly speckled gr. and w. like a snake's back.—Boganga brava, B. rajada or B. Tenerifa.

β. lactea; fr. uniform pure w. or cream-colour. —Boganga branca.

Herb. ann. Mad. cult. reg. 2, ccc. Grown perhaps more extensively and abundantly than either of the two preceding sp. in the whole Chestnut region of Mad. above 1000 or 1200 ft., covering the ground in fields or on banks as if perfectly wild, but rarely if ever trained on trellises, as Abobora preta and A. de Machado mostly are. Fl. throughout the year; fr. principally Oct., Nov.—The pale or light gr. soft foliage at once distinguishes this sp., and the smaller size and peculiar shape of the I. are equally characteristic. St. trailing extensively 20-30 ft. or more, sparingly or remotely branched, more slender than in either of the two preceding sp., pale gr., succulent, and, like the petioles and main ribs of the older I. beneath, harsh and almost prickly-strigose or hispid-pubescent. L. 6 or 8 in. in diam. rounded regularly palmate-lobed with distinct rounded very obtuse equal lobes and rounded sinuses, softly hispid or roughish-velvety but not harsh or stiffly strigose. Fl. (especially the male) produced copiously all over the pl. at all seasons, bright cr.-γ., 3-5 (sometimes 6-8) in. in diam. Cor. altogether smooth inside, subpubescent outside only on the nerves. MALE FL. mostly 3 or 4 in. in diam.; cal.-cup or torus bristly flat and shallow, sep. very small leafy linear flat acuminate ¼ in. long, mostly withered often black and dry, always spreading or recurved. Cor.-cup a little inflated, with 25 principal ribs, viz. 3 to ecah
segment and a single sepaline one giving off an additional side-branch or fork to each, but not always forking from its very base, as in the fem. fl. of *C. moschata* and of the present sp., and not reaching to the top of the cup. Stam. 3, their fil. distinct with a pit or pore at their base, but combined into a thick slightly glandular-pubescent stalk about the length (viz. \( \frac{1}{3} \) in.) of the compact oblong anther-column which is truncate at each end. Fem. fl. much larger than the male, with the cal.-cup much shallower, the sep. longer (\( \frac{3}{4} \) in. long) more gr. and leafy, linear-oblong, subspathulate and abruptly mucronate. Cor.-cup as in male, except that the sepaline nerve is mostly but not always forked quite from its base. Throat half-closed by a white thick but sharp-edged erect fleshy stiff 3-angular or 3-lobed outer ring or crown, about \( \frac{1}{2} \) in. high or broad, and clothed inside and out with y. glandular pubescence, the 3 lobes or angles prominent spreading or recurved and mostly notched at the tip. Within this is a ring of pale wax-like depressed warts or tubercles (abortive anthers) like those of *C. moschata*, but much smaller depressed and inconspicuous, not prominent or tumid above the outer ring, and indeed scarcely discernible except in a vertical section of the fl. Styles 3 or 4 very thick distinct far down, channeled inside, slightly cohering at the base, quite smooth. Stigmas very large and distinct thick and short ove bilobed densely velvety deep bright or. Ov. 3-4-celled oblong-oval thickly and shortly pubescent. Fr. exactly oval very constant in size, shape, &c., varying only in col., quite even, never ribbed, not hollow but finally splitting internally into 4 equal portions as if divided by a crucial incision with a knife; axis from 9-12 or 13, diam. 6-9 or 10 in. Flesh pure w. very firm and close, not pulpy but crisp, with a peculiarly sweet and nutty taste when raw, watery fibrous and insipid boiled. Seeds imbedded in the compact mass formed by their condensed spongy strings and arils, 10 or 11 lines long, about 7 broad, shortly oval, indistinctly bordered, very finely punctulate-rugulose, shining, very dark coffee-brown or black. Aril indistinct, not watery, blended with the flesh.

In *C. moschata* the inner warts or tubercles (abortive anthers) in the fem. fl. are developed at the expense of the outer ring or cup, which is reduced to a mere thin skin or membrane. In the present sp. (as in *C. Pepo*) it is exactly the contrary: the outer ring is thick fleshy high and well developed, but the tubercles within are obsolete depressed and inconspicuous.

Though affording a large supply of food to the poorer classes, this is a very inferior sort even to *A. de Machado*, but valuable for its great productiveness and long duration, the latter pro-
property recommending it for good sea-stock. It is, however, scarcely eatable except quite young, having even then a vapid somewhat bitter taste when boiled. In the Canaries it is more commonly cultivated than any other sort, under the name (at least about Orotava in Tenerife) of “Pantana”; and in Palma the favourite elegant but insipid preserve called “Angel’s Hair” is made from the long spongy strings (funicules) of the seeds.

*C. maxima* Duch. (Naud. l. c. p. 17. t. 1. ff. 1–11) has only now and then occurred in some of its curious coronated smaller-fruited Turk’s-cap varr. (les petits Turbans of the French) with the carpels projecting above the cup-shaped recept. or at the top of the fr., and cult. merely for the singularity or beauty of the latter. The larger edible sorts, with or without a crown to the fr., so much grown in France, and also (especially the latter) recently in England (le Turban rouge and the netted or smooth *Potiron maraîcher ou jaune*, the netted being commonest in Paris and the smooth in England), have never been observed by me either in the Canaries or Mad. Though the fr. of the smooth *Potiron jaune*, at least as grown in England, is vastly inferior in flavour to that of the Mad. *C. moschata*, it much excels that of the Boganga (*C. melanosperma*); and the great size which it frequently attains (1½–2 ft. or more in diam. weighing 100 lbs. and upwards) might make this var. especially valuable in Mad.

With much the habit and foliage of *C. Pepo* Ser., especially as to the strigose asperity of the st., leaves and 1.-stalks, *C. maxima* is at once distinguishable as a sp. by the thick corky round or clavate merely striated (not sulcate ribbed or angular) fr.-stalk. The fr. in the common smooth *Potiron jaune* is a remarkably depressed sphere, hollow at the poles, with a very short axis compared with its diam., very faintly or obsoletely ribbed, and of a uniform pale ochre-y. without bloom. The flesh is or.-y. and pulpy, but with little flavour or sweetness. The seeds are elliptic-oval sharp-pointed at one end, 9–11 or 12 lines long, 5–6 broad, faintly and minutely granulato-rugulose, very pale or quite w. and with a narrow border. The 1. differ from those of *C. Pepo* Ser. in their blunt or rounded shallow lobes, and in being set horizontally on their petioles, which, though strigose like the st. with harsh stiff bristles, can scarcely be called prickly.

†††2. *LAGENARIA* Ser.

Bottle Gourd.

†††1. *L. vulgaris* Ser. in DC. *Cubacá.*

Greyish or hoary and softly pubescent or subtomentose; st. upwards petioles and cal. villous almost shaggy; 1. soft and flaccid broadly triangularly-cordate or angularly rounded scarcely
lobed, indistinctly and remotely repand-toothed; tendrils mostly bifid; fl. white stellate; ov. thickly villous; fr. finally smooth, hourglass-, pear- or club-shaped perfectly even, flesh pale or whitish.—DC. iii. 299. Cucurbita Lagenaria L. Lour. Fl. Coch. ii. 592; Desf. ii. 357; Brot. i. 311; Spr. iii. 45. — Herb. amn. Mad. cult. reg. 1, 2, c. Grown chiefly in or about Funchal, and only here and there occasionally elsewhere; the fr. from its bitter taste, except whilst young, being less employed for food than for making water-jugs or bottles, for which purpose, when the flesh and seeds have been scooped out, the hard thin woody rind renders it available. These vessels soon, however, crack and become useless, especially when large and formed from the full-grown fr. The smaller flasks from the smaller-fruited var. 3, such as are often worn suspended round the neck by travellers, &c., are more durable. Fl. Sum., Aut.; fr. Sept., Oct.

a. Gowda Ser. in DC. l.c. (Cabaça grande); fr. large 1–2 ft. long, unequally hourglass-shaped.—A large climbing musk-scented pl. spreading extensively on trellises or climbing tr. to a considerable height, 30 ft. or more, with thickly matted branches and pale greyish foliage. Branches thin and slender pale gr. or whitish. L. greyish or hoary immaculate not large 3–5 in. in diam. openly cordate and often broader than long, repand-angular or sinuate rather than lobed, fringed with minute remote abrupt or subulate teeth, and with a pair of pits or hollow glands beneath at their base in the axil of the nerves at the top of the petiole. Fl. axillary mostly solitary rarely 2 or 3 together, about 2 in. in diam., wide-opening like a star; pet. about an in. long w. reticulated with gr. veins. MALE FL.; cal.-tube 7 or 8 lines long, rather more funnel- than bell-shaped, many-nerved or striated, thickly tomentose, its lobes 4 or 5 lines long erect linear-subulate thickish tomentose, their tips often withered. Cor. without tube, its segm. divided down to the edge of cal.-cup and petal-like, each strongly 5-nerved downwards, oblong-lanceolate, about an in. long and 3 or 4 lines broad, thickly pubescent on both sides. Fil. 3 very short and quite smooth, distinct below, uniting at top into the large thick oblong truncate anther-column, which is 4 lines long or twice the length of the fil. and nearly 3 lines thick. FEM. FL.; cal.-tube reduced to a narrow ring or short neck at the top of the ov.; sep. distinct remote erect 3 or 4 lines long, much shorter than in male fl., subulate pubescent; pet. 5 oblong-lanceolate, distinct down to base of sep. or top of ov., 5–7-nerved or ribbed, about an in. long and 3 or 4 lines broad; throat of cor. simple without crown or ring, but with 3 distinct erect barren fil. Ov. unequally 2-ventricose, densely tomentose. Styles perfectly united into a single very short thin smooth column shortly 5- or 4-branched at top. Stigmas mostly 5, sometimes 4, smooth
white clavate unequal irregular distinct on very short stalks or branches of the style-column. Fr. finally smooth 1-2 ft. long pale gr., with a hard woody but thin even rind, the upper and larger fertile portion hollow 6-9 in. in diam., the lower much smaller barren solid. Flesh in the upper part about 2 in. thick, pale or whitish, very bitter except when quite small and young, and then only watery and insipid. Seeds remarkable in shape, something like a hand-barrow or Skate's egg, oblong contracted at the base into a triangle with the point downwards, with a broad continuous thickened border produced at the upper truncate end into 2 prominent obtuse or rounded knobs or auricles, one at each corner, and completely surrounding or separating at top the central lanceolate-oblong panel-like compartments of the testa on each side. They are 10 or 11 lines long × 4 broad × 1½ thick, very inconspicuously or obsoletely punctato-rugulose and of a uniform more or less pale coffee-brown col.

β. pusilla (Cabaça pequena); fr. small 3-6 in. long unequally hourglass-shaped.—Differs from a. in its altogether smaller size and much smaller fr. and seeds, the latter being 7 or 7½ lines long × 3 or 3½ broad × 1 or 1½ thick, with the border interrupted at top by the meeting of the upper points of the central panel-like lateral compartments; the 2 auricles or tubercles at top are also much less distinct and prominent than in a.

γ. clavata Ser. (ε. in DC. l. c.; Cabaça comprida); fr. large 3 or 4 ft. long narrow-oblong or cylindric clavate.—Like a. except in fr. and seeds, the latter being as large but with the auricles at top smaller and less prominent though more pointed or acute, and the border completely interrupted at top by the lateral compartments lapping over continuously like a band from one side to the other.

The Cucumber, "Pepino" Port. (Cucumis sativus L.), abounds in May and June. Melons, "Meloes" Port. (Cucumis Melo L.), are fine and well-flavoured; but the pl. do not flourish, being greatly infested with a white mould (Oidium or Erysibe). The large more or less netted var. (a. reticulatus Ser. in DC. iii. 300), and the still larger smooth Maltese (γ. Maltesis Ser. in DC. l. c.) are the sorts chiefly cult. The Water-melon, "Melancia" Port., with red or white flesh (Cucumis Citrullus Ser. in DC. iii. 301; Cucurbita Citrullus L.) is only rarely cult., but it is imported from Lisbon in considerable quantities in the Autumn. The peculiar deeply laciniato-sinuate foliage at once distinguishes the pl.
Tribe II. *Sicyodeæ.*

†††3. *Secchiun Br.*

†††1. *S. edulis (Sw.)*. Chuchu or Chocho. *Pepinella ou Cahiota.*

St. roundish and with stalks of 1. tendrils and rac. smooth ribbed or striated; 1. cordate-angular flaccid nearly smooth or naked and entire, sharply lobed whilst young, finely scabrous or hispidulous above, sprinkled with a few soft hairs beneath; tendrils 4-fid; *fem. ft.* mostly solitary sometimes binate; ov. obovate or clavate mealy-pubescent; fr. the size of the fist, compressedly turbinate or shortly obovato-clavate, prickly-strigose.

—Spr. iii. 47; DC. iii. 313. *Sicyos edulis Sw., Jacq., Lam.*—Herb. per. Mad. cult. reg. 1, 2, c. In and about Funchal, at the Mount, Porto da Cruz, Sª Anna, S. Vicente, &c, almost everywhere in gardens and about houses. Aut. chiefly.—Varr.:

a. Fl. and fr. pale gr.

β. Fl. and fr. rather larger, cream.-col. or w.

Habit and foliage of a Cucumber rather than of a Gourd. Rootstock or rhizome large amorphous massive corky rather than fleshy or woody. St. ann. slender tough but succulent shining pale gr., climbing extensively by the long-stalked mostly 4-cleft strongly curling opposite-leafed tendrils, and becoming thickly matted. L. 5 or 6 in. in diam. strongly cordate with the basal lobes approximate, rounded but more or less distinctly 5- or 6-angular, and whilst young sharply 5-7-lobed like Ivy-leaves, with the middle lobe produced; thin and flaccid, rather dark gr., immaculate slightly shining and appearing naked, but finely roughened or scabrous on the upper surface with hard minute sharp conical scattered dots or pimples (bulbs of mostly undeveloped hairs); beneath smooth and even or with only a few soft scattered hairs, and with the nerves and veins curiously bordered; the edges nearly or quite entire. Male *fl.* in short whorled long-stalked axillary rac., small, ½ in. in diam., pale greenish in a, cream-col. or w. in β, with a very slight but delightful Peach-like fragrance or like the fl. of the common Can. *Tournefortia (Messerschmidtia) fruticosa* L. fil. or of the Mad. garden *Cestrum Bella sombra* Dun. in DC.; 5-angular depressed and mealy-crystalline in bud, with the gr. callobes or sep. erect and conspicuous. Rac. 1-3 in. long on a stiff ribbed or angular mostly curved smooth stalk 2-4 in. long, with the fl.-buds crowded or agglomerate upwards and the tip often hooked or curved; the lower fl. shortly pedicelled, finally remote and deciduous. Cal.-cup flatly hypocratiform or saucer-shaped, combined with and resembling in col. and consistence the cor., pubescent, 10-nerved, the nerves forming the midribs of its segm. and of those of the cor. and dividing it into 10 compartments, flatly umbilicate beneath or
with the pedicel slightly intrusive. Sep. smooth gr. herbaceous remote stiff narrow ovate- acuminate or lanceolate, erect in bud, afterwards stellately spreading or ascending, about \( \frac{1}{2} \) the length of pet. and contrasting strongly with the latter by their leafy char. and col. Cor. very pale gr. or in \( \beta \). cream-col., of a thickish waxy substance or appearance, thickly and shortly (like the cal.-cup) crystalline or glandular-pubescent inside and at the edges, smooth outside, 5-fid down to the rim of cal.-cup, the lobes thickish ovate often rather obtuse, erecto-patent flat, not reticulate but with about 10 close-set parallel straight simple equal nerves or lines; the throat with a ring of 10 simple pores (foveoles) exuding honey, 2 at the base of each segment. Anth. 3-5 mostly 4 sinuous distinct or umbellate; fil. united downwards into a smooth single stalk or column combined at the base with the cor., as in \( \text{Malva} \) or \( \text{Lavatera} \), and slightly glandular. Fem. fl. towards the ends of the branches, mostly solitary, sometimes 2 binate on one stalk, on a short thickly mealy-pubescent axillary pedicel at the outer base of the stalk of the male rac. and opening some time before the development of the latter, having an abortive leaf and branchlet with fl.-buds undeveloped at its outer base, and thus placed between the inner male rac.-stalk and the said abortive fl.-bud-branchlet,—the whole 3 being between the leaf-stalk and the tendril-stalk. Cal. and cor. 5-fid, the latter down to the rim of cal.-cup, both lobes and cup like those of the male fl. but the lobes narrower and rather longer, with the foveoles or pits in the throat much larger, forming a distinct raised crown-like ring of cells with raised rib-like partitions at the bottom of the cup around but apart from the style-column, whilst the cup instead of being sessile on the pedicel is stalked upon the ov. or joined to the latter by a short distinct cylindric or angular mealy gr. equal slender brittle neck. Styles completely united to the very top into a single simple even smooth or very minutely glandular-puberulous cylindric w. column. Stigmas combined into a flat-topped umbrella-like single pale yellowish calyptriform head with deflexed sides and incurved or involute 10-toothed edges, the 10 teeth combined into mostly 4 lobes or sets; the whole resembling the pileus of \( \text{Leotia lubrica} \) (Scop.) or the fr. of a \( \text{Marchantia} \), but more flat-topped. Ovary, except a smooth irregularly wrinkled scar-like transverse gr. space at base of the neck or stalk to the cor., thickly and shortly mealy-pubescent like its short pedicel (in \( \beta \). from the first mealy-w. or cream-colour), compressed turbinate or clavate, indistinctly or irregularly 5-grooved or lobed towards the top, uniformly 1-celled; ovule single erect attached by the middle of one edge to the wall of its cell. Fr. more or less compressed obovate or shortly clavate, very solid hard and heavy, pale gr. in \( \alpha \), cream-col. or w. in \( \beta \), 3-6 in. long, \( 2\frac{1}{2}-3 \) broad at top, umbilicate and distinctly
4–5-lobed or grooved at base, often subtruncate at top and always sphinctrally rimate with an irregular deep transverse closed or narrow sinuous umbilical groove or cleft with timid sphinctral knuckle-like or puckered coarsely ribbed or plaited lips, penetrating about halfway down to the seed and looking like the closed uneven suture of a terminal transverse opening, although the fr. is from the first completely closed above the seed. Surface shining but coarsely rugged or uneven, irregularly and remotely grooved and more or less setose-echinulate or spinulose with scattered subremote erect stiff but scarcely pungent short gr. bristles. Flesh about an inch thick pale gr. in \( \alpha \), w. in \( \beta \), hard firm solid fibrous inwards and gradually compacted and blending into the large compressed softish fibrous shell. Seed or kernel oblong-ovate compressed not bordered, like a large thin almond, point upwards, attached near the top of one of its edges, invested with a white smooth shining veiny thickish soft but firm somewhat leathery or spongy not watery or pulpy coat. Aril, if any, indistinct. Cot. large thin flattened foliaceous pure w., nutty or kernel-like and pleasant to the taste, especially when boiled. Radicle terminal at the upper pointed end. Alb. none.

Propagated by planting the whole fr., which, after germination of the seed, enlarges into a persistent subaerial rhizome. The fr. boiled is a favourite vegetable in Mad. during the aut. and winter months; resembling young pumpkins, but when ripe somewhat firmer, drier or more mealy in consistence, with a peculiar nutty flavour. I have never met with it in the Canaries. The larger cream-col. or w.-fruited var. \( \beta \) is better looking, but not so good as the gr. \( \alpha \).

††Order XXXIV. PASSIFLORACEÆ.

The Passion Flower Family.

Fl. mostly perfect and regular. Cal. 5-partite more or less tubular at the base. Pet. 5 (rarely 0) imbricate in bud with often 1 or more inner filamentous rows or rings within the throat. Stam. mostly 5, monadelphous, their fil. united into a tube sheathing the gynophore or stalk of the free superior 1-celled ov. Styles 3–5 mostly 3. Fr. stalked 1-celled 3-valved mostly indehiscent and many-seeded, placentas parietal. Seeds with an often juicy aril, ovate or oval compressed, often puncate. Embryo straight in the middle of the fleshy albumen. Cot. leafy flat.—Mostly climbing shr. with axillary tendrils. L. alternate mostly stipulate, simple or palmate-lobate. Herbage somewhat fetid. Fl. mostly conspicuous axillary scentless. Ped.
mostly 1-fl. and often involucrate at top. Fr. often esculent with a hard fleshy rind, somewhat between a gourd and berry; occasionally dry and membranous.

†1. **Passiflora.** Cal.-tube very short with several rings of filaments in the throat. Sep. pet. and stam. 5. Styles 3. Ov. stalked. Fr. indehiscent bacate mostly pulpy or juicy, rarely dry or subcapsular.—Shr. climbing; l. stipulate, with glands on petioles. Sep. shortly horned or hooded. Seeds arillate.

††1. **Passiflora L.**

**Passion Flower.**

**Granadilla.** **Maracujá.**

§ **Granadilla** DC. A 3-leaved involucre close under the fl. Ped. 1-fl.; a simple tendril from the same axil.

††1. **P. caerulea L.** **Flór da Paixão.**

L. smooth 5-partite, lobes oblong-lanceolate entire, petioles with 4 glands at top; stip. falcate; involucral bracts ovate entire; crown of fl. shorter than sep.—BM. t. 28; Desf. ii. 323; Bro. i. 477; DC. iii. 330.—Shr. per. Mad. reg. 1, 2, c. Waste or uncultivated spots amongst vineyards and cottages in the neighbourhood of Funchal, at the Mount, &c., quite naturalized. Fl. at most seasons; fr. Sum. Aut.—Branches slender but tough and woody, climbing and interlacing tenaciously by the branched axillary tendrils, and soon becoming thickly matted. Foliage dull dark smoky or lurid gr. subglaucescent, the young l. and shoots dark violet or purple. L. often 7-9-partite with fine narrow lobes. Fl. handsome about 2 in. in diam.; pet. pale bluish or greenish, the rings or crown of fl. blue. Fr. pendulous about 2 in. long and an in. in diam., narrow-oval or elliptic sometimes clavate, of a beautiful bright orange or red-lead col.; pulpy, but with an intolerably nauseous taste and quite un-eatable.

**P. quadrangularis** L. BM. t. 2041, with simple stiff coriaceous shining ovate-oblong or elliptic parallel-ribbed l., large handsome scarlet and blue fl., and fr. (called **Maracujá**) the size of a turkey’s egg, pale yellowish-gr. when ripe, with the pulp pale greenish w. like a gooseberry, and a honey-like smell and taste, is often seen growing over arbours in Funchal, for which purpose it is well suited, forming with its matted branches a thick close perennial shade. **P. edulis** Sims BM. t. 1989, with 3-lobed shining serrate l., and **P. Lowei** Heer, with large broad simple entire cordate subglaucescent l., are also common in gardens: the fr. of the former (**granadilla**) about the size of a small hen’s egg, shortly and globosely oval, having a hard thick corky-coriaceous violet or purple rind and orange-col.
pulp with a fine raspberry-like flavour: that of P. Lowei Heer (which as a sp. seems too nearly related to P. serratistipula DC.), called also Maracujá, being larger (about 4 in. long) and elliptic-oval, having a thinner softer or more yielding rind of a y. or when fully ripe bright orange-y. or red-lead col., with mostly a strong pruinose or glaucous bloom, and with a pale bluish-gr. and very juicy pulp like a gooseberry, is much the best fr. of the three. Its seeds were first sent to me from Tenerife by the Hon. C. E. C. Norton and Miss Young in 1836-7; but it seems now to be altogether lost there. P. edulis Sims was introduced from England by the late Mrs. Penfold and myself in 1828 or 1830.

Order XXXV. PARONYCHIACEÆ.

The Knotwort Family.

Fl. perfect mostly regular. Cal. 5- (rarely 3-4-) partite, sep. persistent imbricate or subvalvate in bud. Pet. minute or rudimentary alternate with and as many as sep., sometimes 0. Stam. as many as and alternate with pet. i.e. opposite the sep., sometimes fewer or twice as many, and sometimes more or less hypogynous; fil. free distinct. Ov. free superior, mostly 1-celled 1-ovulate, rarely 3-celled 3-many-ovulate. Styles or stigmas 1-3, often 2. Fr. dry capsular membranous enclosed in the persistent cal., mostly 1-celled 1-seeded, rarely 3-valved many-seeded with a central placenta, often indehiscent. Embryo more or less curved round the farinaceous alb. Cot. small.—Inconspicuous weed-like herbs or shr. with mostly opposite and connate, often fasciculate, sometimes whorled small entire 1. and minute greenish or whitish tufted axillary or clustered cymose scentless fl. Stip. mostly present scarios or membranous.

Tribe I. ILLECEBREÆ.

Caps. 1-seeded. Cal. 5-partite deeply divided almost tubeless, persistent but unchanged in fr. Stigmas often sessile. Stam. perigynous.—L. opposite with membranous stip.


2. ILLECEBRUM. Sep. snow-w. thickened or spongy hooded, horned at the back. Pet. 5 scale-like or filiform inserted with the 2-5 stam. on a perigynous ring. Stigma single capitiate or notched sessile. Caps. 1-celled 5-grooved bursting along the grooves into 5-10 parts. Embryo nearly straight.
3. **Paronychiae.** Sep. not col. or thickened, but slightly hooded and distinctly awned or mucronate. Pet. 0 or 5 linear. Stam. 5 or less. Style 1 distinct, stigma notched. Caps. 1-celled indehiscent. Embryo annular.

**Tribe II. Scleranthae.**

Caps. 1-seeded 1-celled indehiscent. Cal. 4–5-fid with a distinct urceolate or campanulate tube hardened in fr. Styles 2 or 1 distinct. Stam. perigynous rarely hypogynous.—L. opposite connate without stip.

4. **Scleranthus.** Cal. 5-fid, tube urceolate contracted at the mouth. Pet. 0 or 5 filiform. Stam. 5–10 perigynous inserted in the throat of cal. Styles 2 distinct.

**Tribe III. Polycarpeae.**

Caps. many-seeded 1-celled 3(-5)-valved. Cal. 5-partite, deeply divided almost or quite tubeless, persistent but unchanged in fr. Style 1, stigmas 3 or 2 (or styles 3–5). Stam. hypogynous.—L. opposite or whorled with membranous stip.

5. **Polycarpum.** Sep. keeled at the back, hooded at the tip. Pet. 5 notched. Stam. 3–5 or 1. Style 1 very short, stigmas 3. Caps. 3-valved.—L. broad often whorled in fours.

Here also perhaps belong *Lepigonum* Fr. (*Spergularia* Pers.) and *Spergula* L., supra in Caryophyllaceae, p. 56; and I have modified (in brackets) the tribal char, accordingly. Professor Babington has satisfied me that I was wrong in adopting the name *Spergularia* instead of *Lepigonum* Fr.; the former being used by Persoon only sectionally or for a mere group (in his idea) of *Spergula*, and having thus no prior claim as a generic appellation over *Lepigonum* Fr.

**Tribe I. Illecebreæ.**

1. **Herniaria** L.

1. **H. Flavescens** Lowe.

Ann. herb. densely hirsute-pubescent light y.-gr.; branches hard stiff slender wiry regularly distichous, altogether prostrate or flatly cespitose, thickly and shortly furry or velvety-pubescent; l. oblong-lanceolate, bristly on one or both sides and ciliate at the edges; fl. and fr. sessile in dense crowded many-fid. axillary fascicles or clusters, confluent into oblong leafy spikes on the side-branches; fr. thickly and equably echinate-setose.—Novit. 21 or 543. *H. hirsuta* WB. ! i. 167 (not Linn.).
**H. cinerea** DC. iii. 367?—Gren. et Godr. i. 612?—Herb. ann. Mad. reg. 1, rr; PS. reg. 2, 3, 4, c; SD. reg. 2?, r. Barren sunny ground, Pº de S. Lourenço, at the top of the hill of the Piedade Chapel and beyond the Rocha furada. In Pº Sto. general in cornfields, by roadsides towards P. d'Anna Ferrá, on the summit of P. Branco and on the top of the Ilheo de cima, &c. Apr., May.—A small insignificant weed, branched on all sides from the crown of the slender sparingly divided root and forming flat close-pressed regular dense patches from 2–6 in. in diam. of a peculiar pale apple or light y.-gr. and elegant pattern-like appearance, owing to the fan-like regularity with which the secondary or side-branchlets spread distichously and at equal distances and angles in the same plane on each side of the main branches, and become gradually shorter towards the ends of the latter, like the branches of a well-trained fruit-tr. on a wall en espalier. Root wiry tortuose or flexuose hard and somewhat tough but scarcely woody and decidedly ann., pale or whitish, scarcely or sparingly branched. Branches completely prostrate quite to their ends round hard stiff wiry straight or very faintly flexuose often red or purple, clothed with very short fine close-set horizontally spreading straight furry or velvety pubescence unmixed with bristles. L. small inconspicuous or overrun by the fr.-clusters, 2–4 or 5 lines long, \(\frac{1}{2}–1\frac{1}{2}\) line broad, mostly naked, the lower sometimes more or less furry or velvety, but all sprinkled all over on one or both sides with spreading bristles and distinctly ciliate at the edges. Fl. minute gr. inconspicuous; sep. in fr. connivent shortly furry or velvety-pubescent and equably echinulate-setose or hirsute all over and not particularly at their tips or edges with stiff w. bristles spreading all round, their tips not distinctly aristate or bristle-pointed. Fr. rather large i. e. 1\(\frac{1}{2}\) millim. long narrow-ovate or elliptic compressed, thickly furry and equably echinato-hirsute or setose all over with longer straight w. bristles spreading on all sides and as long as the diam. or even axis of the fr., which bears a sort of miniature resemblance to that of Xanthium or Ricinus.

Scarcely perhaps distinct from *H. cinerea* DC., but the st. are wholly prostrate or flatly adpressed all their length to the ground, not ascending or with the ends upright, and there is no trace of a persistent woody rootstock or perenn. root. As to this last particular however, there is a discrepancy in authors: DC. e. g. calling the root in *H. cinerea* ann., Gren. and Godr. per. Still, in the absence of positive proof of identity from comparison with authentic spec., it is better to retain the Mad. pl. distinct provisionally.

It differs from *H. hirsuta* L. in being much more hairy or
hirsute, in having no distinct terminal awn or bristle to the sep., in the naked bristly l., and echinate-bristly fr.; from *H. ciliata* Bab. in the narrower longer lanceolate l., horizontally spreading pubescence of the st., confluent spicate clusters of fl. and fr., and echinate-bristly fr.; from *H. incana* L. in the sessile fr., &c.; and from all the preceding in the decidedly ann. not per. woody root and rootstock.

This is also a Can. sp. The late Dr. C. Lemann gathered it in Lanzarote in 1837, and I found it myself in Gr. Canaria and in Lanzarote in 1858, 1859.

2. *Illecebrum* L.

1. *I. verticillatum* L.

   The only sp.—EB. 895; Broth. i. 302; Sm. E. Fl. i. 335; Buch 192. no. 148; DC. iii. 370; Seub. Fl. Azor. 45. no. 329; Koch 280; Bab. '123.—Herb. ann. or in swamps bien. or per. Mad. reg. 1, 2, 3, ccc. Mountain pastures especially in moist or swampy places, yet also in dry, and even in clefts or on ledges occasionally of rocks, general. W. bank of the Rib. de Joãõ Gomes above the Campõ do Barco at Funchal; very abundant in the turf of dry mountain pastures about the Primeira Vista do Curral above the Jardim da Serra; in vast profusion and luxuriance in the swamps to the N.W. of the church at S. Antonio da Serra, &c. &c. Apr.-July.—Root fibrous properly perennial. St. cespitose gregarious slender filiform either (as in dry places) simple or nearly so, 2 or 3 in. long, more or less erect or ascending, or in wet or swampy ground much branched and creeping prostrate or trailing and procumbent, 6-12 in. long, forming dense cespitose masses, or sometimes a thick moss-like bed.—Whole pl. smooth slender delicate and usually of short duration. Foliage bright gr. L. opposite small obovate spathulate or lanceolate obtuse or acute inconspicuous. Fl. sessile crowded in axillary confluent tufts or whorls, minute but conspicuous from their snow-white more or less tinged with pink or crimson shining china-like cal. which is alike elegant and curious in aspect as in structure. Pet. 5 very short narrow lanceolate membranous scales concealed by the wax-like white or crimson cal., each ending in a subulate point, not longer than the ov. or stam., and alternate with the curious hooded awned sep. Perfect or antheriferous stam. only 2, opposite the sep. not longer than the ov. Stigma decidedly single (possibly 2 combined into one) nearly sessile forming a simple truncate knob at the top of the ovate acute smooth ov.

It is remarkable that this pl., of such universal diffusion in
Mad., has neither been observed in the Açores, the Canaries, or Cape de Verdes, nor even in the neighbouring islands of Porto Santo or the Desertas.

Ill. cymosum, no. 149 of Von Buch's Mad. Catalogue, is a mistake, originating from some Mad. specimens in the BH., formerly marked I. cymosum, but which are certainly Paronychia echinata (Desf.).


1. P. echinata Lam.

St. diffuse or spreading sometimes prostrate or erect not much branched often simple; branches knotted or jointed puberulous on one side; l. elliptic or oblong-lanceolate mucronate minutely punctulate smooth finely serrulato-ciliate; fl. in axillary crowded subconfluent tufts somewhat secund; cal. glandular-strigose at the base; awns of sep. rather short slightly divaricate.

—DC. iii. 370; WB. i. 162. Illecebrum echinatum Desf. i. 204; Brot. i. 302; Brot. Phyt. Lusit. i. 49, t. 22. f. 1. Illecebrum cymosum and Ill. Paronychia Buch! 192. nos. 149, 150 (not Linn.).—Herb. ann. Mad. reg. 1, 2, c. Sunny dry open hills amongst grass near the sea along the Cañico road a mile out of Funchal; W. bank of the Rib. de João Gomes above the Valle; Curral das Freiras, &c. Apr.—July.—An inconspicuous pl. with somewhat the habit of Polygonum aviculare L. though usually more erect. Root small fibrous whitish. St. more or less erect, always so at the base, mostly simple or dividing near the base into only 2 or 3 stiffish spreading branches 3–6 in. long, mostly red, clothed along one side with very short white deflexed minute pubescence. Foliage pale gr. turning black in drying. L. in pairs or presently fasciculate at the knots of the st., pointed at each end with a very short mucro, of a thickish substance, finely and closely punctate and crystalline-dotted, the margins ciliate with very short remote bristles or hairs pointing forwards, otherwise quite smooth. Stip. short narrow ovate or lanceolate quite entire finely taper-pointed or acuminate whitish membranous. Fl. small sessile in axillary gr. or reddish tufts. Cal. urceolate, the base swollen and densely clothed with short hooked or glandular hairs or bristles; awns of sep. simple slender setaceous moderately long slightly divaricate, subcucullate or with inflexed membranous borders at their base. Bracts lanceolate membranous whitish shorter than the fl. Pet. or scales none. Stam. 5 all perfect. Style one simple truncate and notched at the top. Ov. and caps. 1-seeded clothed with very short pubescence. Seed globose smooth shining.
Tribe II. Scleranthae.

4. Scleranthus L.

1. S. annuus L.

Ann.; sep. ovate acute subimmarginate as long as the strongly 10-ribbed tube, in fr. spreading.—Brot. ii. 171; Fl. Dan. t. 504; EB. t. 351; Sm. E. Fl. ii. 282; DC. iii. 378; Koch 281; Bab. 124.—Herb. ann. P^s^reg. ?, rrr. Raised in 1833 by the Rev. M. J. Berkeley in England from seeds collected by me in PS., June 1–5, 1832. It has not been otherwise observed by myself or any other subsequent botanist, and I have no note or recollection of the precise locality; but doubtless it must be looked for in the usual cornfield region, and somewhat earlier than June or even May.—A small inconspicuous useless weed in corn. St. 3 or 4 in. long slender or even filiform jointed or knotted procumbent or ascending, several from the crown of the fibrous root, the central erect, all branched dichotomously upwards. L. opposite presently fascicled, 4–6 lines long, ½–1 mill. broad linear or subfiliform acuminate, widened sheathing or connate and ciliate at the base. Fl. small gr. inconspicuous axillary or in terminal leafy heads or corymbose forked fascicles which are dense and compact in fl., loose and spreading in fr. Stam. 5–10. Sep. as long as the strongly 10-ribbed or grooved urceolate tube, ovate 3-ribbed, subimmarginate or very narrowly membranous-bordered; in fr. narrower lanceolate more acute erecto-patent, the mouth of the tube being nearly closed by a membranous ring. Seed single rather large proportionately, squarish-ovate or 4-sided, light yellowish or reddish-brown.—Whole pl. nearly or quite smooth, the st. only minutely furry or puberulous on one side.

Tribe III. Polycarpeae.

5. Polycarpum L.

1. P. tetraphyllum L. fil.

Fl. cymose triandrous; pet. notched shorter than sep.; l. ob-ovate or spathulate in pairs, those of the st. in fours.—Desf. i. 115; Brodt. i. 123; EB. t. 1031; Sm. E. Fl. i. 189; Buch 192. no. 151; DC. iii. 376; WB. i. 154; Koch 281 and 1024; Seub. Fl. Azor. 45. no. 330; Bab. 124.—Herb. ann. Mad. reg. 1, 2, 3, ccc; PS. reg. 1, 2, 3, 4, ccc; ND. r; GD. reg. 2 (highest peaks), ½; SD. ½. In cult. and waste ground everywhere, a universal weed. Throughout the year.—A useless insignificant weed, at first cespitose, then bushy, 3 or 4 in. high sometimes 5 or 6 in., bearing a profusion of gr. apparently apetalous fl. Whole pl. smooth shining. St. repeatedly dichotomous, at
first prostrate and trailing, then bushy diffusely erect. L., roundish-oval subspathulate obtuse attenuated at the base into a short stalk, very variable in size, from 2-6 or even 12 lines long and 2-4 or 8 broad, at first all opposite in pairs; hence var. \( \beta \), \textit{diphyllum} DC. and WB. I. c. seems scarcely worth distinction. Stip. inconspicuous minute membranous ovate acute often acuminate and hair-pointed. Fl. very numerous in large dense crowded terminal cymes or corymbs covering the whole pl. Sep. horned or mucronate and hooded, with a broad gr. serrulate keel and point, the margins pellucid white membranous. Pet. white inconspicuous half the length of sep. lanceolate obtuse or retuse i.e. minutely notched, after fl. nearly entire. Stam. only 3. Style single; stigma subcapitate sub-trilobed.

Order XXXVI. \textit{PORTULACACEÆ}.

Fl. perfect mostly regular. Cal. persistent in part or wholly, 2-5-partite, lobes imbricate in bud. Pet. often 0, 3-5 or 6 very fugacious and membranous, soon cohering and deliquescent at the tips, inserted at base of the cal.-tube. Stam. as many as and opposite the pet. often more or fewer but always connate with them; fil. free distinct. Ov. 1-8-celled. Style 1 or 0; stigmas 3-8. Caps. 1-8-celled bursting either all round transversely in the middle into two halves, or by 3-5 valves stellately at top; rarely indehiscent; placenta central. Seeds mostly numerous and with long funicles from the base of the cells of caps. Embryo curved round the central albumen.—Succulent herbs or shr. L. entire mostly alternate without stip. or with only an axillary membrane or tuft of hairs. Pet. very ephemeral or 0.

* Sep. 2, imbricate in bud.

1. \textit{PORTULACA}. Cal. 2-partite coherent downwards with the ov., the upper bivalve part or limb separating all round from the lower and falling off with the lid of caps. Pet. 4-6 equal free or cohering only at their base, sometimes abortive. Stam. 8-15. Ovary roundish. Style 0; stigmas 3-8 elongate. Caps. subglobose 1-celled bursting all round in the middle. Seeds numerous attached to the central placenta by long persistent funicles.

** Sep. 3-5, subvalvate.

††2. \textit{TETRAGONIA}. Cal. persistent 3-5- mostly 4-fid, its tube connate with the ov., lobes horned. Pet. 0. Stam. few variable in number. Styles 3-8. Ov. 3-9-celled; ovules 1 in each cell. Fr. coated by the fleshy cal., woody.
or bony, mostly 4-cornered horned or winged at the angles, 1-9-celled indehiscent; cells 1-seeded.—Herb. or suffrut. with flat succulent l. and small inconspicuous axillary gr. fl.

3. AIZOON. Cal. persistent 4-5-partite free. Pet. 0. Stam. about 20 in 3-5 bundles, stigmas 5 sessile. Ov. free 5-angular. Caps. woody or bony 5-celled bursting hygro-metrically with 5 star-like clefts at top; cells several or many-seeded.—Herb. or suffrut. with flat succulent l. and gr. or pale often small axillary sessile fl.

1. PORTULACA L.

Purslane.

1. P. OLERACEA L.

St. prostrate or procumbent; l. fleshy wedge-shaped or oblong-spathulate, axils shortly fringed or bearded; fl. sessile inconspicuous.—Brot. ii. 257; Buch 197. no. 369; DC. iii. 353; Seub. Fl. Azor. 45. no. 328.—Herb. ann. Mad. reg. 1, 2, c. PS. r. Sum. Aut., but at most seasons.—Varr.:

a. sylvestris DC. l. c.; WB. i. 169. P. oleracea Koch 278. St. prostrate, sep. simply keeled. In bare open places, streets, roads, walks and paths about Funchal, &c. Cal. bivalve compressed beak-shaped or lepadiform; sep. boat-shaped sharply but simply keeled at the back tightly closing over the caps. Pet. usually abortive.

β. sativa DC. l. c. P. sativa Koch 178. P. oleracea DC. Pl. Gr. t. 123. St. ascending or diffuse, sep. membranous-winged. Amongst other herbage, in vineyards, gardens, waste ground by roadsides or in dry ditches about Funchal, Machico, &c., a common weed. Merely a more luxuriant form or state of a, from soil or situation larger in all its parts. Cal. as in a, but larger and with the keel of sep. membranous-bordered upwards. Pet. usually developed.

Whole pl. succulent smooth and shining, often altogether red or purple. St. in a. 2-4, in β. 6-8 in. long. L. in a. ¾-⅞, in β. ⅓-⅔ in. long thick fleshy obtuse or rounded at the end, attenuated downwards, more or less fasciculate towards the ends of the branches, very variable both in size and shape. Fl. sessile solitary or agglomerate in the axils of the upper l. Cal. of 2 unequal gr. compressed keeled boat-shaped sep. Pet. y. with a shining silky gloss, very frail and delicate, a little longer than the cal., often subabortive or at least not expanding except in a hot sun and for a few hours only in the morning, always closing and withering before noon. Seeds numerous minute orbicular-spiral with the radicle prominent like a minute depressed or discoidal shell, most elegantly grooved and granulated spirally, black and shining.—Occasionally used as a potherb.
36. Portulacaceae.

††2. Tetragonia L.
New Zealand Spinach.

††1. T. expansa Murr.
St. herbaceous diffuse or ascending; 1. stalked ovato-rhomboideal subcordate; fl. shortly stalked subsessile; stam. in little tufts of 2–4 or 5 alternate with sep.; fr. 4-horned 6–8-seeded.—"Murr. in Comm. Goett. 1783, 13. t. 5;" Thunb. in Linn. Tr. ii. 335; DC. Pl. Gr. t. 114; Haw. Syn. 199; BM. t. 2362; Spr. ii. 526; DC. iii. 452.—Herb. ann. Mad. reg. 1, rr. Roadside near the Casa Branca to the W. and edge of the seaciff just out of Funchal to the eastward near the Jews’ Cemetery; also "Brazen Head" S’ Moniz. Apr., May.—A somewhat coarse leafy succulent smooth dark-gr. pi. with numerous spreading stout ribbed or furrowed st. 6–18 in. long. Upper 1. deltoid or hastate, lower cordate, all wedge-shaped or decurrent gradually at the base into the footstalk, 1–3 in. long and ⅔–2 in. broad, flaccid-succulent not thick finely papulose. Fl. small inconspicuous solitary in the axis, y. or yellowish within. Fr. rather large hard and bony or woody.

A mere outcast from gardens, but appearing likely to become established and prove useful as an esculent. It was first introduced about 1825 by the late Mr. Consul Veitch.

3. Aizoön L.

1. A. canariense L.
Herbaceous pubescent; st. hard stiff woody altogether flatly prostrate thickly regularly and distichously branched in one plane from the crown of the root, leafy above, naked and bare beneath; 1. alternate obovate- or spathulate-wedgeshaped, attenuated into the petiole; fl. axillary sessile; caps. with cal. in fr. woody crowded and adnate to the branches.—Deaf. i. 399; Buch 197. no. 370; DC. Pl. Gr. t. 136; DC. iii. 453; WB. I. i. 207. Glinus cristallinus Forsk. Fl. Egypt. Arab. 95; ejusd. Icon. t. xiv.—Herb. ann. Mad. reg. 1, r; ND. rrr; SD. reg. 2, cc. Dry barren sunny maritime hills and slopes. In Mad. only on Pta de S. Lourenço on the Ilheo dos Embarcadores beyond the bay called Labra. Abundant at the top of the SD., very rare in the ND., and not obs. in either GD. or PS. ! Apr.–July.—Root simple taper tough strong and woody though merely ann., pale or w. St. numerous from its crown spreading all round quite close to the ground from 6–12 in. long, flexuose, with crowded regularly distichous alternate branches all in the same plane, bearing 1. and fl. on their upper side only, naked and bare beneath and resembling some elegantly branched coral.
or stone tracery work, very stiff and rigid tough or woody thick and flattened, appearing more strongly flexuose from the knobbed or thickened and dilated axils, and projecting regularly alternate adnate caps. Whole pl. usually of a peculiar apple- or light y.-gr. and thickly but shortly and inconspicuously pubescent. L. rather small and inconspicuous except towards the ends of the branches, about ¼ in. long and 3 or 4 lines wide flaccid succulent and quickly withering, minutely pellucid-papulose, more or less obtuse, attenuated downwards into rather long petioles. Fl. small gr. star-like, bright apple-gr. or sulphur-y. within. Lobes of cal. half-ovate. Anth. y. subglobose. Stigmas 5 sessile filiform simple y. Caps. large, hard and woody, coated by the persistent woody 5-lobed cal., strongly pentangular and with the base broadly adnate to the branches, 2–3 lines broad, not quite so high, very numerous and becoming densely crowded towards the centre of the pl., broadly or shortly turbinate or cylindric-ovobute, turning first purplish, then brown, bursting only with rain or moisture. Seeds very minute black shining kidney-shaped, elegantly ribbed and grooved spirally, the ribs granulate. In some of the Canary Islands (Lanzarote and Fuerteventura, where the pl. is called Pata) they are collected in times of scarcity and used for food; the meal obtained from them, mixed with barley, forming a coarse sort of "Gofio," which is the ordinary food of the poor in those sadly miscalled "Fortunate Islands."

The whole pl. continues long through the aut. and winter in a dried state on the surface of the soil unchanged in form though entirely lifeless, looking like some brown coral or zoophyte.

2. A. HISPANICUM L.

Herbaceous smooth roughly papulose; st. dichotomously branched straggling diffusely decumbent or ascending; l. opposite spathulate-oblong or linear-ligulate; fl. solitary sessile in the forks of the branches, the uppermost only apparently shortly stalked.—Dill. Hort. Elth. i. 143, t. 117, f. 143; Desf. i. 399; DC. Pl. Gr. t. 30; DC. iii. 454.—Herb. ann. PS. reg. 1 or 2 (lower part), rrr. Campo Debaixo, roadside and border of a cornfield along a road leading to some cottages at the E. base of Pico d'Anna Ferreira about 2 miles to the W. of the town in Pte Ste, in one spot only but plentifully. Apr., May.—Root small pale tortuose simple hard woody. Whole pl. smooth and succulent with the habit of a Mesembrianthemum, dark full gr. Stems diffusely spreading or even prostrate 6–12 in. long repeatedly branched sometimes almost erect and bushy. L. 1–2 in. long, 2–4 lines broad, in pairs at the forks of the branches, obtuse or only the uppermost subacute. Fl. rather large or about ¼ in. in diam., like those of some Ornithogalum; the uppermost not
really stalked but appearing so from the yet incomplete development of both or abortion of one of the branches of the fork in which it is as properly sessile as the lower fl. Thus the single branch below it has been apparently mistaken sometimes for a pedicel. Sep. 5 ovate or lanceolate, gr. outside, pure w. within, opening like a star, produced in fr. into ligulate or linear-acuminate long gr. leafy points. Stam. 10-12 not exserted. Fr. rather large obconical pentagonal subadnato-sessile invested with the persistent cal.-tube and 5-horned, as it were, with its unchanged (not hardened) spreading or erecto-patent lobes as long again as the caps, which is 4 or 5 lines long and broad. Seeds very small black, sculptured like those of *Portulaca oleracea* L. but with the radicle less prominent.

Abundant in Lanzarote close outside the town of Arecife on the south side, but omitted by Webb in his Canarian Flora, though Lanzarotan spec. from Bourgeau exist in BH.

**Order XXXVII. MESEMBRIANTHEMACÉ.**

The Fig-Marigold Family.

Fl. perfect regular. Cal. persistent, the tube fleshy connate with the ov., 6- rarely 2-8-partite, lobes herbaceous mostly unequal imbricate in bud. Pet. many indefinite inserted in the throat or top of cal.-tube linear or ligulate in several or many rows rarely in one row, membranous, deliquescent and subconfluent in decay. Stam. numerous indefinite in several rows or rarely one inserted with the pet.; fil. free distinct. Ov. 4- or 5- many-rarely 1-celled; ovules many with long funicles affixed to axile sometimes parietal placentas. Stigmas as many as cells of ov. Caps, at first fleshy, then dry and somewhat woody, bursting when moist longitudinally at the central sutures of the spreading or stellately divergent carpels. Seeds many small; embryo curved round the central alb.—Succulent suffrutescent or herbaceous pl., with opposite or alternate thick and fleshy l. without stip. and conspicuous radiant y., purple, p. or w. mostly scentless fl. opening only in bright sunshine.

1. **MESEMBRIANTHEMUM.** The only genus. Char. that of the Order.

1. **MESEMBRIANTHEMUM L.**

*Fig-Marigold.*

* Herbaceous, annual.

1. **M. NODIFLORUM L.** *Barrilha.*

Evenly and finely papulose; st. branched procumbent or dif-
MESEMBRIANTHEMUM.

fuse; 1. opposite or alternate fleshy subcylindric obtuse ciliated at the base; fl. axillary or terminal sessile or subsessile small; sep. 5 unequal cylindric like the 1.; pet. small not longer than the outer sep.—Desf. i. 398; Brot. ii. 331; Fl. Gr. t. 480; Haw. Syn. 250, Rev. 166; Buch 197. no. 371; DC. Pl. Gr. t. 88; DC. iii. 447; WB. i. 205.—Herb. ann. Mad., PS., ND., GD. and SD., reg. 1, cc. Sunny slopes and waste ground near the sea; in Mad. chiefly on Pt. de S. Lourenço, at the Gorgulho and Praia formosa, &c.; in Pº Sº general, and in ND. most abundant. Apr., June.—Whole pl. quite smooth, mostly more or less reddish purple, frosted with small crowded oblong equal not watery papille. St. 3–12 in. long spreading on all sides close to the ground, then ascending, sometimes suberect and bushy, round and slender, much branched, hard and woody. L. flaccid 3–6 lines long, 1 broad, subcylindric or subclavate flattened or slightly channeled above, round beneath, fasciculate on the young shoots. Fl. small 3–5 lines in diam. w. or pale flesh-col. with the eye yellowish, nearly or quite sessile, opening only in the hottest morning sunshine, closing about noon. Sep. all like the 1. in shape and the 2 or 3 outer in size also, the 3 or 2 inner or shorter with broad membranous margins and 1 or 2 of them sometimes reduced to red-purple ovate-lanceolate fleshy-membranous pointed scales; the outer 2 or 3 longer subciliate and gibbous behind at the base. Pet. 2 or 3 lines long, ½ or ¾ millim. broad, very narrow linear-ligulate rounded at the tip, w., pale p. or flesh-col., greenish-y. towards the base. Stam. 10–15 in a single row, half the length of pet.; anthers chrome-y. Styles 5 straight erect closely connivent or spirally twisted; stigmas chrome-y.; ov. gr. Caps, small erect hard 5-angular.

This is the chief in quantity if not in quality of the three Soda-yielding pl. of these islands, viz. M. nodiflorum, M. crystallinum, and Sueda or Salsola fruticosa L. It is chiefly produced or cult, for the purpose of burning into Soda in the N. or Little Flat Deserta.


Coarsely and strongly watery-papulose; st. divaricately branched mostly prostrate; 1. alternate flat undulate rhomboid or oval-wedgeshaped; the lower stalked, upper sessile; fl. axillary or terminal sessile; sep. 5 unequal flat ovate, pet. very narrow-linear longer than the sep.—Dill. Hort. Elth. ii. 232. t. 180. f. 221; Brot. ii. 331; Fl. Gr. t. 481; DC. Pl. Gr. t. 128; Haw. Syn. 243; DC. iii. 448 (a and b, M. crystallinum and M. glaciale Haw. Suppl. 91, 92, Rev. 157); WB. i. 205.—Herb. ann. Mad. reg. 1, rr; PS. reg. 1, c; ND. and SD. ccc. Pt. de S. Lourenço about the Piedade only in Mad. Along the road to
the W. of the town in PS. and on the Ilheo Debaixo at the
landing-place; most abundant in N. and S. D. but not observed
in GD. Dry waste ground and barren places near the sea.
May–July.—Root small simple. St. smooth round thickish
strong tough and somewhat woody lying mostly quite flat and
spreading from 6–18 in. all round. Whole pl. covered with
large conspicuous prominent unequal ovoidal hyaline papilla
like drops of congealed dew or ice glittering in the sun, gene­
rously tinged more or less with bright red or purple. L. rather
large flat waved or plicate succulent but not thick, flaccid and
soon withering; the lower st. or root-l. large, sometimes 3–5 in.
long, cordate-quadrangular or rhomboidal attenuated downwards
into a broad petiole, the upper sessile about an in. long (¼–2
in.) oblong oval or spathulate with an abrupt point; often more
or less furry above at the edges. Fl. nearly or quite sessile
numerous towards the ends of the branches pale p. with the
eye greenish, 9–12 lines in diam. or 2 or 3 times as large as
in M. nodiflorum L. and closing much later i. e. towards sunset
or at 4 or 5 P.M. Sep. 5 unequal, 3 larger fleshy ovate or oval
abruptly pointed short flattened and leaf-like; the 2 inner or
smaller scale-like, sometimes horned at the back, broadly mar­
gined, bright crimson or red. Pet. twice as long as sep. ½ in.
long, ½ mill. broad, pink towards the tips, w. downwards. Stam.
numerous in many rows, scarcely half the length of pet.; anth.
w. or very pale, not y. as in M. nodiflorum. Styles 5 sim­
ple straight erect closely connivent or twisted; stigmas pale
simple. Fr. large and handsome about the size of hazel-nuts
erect 5-angular hard dark purplish-red or crimson and abounding
in juice, saturating and staining blood-red or crimson the
feet of persons walking over large beds of the pl. which present
at such times a striking and peculiar appearance. Might not this
dye, like that latent in the cognate Cochineal-producing Cactus­
tribe, be turned to similar account?

The two sp. formed by Haworth out of this, are certainly
mere transitory forms or stages of the wild pl. In PS. the pre­
sent sp. is preferred for making Soda to M. nodiflorum L., and
it is there called par excellence "Barrilha." It is the common
well-known "Ice-plant" of English gardens. The quantity of
water it contains is quite astonishing. A person walking inad­
vertently over only a few pl. of it in the hottest weather and
most parched up-ground, will soon find his boots or shoes com­
pletely saturated.
** Suffrutescent, perennial.**


Evenly and finely papulose; st. much branched prostrate or pendulous; l. opposite fleshy flat cordate stalked; fl. small axillary stalked; sep. 4 unequal, 2 larger opposite flat and leafy, 2 smaller conical or horn-like; pet. shorter than sep. —Jacq. Ic. Rar. iii. t. 487; Sm. Spicil. Bot. t. 6; DC. Pl. Gr. t. 102; Haw. Syn. 248, Rev. 159; DC. iii. 449; Spr. ii. 516.— Suffr. per. Mad. reg. 1, 2; Waste spots and hanging down walls in the neighbourhood of Funchal, at Ponta do Sol, Magdalena, Calheta, &c., and in the north at Porto de S. Jorge. Apr.—Aug., but at most seasons.—Whole pl. quite smooth, of a peculiar bright fresh gr., shining but scarcely or inconspicuously and very minutely frosted. St. thickly cespitose either quite prostrate or hanging down walls in thick close leafy masses 2-3 feet long, round hard and woody, but gr. L. opposite distinctly stalked ¼—about 1 in. long and broad flat but firm and thickish or fleshy and brittle, cordate acute a little decurrent into the broad flattened petioles which are ¼—½ in. long. Fl. rather small 4 or 5 lines in diam. very double with many rows of pet., bright rose-purple, solitary axillary stalked; stalks erect sub-quadrangular thickened upwards. Sep. 4; 2 larger leaf-like, 2 alternate shorter horn-like. Pet. numerous crowded imbricate in many rows, shorter than any of sep. Stam. about 12 in a single row. Styles 5 short. Fr. rather large erect turbinate quadrangular half-immersed in the gr. persistent sep. smooth 4-celled.—Papilla of whole pl. very minute and crowded equal round, not oblong prominent or watery.

††4. M. EDULE L.

Quite smooth and even, not papulose; st. stout creeping sparingly branched, the ends ascending, compressed 2-angular; l. opposite connate at the base fleshy sharply triquetrous and acuminate, slightly concave above, the edges and more distinctly the keel subserulate; fl. large terminal stalked; sep. 5 very unequal horn-like or triquetrous like the l., pet. shorter only than the outermost sep.—Haw. Syn. 234, Rev. 119; Spr. ii. 524; DC. iii. 428. M. fulcatum majus Dill. Hort. Elth. ii. 284. t. 212. f. 272. Ficoides, seu Ficus Aizoides Africana, &c., Ficus Hotentottorum vulgo Seba Thes. i. t. 19. f. 6.—Suffr. per. Mad. reg. 1, 2, 5; PS. reg. 1-4, ccc. Mad. at the Mount, the Palheiro, Camacha, &c.; 3 or 4 miles up the Machico valley by the roadside, &c. PS. in vast beds along the beach to the E. of the town, and a little below the top of Pico do Castello. Fl. at various seasons, properly Sum.; up the Machico valley, 1500 ft. above the sea, early in March; in PS., at the back of the hot sandy beach, not in fl. at the end of May.—Whole pl. smooth
not papulose. St. 2-4 ft. long, forming large thick beds, yet sparingly branched, irregularly tortuose or flexuose, rooting here and there from the joints, the ends ascending upright, thick fleshy succulent compressed sharply 2-angular or 2-edged leafy pale gr. often reddish or purple as thick as the little finger, thinner brown hard and woody downwards and, as it were, jointed rough and rugged with the prominent dry sheathing bases of the old 1. L. quite even without dots or papillae, dark full gr., large fleshy 1½-3 in. long, ½ in. broad, ½ in. deep, the sides flat, the upper surface slightly concave with a raised tumid crescent-shaped or horseshoe-like stem-clasping wheal or border at the base, nearly straight or only slightly falcate or incurved acute, their sheaths hard tumid knobbed. Fl. solitary with erect very stout and thick strongly 2-edged ped. dilated upwards, without bracts, short but sometimes as long as the uppermost pair of l.; the fl. 2-3 in. in diam. opening only in hot sunshine, uniformly in Mad. pale faded straw-col., greenish towards the centre or base of the very numerous narrow strap-shaped pet. which are ⅔-1 in. long and scarcely 1 line wide. Sep. fleshy horn-like and triquetrous like the l., spreading, very unequal, 1 or 2 being 1-2 in. long, the rest irregularly much shorter, all dilated and the smaller broadly so with a membranous or scarious wing or hood at the base. Stam. about ¼ length of pet., very numerous in a broad crown-like ring, with small ochre-y. anthers. Stigmas 10 horizontally spreading or reflexed, subflexuose sigmatoidally like the rays of an Ophiurus.

I have never found the fr. such as could be called in any sense eatable, either in Mad. or at the back of the hot beach of Porto S. Still at the Cape it has the char. in books of being so, at least with the Hottentots; and, which may be more worth attention, the leaves or shoots are said when boiled to be available for food.

The rapid spread in PS. of this pi. is most remarkable. Introduced from Mad. by Sr Joao Ant Pedros in or shortly after 1834 along with Tamarix gallica L., it had already in 1855 overspread in vast beds the whole sandy region at the back of the beach about the town and chiefly to the eastward. I also found large patches of it on a bare flat rocky place a little below the top of Pico do Castello. It was introd. first into the neighbourhood of the Mount in Mad. by the late J. D. W. Gordon, Esq., about 1825.

There is a purple-fld. var. (Bot. Reg. 20. t. 1732), but it has not occurred in Mad.
\textit{M. formosum} Haw. Rev. 145, DC. iii. 436, a lovely sp., allied to \textit{M. spectabile} Haw. (BM. t. 396), but with grass-gr. (not glaucous) l. 1–2 in. long, shortly stalked corymbosely crowded binate or subternate large bright deep rose-pink fl. and decumbent or procumbent fl.-branches dying back after flowering, is a great ornament to Funchal from March to June, cult. in boxes or pots in balconies and windows: and a scarcely less striking cult. sp., though of shorter continuance in fl., which seems to be exactly, from its dark gr. not at all glaucescent l., \textit{M. cocci-neum} B. Haw. Syn. 265, as distinguished varietally from \textit{M. cocci-neum} DC. Pl. Gr. t. 83, Haw. Rev. 150, DC. iii. 438= \textit{M. bicolorum} BM. t. 59 (not Linn.), has intense deep crimson or blood-red fl. with a metallic lustre perfectly dazzling in bright morning-sunshine, in which alone they open. A 3rd sp. occasionally seen with these in cottage gardens (e.g. at Porto da Cruz) and flowering at the same time, has also prostrate or procumbent st., short triquetrous but more fasciculate or crowded very glaucous l. ½–1 in. long, and very pale pink or flesh-coloured binate or ternate fl. It is a glaucous-leaved var. of \textit{M. blandum} Haw. Suppl. 95, Rev. 147; Bot. Reg. t. 582; DC. iii. 436.

Order XXXVIII. CACTACEÆ.

The Prickly-pear or Cactus-tribe.

Fl. perfect regular. Cal.-tube connate with the ov.; sep. and pet. numerous undistinguishable imbricate (often distinctly spirally), either forming a crown at the top of the tube or in spiral bands around it, the crown or limb persistent or falling off together in one withered mass in fr. Stam. numerous in many rows with long fil. and small versatile anth. Ov. inferior 1-celled with vertical parietal placentas and many ovules. Style elongate more or less tubular, stigmas several (as many as placentas) linear. Fr. baccate succulent 1-celled umbilicate at top, with numerous hard bony seeds at first parietal, when ripe scattered in the pulp; alb. mostly none; embryo straight or curved.—Fleshy herbaceous, shrubby, or subarboreal mostly leafless pl., with globular columnar round or angular often flattened leaf-like jointed or moniliform fleshy st. or branches of a peculiar aspect, beset spirally with tufts of short bristles and often spines instead of l. which are either wanting or abortive and soon falling, rarely perfect. Fl. sessile mostly conspicuous and scentless, of short duration, sometimes nocturnal, w., y., or sc., r., p. or cr. Fr. often eatable.
†††1. **Cereus.** Fl. trumpet- or funnel-shaped, sep. and pet. very numerous imbricated spirally down the long or distinct tube nearly or quite to the base of ov., deciduous in fr. Cot. 0 or very small?—St. elongate erect or creeping cylindric fleshy with a woody axis many-grooved and angular or flagelliform, armed with tufts of spines or bristles. L. none. Fl. large often w. and nocturnal. Ov. and fr. more or less imbricatedly scaled.

†2. **Opuntia.** Fl. cup-shaped; sep. and pet. numerous collected into a distinct tubeless rose or crown at top of ov., deciduous in fr. “Cot. flat leafy.”—St. and branches very rarely altogether cylindric, mostly while young composed of thick flattened leaf-like fleshy joints becoming by age hard and subcylindric, armed with tufts of spines or bristles. L. minute subulate fleshy (like those of a Sedum) under the tufts of bristles, falling very soon. Fl. large y. or r. diurnal. Ov. and fr. armed with distinct dense tufts of deciduous setae, otherwise naked.

†††3. **Pereskia.** Fl. rose-like and tubeless at top of the naked ov.; sep. persistent crowning the naked fr. Cot. —?—St. and branches normal rounded woody with tufts of spines and axillary prickles. L. normal distinct flat fleshy not caducous. Fl. terminal panicled or solitary. Ov. and fr. altogether naked.

†††1. **Cereus DC.**

†††1. **C. triangularis (L.). Strawberry Pear.**

St. gr., only here and there jointed or constricted, creeping prostrate or climbing, wingedly-triangular remotely but regularly crenate; spines very short strong woody naked 1-3- or 4-nate in the notches of the wings.—Haw. Syn. 180; DC. iii. 468. *Cactus triangularis* L. BM. 1884.—Shr. per. Mad. reg. 1, §. Walls of gardens in and about Funchal. Fl. Aug., Sept.; fr. Dec., Jan.—St. throwing out long stringy pale roots, by which they affix themselves and climb extensively in large thick entangled masses over walls &c.; they are almost continuously triangularly-winged, and jointed or interrupted only for a short space cylindrically at very irregular remote intervals here and there; the three sides concave about 2 in. broad, the wings or edges sinuated crenate notched or scalloped at regular intervals of 1-1¼ in., with a mostly single (rarely 2-4) inconspicuous strong erect woody spine, 1-1¼ line long, from a small obsolete tuft of very short greyish or whitish setae in each notch. Fl. very large, 6-9 in. in diam., w. or outside, opening about 8 or 9 P.M. and lasting only 8 or 10 hours, in fact withering soon after sunrise, disagreeably scented. Fr. rarely matured in
OPUNTIA.

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Mad., of the size and shape of a hen's egg, deep rose-colour, with the tips of its scales greenish; rind or flesh a line thick, deep rose; pulp fleshy subpellucid w., rather crisp and juicy but mawkish and insipid, full of jet-black ovate subangular small seeds.

In gardens are also cult. C. flagelliformis (L.) BM. 17; C. grandiflorus (L.) BM. 3381; C. speciosissimus Desf., BM. 2306; C. serpentinus Lag., BM. 3566; C. peruvi anus (L.) DC. (Great Torch-thistle, at the Mount and Palheiro), &c.; Epiphyllum phyllanthoides (DC.) BM. 2092; E. truncatum (Link) BM. 2562, &c.: the two latter forming a link between Cereus and Opuntia, as the Torch-thistle Cerei do with the Melon-thistles (Echinocactus, Melocactus, &c.), of which also several sp. are commonly cult. in Madeira.

†2. OPUNTIA TOUN.
Cactus or Prickly Pear.

†1. O. TUNA (L.). Prickly Pear. Tababa.

More or less spiny dull gr. subglaucous erect subarboreous; joints obovate-oblong or oblong-spathulate 2–3 times as long as broad; spines white short feeble weak and inconspicuous, 2–5-fascicled towards or at the edges, often solitary or wanting on the disk of the joints, from short thick tufts of pale or yellowish sete; fl. gilvous i. e. dull tawny reddish-orange or flame-colour; fr. ovoidal or barrel-shaped truncate and widely umbilicate at top, pale gr., pulp pale greenish-w.—Haw. Syn. 188; DC. iii. 472. no. 13 (not C. Opuntia tuna DC. Pl. Gr. t. 185); Lowe in J. of Bot. i. 40 (excl. syn. Cactus (Opuntia) Bonplandii Humb. et Kth.). O. monacantha BM. 3911 (not Willd., DC., Pfeiff., &c.). Cactus Tuna Linn. Sp. Pl. (ed. 2) 669, 670 (excl. syn. Sloane Jam.). C. Ficus indica Lour. Fl. Coch. i. 306; WB. (a and β) i. 208 (not Linn.). C. Opuntia Buch 197. no. 368; Holl's List in J. of Bot. i. 21 (not Linn.). Tuna major spinis validis flaviscantibus, fl. gilvo Dill. Hort. Elth. ii. 396. t. 295. f. 380 (misprinted f. 238 by Linn.).—Shr. or subarborecent, Mad. reg. 1, 2, 3; PS. reg. 1, 2, r. Seacliffs and in the whole maritime region of Mad. on the S. coast up to a height of about 1200 ft. everywhere in waste rocky places, especially about Funchal; not observed in the north; in PS. only here and there, to the W. of the town, in the Serra de Fora and Serra de Dentro. Fl. May–July; fr. July–Sept.—Usually about 6 ft. high, of a dull gr., approaching more or less to glaucous, but seldom decidedly so; st. and older branches ashy-brown rudely cylindric, sometimes as thick as a man's thigh. Joints hard or firm stiff thick flat and even, 9–18 in. long or more, 4–6 in. broad, ½ in. thick, obtusely oblanceolate or spatulate, always more or less elongate.
and attenuated to the base. Spines scanty feeble short weak and slender, and except from their whiteness subinconspicuous, $\frac{1}{4}$-$\frac{3}{4}$ in., rarely quite 1 inch, long, though sometimes in hot exposed situations or on dwarf stunted pl. and especially on strong vigorous young joints thrown out from the base of the old st. they are more developed both in length and quantity,—single, or even in luxuriantly growing pl. none at all on the disk or middle of the joints, and for the most part only 2-3- sometimes 4-5- rarely 6-fascicled towards or at their edges, more or less divaricate or deflexed, at first pale yellowish or straw-colour, but very soon bleaching into almost pure opake w., except at their tip and base, which remain subpellucid strawcolour or yellowish. The less copiously and shorter-spined state of the pl. passes so gradually into the more spinous, and is indeed often so transitory in the same individual, that although it has been mistaken for *O. monacantha* Willd. by one botanist of the highest eminence, and distinguished by Webb as a var. $\beta$, I cannot even follow the latter. It is indeed perhaps rather the more normal or at least usual form of the sp., especially as seen in cultivation, though Webb makes it var. $\beta$ of the more spinous form, his $\alpha$. But nothing can be more inconstant: not only the same pl. at different periods, but even different parts of the same pl. at the same period, exhibiting both the sparingly and copiously spined states. The spines, whether single or 2- or 3-5- or 6-fascicled, spring from thick tufts of pale yellowish or tawny-y. bristles (setae) 2 or 3 lines long, like those of the fr., and equally penetrating and caducous on the slightest touch, leaving a short dense grey or whitish cottony wart or knob. They are renewed annually, even on the older joints, at the usual time of growth or flower-season, when an additional spine or two is also commonly put forth. Close below each tuft of bristles on the quite young fresh-developed joints is a small inconspicuous subulate fleshy *Sediform* 1. 2-4 or 5 lines long, which almost immediately withers and falls off, and then the spines are developed in or close above its axils. Pl. diurnal scentless rather large conspicuous, 2 in. in diam., produced most abundantly from the edges of the terminal joints, of a peculiar dull orange- or flame-red i.e. between orange-red and dark wax or honey-colour, appearing clearer orange-y. by transmitted light; basket- or cup-shaped without any tube. Pet. erect or erecto-patent, set like a crown on the top alone or rim of ov., imbricate, the outer shorter and smaller with a broad green fleshy midrib at the back, or gr. altogether, the inner 1-$\frac{1}{2}$ in. long, 1 in. broad, ovate or oval retuse or notched, often sublacerate. Stam. much shorter than pet.; outer fil. pale or., inner pink; anth. pale y. Style as long as stam. pink upwards, pale much swollen towards and again contracted at the base, fistulose throughout; stigmas 7 or 8 pale yellowish erect connivent into a close sub-
globose head slightly overtopping the anthers. Ov. inversely clavate or turbinate naked but with thick tufts of short fine y.-tawny bristles with pencils of stronger and longer projecting from them, arranged quincuncially or spirally, rugged or uneven and often plicate towards the base; ovules numerous, attached to the sides of ov. by short funicles. Fr. when ripe light apple-gr. or yellowish-gr., 2-3 in. long, 1½-2 broad, oblong-ovoidal subturbinate or a little contracted at the base, truncate and concave or cupped at top, even and scentless; pale greenish-w. or whitish within like a gooseberry, with brown or yellowish specks and stains, and small flattened round hard bony dusky-brown or or. seeds dispersed through the whole fleshy pulp, which is very melting cool and juicy, and though at first seldom relished as insipid, not ungrateful to the palate, possessing a flavour of cucumber or burnet (Poterium) combined with a very slight taste of melon in addition to its pleasant watery sweetness. In a bad feverish cold I have experienced its refreshing gratefulness and benefit. The collectors of the fr., on gathering them with a small sickle or pruning-hook (podão), at once clear them of their treacherous tufts of setae by rubbing them strongly on the ground with the soles of their bare feet, which are too hard-skinned to suffer from the operation. In eating, the outer rind is adroitly split lengthwise and carved off, and the fleshy coherent pulp turned out whole and entire as from a case.

The deciduous fine short subtile pungent yet fragile bristles of the fr. or younger joints, if carelessly touched or handled, immediately penetrate the skin, insinuating themselves gradually even through the clothes; and being at once minute, fragile and transparent, are very difficult to extract, causing no small annoyance.

Any change of col. in the fl. of this pl. is a most rare and exceptional anomaly. Such variation has however occurred to me twice in Mad. in the course of 25 or 30 years, and once in the Canaries amidst myriads of pl. with fl. of the normal col. In Mad., April 10th 1837, a pl. a little below the Fort at the Louros on the Canico road near Funchal bore on the same branch with others of the usual col. a single fl. of a bright clear y., with merely a few streaks on the outer pet. or sep. of the usual dull or.-red, and which seen apart might have been taken for a fl. of O. vulgaris Mill. (Cactus Opuntia L.). Again, June 11th 1847, on the path from S. Martinho down to the Praia formosa, I found a pl. amidst a bed of others of the common dull red-fld. sort, with several fl. of a uniform bright lemon-y.
And again once in Palma, one of the Canaries, above the village of Argual on the W. coast or La Banda, in the first week in June 1858, I saw a few y. fl. on a single pl. amongst a profusion of others of the normal colour. But these instances are far too rare to depreciate at all the diagnostic value of the proper dull or.-red hue of the fl., and are rather analogous to the occasional occurrence of a white Sparrow, Crow, or Blackbird, or, still more in point, of the Mad. white-fld. var. of the Common Broom (Sarothamnus scoparius (L.)) supra p. 123; though they may serve to put botanists or rather horticulturists on their guard against deception by such accidental and merely temporary aberrations; for these variations in this Opuntia do not seem to be permanent for even two years in succession.

In like manner an odd untimely fr. occurs occasionally in Mad. here and there in early spring or winter, produced from a late autumnal fl., which acquires, before dropping off shrivelled and juiceless without attaining proper ripeness though full-sized, a purplish-red or madder-colour: whereas the properly matured fr. in its season (July–Sept.) is uniformly more or less pale apple-gr. or yellowish without the slightest tinge, outside or inside, of red or purple.

This is the only sp. employed in the Canaries for raising Cochineal. It had existed however universally in all the islands long previous to the introduction of the insect, or at least to its becoming an article of commercial importance,—a condition indeed of not more than 30 or 40 years' standing. It is recorded by Webb i. 209, and his account was confirmed to myself upon the spot, that the first introduction of the insect was violently opposed by the country-people, especially at Guimar in Tenerife, on the ground of its rendering the "Tuneras" or pl. of Opuntia barren, and injuring the crops of their favourite fr., called "Figos," which are even now much used in Fuerteventura and Lanzarote both fresh and dried.

Attempts have been made lately very zealously and carefully in Mad. to cultivate the Cochineal on this pl.; but they have all proved wholly unsuccessful, mainly from the difficulty of preserving or obtaining, when lost, in a remote island, fresh "seed" (young insects) to restock the pl. annually.

Webb, writing probably from memory after leaving the
Canaries, has singularly confused and misunderstood the two sp. common in those islands: one of which, and by far the most universal and abundant, is exactly the present pl. First, he reverses the col. of their fl., calling them “lutei” in the more widely diffused glaucescent less copiously and more shortly w.-or pale-spined very common sort with dull or.-red fl. and ovoidal truncate widely umbilicated gr. fruit,—and “sordide flavi” (and the fr. “late umbilicati”) in the more specially littoral greener thickly or copiously spinous long and slender y.-spined sp. with bright sulphur or lemon-y. fl. and pear-shaped more narrowly umbilicated purple fr. And secondly, he almost more strangely mistakes or inverts their names and syn.; calling “O. Ficus-indica L.” the first, which, by its pale or whitish mostly short and scanty spines, gr. truncated ovoidal fr. and dull orange-red or flame-col. fl., is the common Mad. pl. and assuredly the true Cactus Tuna of Linnaeus, clearly identified by his reference to Dill. Elth. 396. t. 295. f. 380 (errore typ. quoted f. 238); and referring the second—which by the very numerous long slender y. spines, short rounded joints, the pear-like form, purple flesh and tinging properties mentioned by him of its fr., and by the pure pale lemon- or sulphur-y. fl. mostly uniform in tint, but occasionally (as observed in Lanzarote) tinged or streaked outside with reddish, is as clearly Dillenius’s next sp. at p. 398. t. 296. f. 382—to “Opuntia Tuna Mill.” or Cactus Tuna L.

With such confused ideas or recollections of the two pl. themselves, the synonymy and notices of the Linnaean and other sp. in the Phytogr. Can. are necessarily full of errors. Yet Linnaeus had clearly enough defined his C. Ficus indica by the words “spinis setaceis” as being entirely devoid of thorns, which he terms “spinae subulatae”; and although his synonyms of C. Tuna plainly comprehend two sp., viz. Dillenius’s f. 380, “Tuna major &c. fl. gilvo,” and Sloane’s t. 224. f. 1, “Opuntia major &c. fl. luteo,” yet his diagnosis, by the words “articulis ovato-oblongis,” refers to the former rather than the latter, which is described by Sloane “folio” (i.e. articulis) “oblongo-rotundo,” and which moreover, by his following words “spinis longis et validissimis confertim nascentibus obsito, fl. luteo” and by the distinctly elongate-pear-shaped “purple” fr. attenuated downwards, is very distinct from the pl. of the Hort.
Eltham. 396. t. 295. f. 380 and clearly synonymous with the Dillenian pl. at p. 398. t. 296. f. 382,—a sp. not taken up by Linneus and partly confounded by him with his O. Tuna, but which is certainly at once the O. Dillenii (Ker) and the Canarian littoral copiously long and slender y.-spined y.-flid. pl. with purple pear-shaped fr., miscalled by Webb "O. Tuna Mill," and of which the diagnosis and correct synonymy stand thus:

O. Dillenii (Ker); spinosissima, pallide glauco-virens subhumilis, artic. subabbreviatissimis latiusculis rotundato-obovatis ovalibus lat. ¼—¾ longitudinis aequante, spinis subulatis flavidos longis tenuibus validis confertis horridissima; fl. luteis v. sulphureis extus sœpe rutilis v. rubescentibus, fr. elongato-pyriformibus purpureis.—Cactus Dillenii Ker in Bot. Reg. iv. t. 255. Opuntia Dillenii Haw. Suppl. 79; DC. iii. 472; Wight Ill. Ind. Bot. ii. 50. t. 114 (outer pet. with a red midrib, as occasionally in the Canaries). Opuntia Tuna WB. i. 209 (not O. Tuna Mill. or Cactus Tuna L.). O. amycalea Ten. Fl. Nap. iv. 270. t. 236; DC. iii. 474. Cactus Opuntia var. C. (text), C. Opuntia tuna (plate) DC. Pl. Gr. t. 138 (not Opuntia Tuna DC. Prodr. iii. 472. n. 13). Opuntia major, folio oblongo-rotundo, spinis longis et validissimis confertim nascentibus obsito, flore luteo, Sloane Hist. ii. 149. t. 224. f. 1.—Hab. in sicissimis apricis littoralibus Ins. Canariensium vulg.—Approaches nearest to O. nigricans (Haw.) = Cactus Tuna γ. nigricans BM. t. 1557, but differs notably by its shorter and broader more rounded joints which are mostly much less and never more than twice as long as broad, y. spines and sulphur or lemon-y. fl. It is called in G. Canary Tunera da India; and though not otherwise employed in raising Cochineal, the long (1-2 in.) and very slender spines are used generally in the Canaries for affixing the rags impregnated with the young insect brood to the plants of the true O. Tuna L. The fr. is scarcely eaten. I have never seen this sp. either wild or cult. in Mad.

Cactus coccinillifer (or on the plates cochenillifer) of DC. Pl. Gr. tt. 137 (two pl., viz. fl. and fr.) is referred by DC. himself, but obviously by mistake and under the wrong name of Cactus Opuntia Tuna in Prodr. iii. 472, to O. monacantha Willd., from which it is totally distinct by its tufted or many-fascicled rather short
OPUNTIA. 319

spines and pale-red fl. It is with more probability asserted by Sir W. J. Hooker in BM. tt. 2741, 2742, as before by Haworth (Syn. 188), to be the Cactus Tuna L. (not DC. Pl. Gr.); but I am extremely doubtful of its precise identity with that sp. as here restricted and defined, on account of the very numerous spines in each fascicle and the purple or madder-red fr.; though it may just possibly have been some unusually spinose cult. form of it with the fr. unnaturally coloured as it occurs sometimes out of season in the Mad. pl.

Cactus Opuntia C. (inscribed on the plate C. Opuntia tuna)
DC. Pl. Gr. 138 has the spines on the whole too long and numerous for the common Mad. and Can. pl., with moreover pale lemon-y. fl. stained or streaked outside with reddish, and the fr. described as "rouge." The joints agree in shape with those of the true O. Tuna L., but their glaucous tint cannot be relied upon, being the common col. in the work resulting from gr. colour-printing. It is remarkable that in his Prodr. DC. does not refer at all, not even under his Opuntia Tuna, to this figure. And on the whole, notwithstanding its reference in BM. t. 3911 to the present sp. O. Tuna (L.) and by Haworth (Syn. 189) to his O. nigricans, I must rather consider it to belong to O. Dil-lenii (Ker).

Other sp. of Opuntia occasionally seen in gardens in or about Funchal arc—1. O. cylindrica (Lam.) DC. iii. 471; BM. 3301; habit of a Cereus, st. cylindric suberect only here and there branched, arculado-tuberculose not jointed, spines setiform feeble 2- or 3-5- or 6-fascicled, fl. red rather small.—2. O. bra-siliensis (Willd.) Haw. Suppl. 79; DC. iii. 474; BM. 3293; st. erect virgate terete, spines strong long numerous subsolitary on the somewhat thin and sinuated joints, fl. y., fr. y.—3. O. monacantha (Willd.) Haw. Suppl. 81; Ker in Bot. Reg. 20. t. 1726; DC. Prodr. iii. 472. no. 15 (excl. syn. "DC. Pl. Gr. n. 137 cum tab. 2," quoted as "Cactus Opuntia Tuna," but called in Pl. Gr. 1. c. Cactus coccinillifer or on the plate cochenillifer); with large thin waved or flaccid full grass-gr. almost stalked oblong-lanceolate or elliptic joints 2-4 times as long as broad armed with very long strong slender spines 1½-3 in. long, solitary or in pairs, naked at their base, rather small golden-y. fl., the outer pet. red or streaked with red outside, and copious longish pear-shaped fr. dull ruddy red or purplish on the upper side till ripe, and then pale apple-gr. or yellowish tinged with reddish.—4. O. vulgaris Mill. Haw. Syn. 190; DC. iii. 474; BM. 2393; st. low diffuse, spines 0, fl. y., fr. purple.—5. O. microdasys Lehm., with rather small stiff ob-
ovate or oval joints, without spines, but elegantly and regularly thick-set with short dense tufts of conspicuous golden setae, plain lemon-y. fl. and gr. fr., &c.

†††3. Pereskia Plum.

† † †1. P. aculeata Mill. Barbadoes Gooseberry.

St. climbing sarmentose the younger branches armed with short axillary deflexed prickles, the older with fascicles of long straight slender spines; l. oblong-ovate subacuminate; fl. in terminal panicles pale greenish-w. ; fr. small globose y. crowned with some of the stiff leafy sep.—Haw. Syn. 198 ; DC. iii. 474. Cactus Pereskia L.—Shr. per. Mad. reg. 1, §. Arbours and walls in gardens in and about Funchal. Fl. Aug., Sept.; fr. (rarely perfected) Jan.—June.—A climbing shr. without any of the habit of a Cactus, with long weak slender straggling branches forming a thick entangled mass or canopy on walls or arbours of evergreen somewhat thick or fleshy foliage; the whole quite smooth except the buds which are a little woolly or hairy. L. alternate 2–3 in. long 1–2 in. broad veinless rounded or slightly cordate at the base acuminate whilst young. Prickles of young branches in pairs or solitary divericate deciduous. Spines of st. or older branches in large bundles on the old axillary knobs or spurs, 1–2 in. long. Fl. in large terminal leafy racemose panicles, 1–1½ in. in diam., like little semidouble roses or those of Calycanthus praecox L., deliciously fragrant like Primroses or Cows-lips. Fr. the size of a gooseberry amber-y. naked i.e. without scales or bristles, with 2–4 rather large seeds surrounded with a mucilaginous pulp not unpleasant to the taste. In Tenerife at Sta Cruz I found it in the little public walk or Alameda by the sea loaded in Feb. with ripe fr., which, under the idea of its poisonous nature, had been suffered thus to remain untouched. Seeing that I survived however the supposed rash experiment of eating the ripe berries, the rising generation of the town soon took courage; and to such effect, that in a few days I could no longer find a single berry for myself.

Rhipsalis salicornioides Haw. Suppl. 83, BM. 2461, is also occasionally seen in gardens.

Ribisaceæ or Grossulariaceæ are very feebly represented in Mad. by a few Gooseberry and Current bushes (Ribes Grossularia L. and R. rubra L.), cult. scarcely below 2000 ft.; the former principally about the Jardim da Serra, producing plenty of fr., which however mostly shrivels up without properly ripening or acquiring any flavour, and which is therefore only sold in its unripe state under the name of Uvas Ingleses to the English in Funchal in Apr. or May; the latter producing at most only a few miserable bunches.
The Houseleek Family.

Fl. regular mostly perfect. Cal. persistent; sep. 3–20, mostly 5 often fleshy more or less united at the base, imbricate or subvalvate in bud. Pet. as many as and alternate with the sep., free or connected downwards, inserted at base of sep. Stam. as many or twice as many as the pet. and inserted with them. A ring of hypogynous glands or scales (abortive stam.) between the pet. and carpels. Ov. free; carpels as many as and opposite the pet., free or sometimes partially connected downwards, each produced into a short persistent simple style. Fr. of 3–20 one-celled many- (rarely 2-) seeded follicles bursting by a cleft or slit mostly at their inner suture, to which their minute seeds are attached. Alb. little or none. Embryo straight.—Succulent herbs or shr. with fleshy l. and no stip. Fl. mostly cymose w. or y., sometimes red or reddish, opening centrifugally.

1. TILLÆA. Sep. pet. stam. and carp. 3–4. Pet. free distinct. Hypogynous scales very small or 0. Carp. 2-seeded contracted between the seeds.—Minute inconspicuous moss-like herbs with opposite l. and axillary fl.

2. UMBILICUS. Sep. 5. Pet. 5 cohering into a tubular-campanulate cor., with straight erect acute lobes. Stam. 10 affixed to the sides of the cor. Hypogynous scales 5 obtuse. Carp. 5 many-seeded.—Herbs with ann. fl.-st. and radical tufts of l. alternate on the st. Fl. w. or y. in simple or branched erect rac.

3. SEDUM. Sep. and pet. 5, rarely 4 or 6–8, the latter altogether free distinct. Stam. mostly twice as many, sometimes only as many. Hypogynous scales simple notched retuse or lunate. Carp. as many as pet. many-seeded.—Herb or shr. L. often round or fusiform. Fl. cymose w. pale purplish or flesh-col. and y.

4. SEMPERVIVUM. Sep. 6–20 rarely 5. Pet. as many, connate at the base and with the stam. which are twice as many. Hypogynous scales various, palmate or simple and in the latter case notched retuse or lunate, sometimes 0. Carpels as many as pet. many-seeded.—Herbs or shr. L. flat or flattened. Fl. cymose mostly y., sometimes w. or flesh-col.; cymes mostly paniculate often corymbose.

1. TILLÆA L.

1. T. MUSCOSA L.

St. procumbent or ascending branched and flowering from the base tufted; fl. axillary sessile trimerous.—Brot. i. 124; EB.
t. 116; Sm. E. Fl. i. 242; DC. iii. 381; ejusd. Pl. Gr. t. 73; WB. i. 175; Koch 282; Seub. Fl. Azor. 42. no. 302; Bab. 125.
—Herb. ann. Mad. reg. 1, 3, r. About Funchal on the walls and in the bed of the Rib. de Sta Luzia between the 2nd and 3rd bridges from the sea near the Bom Jezus; and also near the top of the Pico da Silva (about 3500 ft.), Sr. J. M. Moniz. Febr.–July.
—An extremely minute insignificant pi., somewhat resembling Paronychia echinata (L.) in miniature, and covering walls or barren sunny spots with its often yellowish or reddish moss-like herbage. Whole pi. smooth. St. round slender filiform 1–2 in. long, prostrate and often rooting near the base. L. very small fleshy elliptic-oblong lanceolate or even linear mostly aristato-acuminate, the lower only obtuse, at first in pairs or opposite and connate at the base, afterwards thickly fascicled at the joints of the main branches, which thus become crowdedly whorled and spicate towards their ends. Fl. very small axillary all up the st. on the little short abortive side shoots which form the axillary fascicles of l. and so appearing crowded or agglomerate, sessile or shortly stalked trimerous; sep. aristate-acuminate gr. or reddish; pet. very minute narrow acute w. or flesh-colour.

I feel by no means certain that on closer study and examination on the spot (I describe only from dried spec.) this may not prove distinct from the sp. to which I have referred it. In foliage it agrees better with Bulliarda (Tillaea L.) aquatica of DC. and Koch; but the fl. are certainly only trimerous,—I can detect in them no “linear scales,”—and the carpels are not “polyspermy.” This inconspicuous little moss-like pi. had escaped all observation till discovered by Sr. Moniz in 1860. From the remoteness, especially in elevation, of the two localities above indicated, it will probably be found more generally diffused, now that it has once been noticed.

2. UMBILICUS DC.

Navelwort.

1. U. PENDULINUS DC. Inhame de Galatixa.

Root–l. peltate concave repandly crenate; br. entire; fl. pale y.–gr. inconspicuous mostly pendulous or drooping; throat contracted, segments short ovate, stam. 10 included.—DC. iii. 400; WB. i. 177; Koch 291; Seub. Fl. Azor. 42. no. 303. Cotyledon Umbilicus (β. L.), EB. t. 325; Brot. ii. 203; Sm. E. Fl. ii. 314; Buch 196. no. 359; Bab. 128.—Herb. per. Mad. reg. 1,2,3, 4, ccc; PS. reg. 4, rrr. Walls and rocks in Mad. everywhere. Pico da
UMBILICUS.

Cabrita at the head of the Serra de Dentro in Porto Santo. Apr.–June.—A most variable pl. in size and characters. Root fleshy tuberous. L. chiefly radical of a somewhat dull leaden-gr., fleshy soft and flaccid, more or less deeply and widely crenate, 1-1 1/2 in. in diam., round or roundish-reniform, mostly peltate and more or less concave and umbilicate or even funnel-shaped, sometimes rounded or orbicular-cordate and cut down to the always long round fleshy footstalk. Stem-l. broadly obovate or spathulate, the upper sessile. Fl.-st. single 2-12 or even 18 in. high, stiffly erect and straight. Rac. either simple constituting var. β. peltatus DC. 1. c., or in finer pl. more frequently branched below with upright or adpressed branchlets: but these are forms dependent merely on the greater or less luxuriance of the pl. Fl. pentamerous small and inconspicuous of a pale dull greenish-y. very numerous in long erect leafy rac. crowded upwards, interspersed with sessile leafy deciduous lanceolate oblong or linear bracts, which are mostly entire but sometimes crenate-toothed. Tube of cor. oblong or slightly barrel-shaped about 4 times as long as the short ovate acute sep. and about twice as long as broad; lobes straight erect broadly half-ovate and acute or subcordate and apiculate, about 4 length of tube. Stam. 10 in a double row, short, all included. The fl., especially the lower, are usually pendulous, but the upper and sometimes all nearly or quite erect; the length of their pedicels being very variable. The lower l. and br. mostly wither and disappear before the expansion of the upper fl. of the rac. Varr.:

a. fl. distinctly stalked and pendulous.—U. pendulinus DC. &c., 1. c.

β. fl. nearly sessile spreading or erect.—U. horizontalis DC. 1. c. (Cotyledon horizontalis Guss., Ten.) ? Schmidt Fl. Cap. Verd. 258.—A not uncommon but trifling and quite inconstant aberration from the normal state a, by no means worth recording as a distinct var. Plants of it, possessing the further characteristics of more deeply cut less peltate l. and without a tuberous root, growing abundantly on dry rocks near the Waterfall at the head of the Rib. de Sta Luzia, acquired within six weeks when planted in my garden at the Valle, Funchal, a large tuberous root and drooping fl.: nothing but the l. remaining to distinguish them from the ordinary state a. of the species. The Portalegre and Marvão chestnut-wood var. prealta mentioned by Brot. 1. c. p. 204, Obs. 1, needs investigation, but was more probably this state of the sp. than, as Webb surmises, U. luteus (Huds.).
**39. CRASSULACEAE.**

**3. SEDUM.**

Stonecrop.

* Leaves subcylindric.

† St. creeping. Fl. w. or flesh-colour.


Smooth, mealy-whitish; st. cespitose creeping, suffrutescent and naked at the base, sparingly branched; 1. crowded and imbricated upwards in 4–6 rows short subcylindric-oblong, flattened above and beneath, very obtuse, gibbously free at the base; cyme 2–3-partite; fl. unilateral subsessile; pet. 5 lanceolate slightly mucronate; hypogynous glands shortly wedge-shaped truncate or retuse.—Prim. 31.—Herb. per. Mad. reg. 3, 4, 5. Dry woods and rocky banks between Pico Grande and the Encumeado de S. Vicente, all round the top of the Paul da Serra, Boca das Torrinhas at the top of the Lombo Grande and all the range of mountains at the head of the Boa Ventura, upper part of the Rib. da Metade, &c., but not found further than the Póusos to the E., or anywhere much below 3000 ft. June–Aug.—Forming a turf of a glaucous or mealy-white appearance turning reddish in dry places; with creeping st. running amongst other herbage, 6–12 in. long, throwing out roots downwards, the ends ascending. L. about ½ in. long scarcely ¼ in. broad like grains of rice in size and shape, pale glaucous gr. and mealy with their tips often red. Cymes mostly 2-fid rarely 3- or more-parted, the branches recurvedly spreading with a single fl. in the forks. Fl. white or inclining to red nearly sessile on one side of the divisions of the cyme stellate ½ in. in diam. Sep. fleshy gr. acute. Pet. constantly 5, ½–¾ in. long, half as wide, white with the nerve outside often red. Hypog. scales short broader than long dark purple or red. Stam. 10 a little shorter than the pet., 5 spreading horizontally and lying on the pet., 5 alternate more erect. Fil. w. or reddish. Anth. very dark purple almost black, the pollen at first very pale greenish-y. Ov. w. or reddish, each produced into a long slender point or beak. Caps. beaked turning deep red as they advance towards maturity.

†† St. shrubby. Fl. y.


Smooth very dwarfish bushy; branches crowded numerous tortuous intricate naked downwards; 1. cylindric-oblong or subclavate very short and obtuse; cymes few-fl.; pet. 5 narrow lanceolate; hypog. scales shortly spathulate distinctly notched.—DC. Pl. Gr. t. 155; DC. iii. 409; Buch! 197. no. 361; Haw. Syn.
117. *S. suffruticosum* Sol. MSS.? — Shr. per. Mad. reg. 1, cc; PS. reg. 4, $\frac{7}{2}$; GD. rr. Seacliffs everywhere on both the S. and N. coasts of Mad.: e.g., to the E. of Funchal, especially beyond Machico; to the W., especially at Paul do Mar, P\textsuperscript{10} do Pargo, &c.; in the N. at S. Vicente, St\textsuperscript{a} Anna, Fayal, at Larana near Porto da Cruz, &c. In P\textsuperscript{10} St\textsuperscript{a} on the rocky summits of Pico d'Anna Ferreira, P. do Concelho, P. Branco, and in the Serra de Dentro. July–Sept. — A small bushy pl. 3 or 4 in. high or rarely so much as 5 or 6 in., with very much branched interlacing stiff shrubby naked pale or whitish branches forming a compact thick tufted head. L. towards the ends only of the branches, mostly bright full gr., occasionally pale or glaucous, $\frac{1}{2}-\frac{3}{4}$ in. long very obtuse sometimes clavate and a little flattened above. Fl. small greenish-y. inconspicuous in small mostly 3- or 4- sometimes 7-10-fld. cymes. Sep. thick fleshy ovate obtuse. Pet. greenish outside with a gr. nerve. Stam. 10 rather shorter than the pet.; anthers small purplish or brownish-y. Hypog. scales distinctly notched or almost bifid, remarkable for their or.-y. colour and thick or waxy appearance. Ov. large fleshy gr. triquetrous ending in a short simple style.


Smooth dwarfish bushy glaucous; branches crowded numerous mostly tortuous naked downwards; 1. lax spreading fusiform or thick in the middle and attenuated at both ends, somewhat acute and flattened above; cymes few-fld.; pet. 5 ovate-lanceolate slightly obtuse; hypog. scales very short lunate.—Prim. 31 (Cam. Phil. Tr. iv. t. 3. ff. 1, 2).—Shr. per. Mad. reg. 1, rr. Seacliffs on dry sunny rocks; W. of Funchal, on the Pico do Rancho above Camera de Lobos, and at the further or W. end of the top of the Cabo Girão; also E. of Funchal a little on the Funchal side of the Brazen Head, Sr. J. M. Moniz, 1858. July–Sept. — An altogether larger stouter pl. than *S. nudum* Ait. 5 or 6 in. high, with more lax spreading 1. of a pale dull Bluish-grey or glaucous colour $\frac{1}{2}-\frac{3}{4}$ in. long and 1-2 lines thick in their broadest part or middle. Whole pl. perfectly smooth. Branches pale brown or greyish forked. L. most attenuated from their middle upwards, less so and a little thickened though not spurred at their base, sessile but free; flattened or even sometimes slightly channelled above with often a dull reddish-purple or dark stripe down the middle, rounded and convex or tumid beneath. Fl. larger and brighter y. than in *S. nudum* Ait. in about 5-10-fld. terminal cymes. Sep. 5 ovate-lanceolate acute fleshy gr. with often reddish edges. Pet. greenish-y. mottled or spotted towards the base inside with red. Stam. 5 rather shorter than the pet. and attached a little way up them, spreading wide open with the pet. Hypog. scales sessile very short and not visible without pulling down the pet., distinctly lunate.
Ov. large y.-gr. often with minute red specks at their base, produced into the short obtuse converging stigmas.

4. SEMPERVIVUM L.

Houseleek.


1. S. DIVARICATUM (Ait.).

Herb. ann. or subbiennial mostly altogether smooth and shining; st. ascending then erect stiffly fork-branched bushy corymbose; l. distinctly and abruptly stalked, broadly rhomboidal or rhomboidally oval or obovate minutely retuse shortly and abruptly wedge-shaped at the base flat not thick or fleshy, dark full gr., forming before flowering a somewhat loose flat disk or rosette, afterwards scattered and caducous; fl. very numerous rather small in repeatedly forked cymes forming a broad close crowded fork-branched corymbose panicle; pet. 6-8 mostly 6 or 7 narrow-lanceolate twice the length of the sep.; hypog. glands distinctly stalked abruptly palmate or cuneate-clavate mostly 4-6- or 7-fid subbilobed or bipartite with a subelongate wedge-shaped stalk.—Herb. ann. or partly bien. Mad. on trunks of Laurels, rocks, and walls abundantly, chiefly above 2000 ft.—Varr.:

a. polita; wholly smooth.—Sedum divaricatum Sol. i in BH; Ait. H. K. (ed. 1) ii. 105; Buch! 197. no. 360. Anacampseros divaricata Haw. Syn. 113. Sempervivum arboreum Sol. i in BH; Buch! 197. no. 363 (not Linn.). —Mad. cc. Rib. Frio, de S'a Luzia, da Metade, de S. Jorge, da Janella, at S. Vicente, P'to da Cruz, &c. June–Aug.—A very variable pl. in size and luxuriance though not at all in aspect or habit, ranging from 1 or 2 in. to 1 or even 2 ft. in height. St. always horizontal quite at the base, then abruptly curved upwards and erect, varying from the thickness of a crowquill to that of the little finger, hard and stiff but rather fleshy than woody, very smooth even and shining, of a dark green or brownish olive colour, soon forking repeatedly into a flat-topped leafy head and with the branches and l. also becoming (especially in β.) dull reddish or dark madder-col. L. very smooth and shining dark full gr. nearly as broad as long, ½-1 in. in diam. rhomboidal with rounded angles, abruptly and shortly attenuated into distinct stalks, notched mostly at the tip, scattered on the st. and branches, soon falling off the former and main branches, flat succulent, not very thick or fleshy. Fl. very numerous crowded small, 3–4 lines in diam., bright-y., in close broad flat-topped forked panicles 2–6 in. in
Cymes repeatedly forked racemose with slender branches. Pedic. rather long (1/3-3 lines) fine and slender. Sep. 7, rarely 6 or 8, linear-lanceolate somewhat thick and fleshy quite smooth, erect and closely connivent after fl. Pet. 7, rarely 6 or 8, mostly about twice as long as sep., narrow-lanceolate acute spreading; rather pale golden-y., quite smooth and with a greenish midrib at the back; 1-2 lines long and half as broad. Stam. twice as many as pet. and about as long, but unequal, and sometimes only 10-12 in number. Hypog. scales irregularly palmate with a more or less broadly wedge-shaped flattened stalk, the head mostly bilobed and always cleft irregularly into several (2-8) short blunt unequal spreading or divergent branches, not always in one plane, resembling a *Clavaria* in miniature. Styles capitate divergent in fl., afterwards erect and more or less convergent.

*B. pubescens*; branchlets and l. of cyme pedic. and cal. minutely glandular-puberulous sprinkled with longer wide-spread hairs.—Mad. r.; Rib. Frio occasionally with a; Seixal abundant. May, June.—In habit foliage and fl. agrees perfectly with a, but is almost always of a bright full madder-red col., coming into fl. a little earlier and soon passing over. Hypog. glands abruptly capitate-palmate the broadly flattened unequally 4-8-fid subbilobed head set on like a hammer or abruptly contracted into the distinct flattened oblong (not attenuated) stalk. This var. or state of the sp. may be easily mistaken for *S. dumosum*, but is distinguishable by its broad level-topped many-fl. crowded panicle, its somewhat smaller fl. and broadly rhomboidal abruptly stalked l. It abounds at Seixal 200-500 ft. above the sea on walls and rocks by the roadsides in May and June, becoming gradually smoother and later-flowering every 100 ft. of higher elevation till it passes completely into a.

This is a perfectly distinct sp. apparently from *S. aizoides* Lam., DC. iii. 411 (*Sedum aizoides* DC. PI. Grass. t. 4), which by the fig. and description is a permanently shrubby pl. with the more lanceolate l. crowded in tufts or rosettes towards the ends of the naked woody branches and larger more golden-y. ("6-8-" or by the fig. mostly 9-petalous) fl. in a smallish racemose cyme.

*S. divaricatum* makes its first appearance in Mad. soon after the first autumnal rains, continuing through the winter flowerless in its discoidal leafy state till May or June; first beginning to flower rather later than *S. villosum* Ait. and perishing entirely in the ensuing autumn after once flowering. Cult. in an English greenhouse it is always bi- and sometimes tri-ennial, flowering 2 or 3 years in succession: yet retaining all along the
truly herbaceous (not woody or frutescent) aspect of its st. and branches, and acquiring nothing whatever of the peculiar habit and appearance of Sedum aizoides DC. Pl. Grasses t. 4.

2. S. DUMOSUM Lowe.

Herb. ann. or subbiennial glandular-puberulous at least upwards; st. mostly erect from the base, irregularly fork-branched and sometimes bushy, rarely corymbose; l. attenuately stalked spathulate or narrow-ovato-lanceolate obtuse notched at the tip, much attenuated at the base into the petiole, concave or slightly channeled, quite entire, somewhat thick and fleshy pale subglau- crous, before flowering erecto-imbricate not forming a flat disk or rosette, afterwards scattered and caducous; fl. rather large not numerous in short distinct once-forked cymes forming a bushy leafy fork-branched by no means constantly corymbose or close and crowded panicle; pedic., cal., br. and upper l. glanduloso-puberulous; pet. 6–8, mostly 7, lanceolate rather more than twice the length of sep.; hypog. glands subsessile broadly and shortly cuneate-palmate mostly multifid and subbilobed with a very short broad stalk.—Herb. ann. Mad. reg. 2, rrr. On the side of a mountain peak or ridge 1000–1200 ft. above but overlooking the sea on the upper road from Magdalena to the Arco, at a place on the crest of the ridge between the two, called Os Mó- ledos, amongst heaps or beds of bare loose rocky fragments and on walls. March–May.—Habit tree-like but only from 3 or 4 to 12 or 15 in. high with a regular naked trunk-like st. (1–2½ lines in diam.) and erectly branched head; normally hapaxanthous and only by chance more than ann. St. and branches erect thickish and succulent, robust round firm or hard and stiff but fleshy-looking, naked downwards but scarred and a little rugged with the raised marks of the fallen l., shining dark madder-red or reddish-purple, always minutely glanduloso-puberulous upwards and sometimes the same downwards, while young leafy all the way up, the l. falling as the fl. advance. St. mostly erect quite from the base, but sometimes a little curved at the bottom and rooting from the lower leaf-scars. Whole pl. finely glandular-pubescent smoother (sometimes quite smooth) downwards. Foliage altogether finer and l. narrower and longer than in S. divaricatum, neither collected into terminal tufts, nor forming a single flat disk or rosette before fl., but loosely imbricated all up the st. from the first, flat but concave above and somewhat thick and fleshy, shining and apparently smooth, but the upper at least, and sometimes the lower also, minutely glanduloso-puberulous; in shape spathulate or narrow-lanceo- late with the tip obtuse notched and recurved, gradually attenuated downwards into the long channeled stalk, with the disk slightly concave, from ¼–1 in. long, and 1½–2 or 3 (rarely
4 or 5) lines broad, of a peculiar pale glaucescence gr. turning as the fl. advance red or purple, and presently falling off from both st. and lower parts of the branches. Inflorescence usually more like that of *Sedum nudum* Ait. than that of *S. divaricatum*, the fl.-branches erect forked leafy forming a loose not always close level-topped or corymbose panicle, the cymes distinct and terminal very rarely more than once-forked, the forks short 4- or 5- to 9- or 10-fld. with the fl. not crowded, larger and of a darker or fuller golden-y. than in *S. divaricatum*, but smaller though darker y. also than in *S. villosum*; the whole panicle glandulose-puberulous in all its parts. Pedicels 2-3 or 4 lines long. Sep. not quite 1 line or 2 millim. long, narrow-lanceolate, dark gr., united into a cup-shaped base in depth equalling their length. Fl. 4-6 lines in diam., mostly 5. Pet. mostly 7 sometimes 6 or 8, lanceolate finely acute stellately spreading or reflexed, 2 lines or 4-5 millim. long; 2 millim. broad, bright golden-y., the midrib outside reddish. Hypog. glands golden-y. or deep orange shortly and broadly stalked flattened subcuneato-palmate as broad as long obscurely and irregularly subbilobed, each lobe unequally 2-4- or 5-fid. Stam. 12-16 a little shorter than the pet. Styles and ov. as many as and colour of the pet. smooth.

In drying this pl. stains the paper with bright greenish-violet and red or purple spots. My first acquaintance with it is due to Sr. J. M. Moniz, who in March 1861 showed me flowering examples of it in his garden which had been brought to him from Magdalena by a countryman. Till the present spring (1863), when I discovered its exact locality, it had remained imperfectly characterized. In season it is considerably earlier than the other Mad. *Semperviva*, losing its l. and passing out of fl. when *S. villosum* Ait. in its neighbourhood, at a lower elevation, is first coming in. And though assuredly not more than ann. and hapaxanthous normally in Mad., it has so much of a suffruticulose form or habit, that it might perhaps in cultivation or other favourable circumstances become suffrutescent or at least, like its near ally *S. divaricatum* Ait., subperennial.

The Canarian *S. tortuosum* Ait. (BM. t. 296), if correctly figured and described, must be very distinct from *S. dumosum* by its decidedly per. woody or frutescent habit, short thick Sediform or gibbous l. (by the fig. 3-4 lines long X 2-3 broad) crowded in tufts at the ends of the naked "tortuous" widely divaricate or declining branches, and simply "bilobed," not palmately fimbriate (4-10- or many-cleft and only obscurely or irregularly
2-lobed), hypog. glands. (See also Haw. Syn. 166 and Rev. p. 66.) From this, however, *S. tortuosum* DC. Prodr. iii. 411 and Pl. Grass. t. 156 slightly differs, approaching somewhat more to *S. dumosum*, by the larger more loosely tufted l. "11-12 lin. longa, 4–5 lata:” and *Aichryson tortuosum* WB. i. 184, with digitato-fimbriate or fimbriately subbilobed hypog. scales or glands ("squamis digitato-fimbriatis aut subbilobis, lobis fimbriatis"), exactly as in *S. dumosum*, seems to approach still nearer the Mad. pl.; though, like the pl. of Curtis and DC., still differing entirely in habit, viz. "caule fruticoso decumbente contorto" WB. l. c.

3. *S. villosum* Ait.

Herb. ann. dwarfish thickly villous-pubescent glandular-viscid hoary; st. ascending then erect, bushy and corymbose at top; l. distinctly and abruptly stalked broadly rhomboidal obtuse, shortly wedgeshaped or subcordate at the base, quite entire flat pale hoary-gr. densely villous, at first forming a loose flat rosette, afterwards scattered and caducous; fl. rather large and numerous in few-fld. short crowded once-forked cymes forming a close leafy bushy corymbose broad panicle; pedic. cal. br. and fl.-l. villous; pet. 6–9 mostly 8 lanceolate 2–3 times the length of sep.; hypog. glands distinctly stalked subclavate or narrowly palmate mostly 3–5-fid subbilobed with a narrow-oblong stalk.—Sol. ! in BH.; Ait. ! H. K. (ed. 1) ii. 148; BM. t. 1809; Buch! 197. no. 365; Spr. ii. 469 (not Haw. or Lindl.). *S. stellatum* Sm. Tr. Linn. Soc. i. 251; Haw. Syn. 166, Rev. 66; DC. iii. 412.—Herb. ann. Mad. reg. 1, 2, 3, c.; PS. reg. 3, 2; GD. reg. 2, r. Dry rocks and walls especially in the north, and in all the principal ravines, e. g. Rib. de Sª Luzia, Rib. Frio, dos Cayados, &c. In Pto Stª on N. side of Pico d'Anna Ferreira. Apr.–July.—A small low bushy dwarf herb. pl., mostly 3 or 4, rarely 6 or 8 in. high, coming into fl. as *S. dumosum* is going out, hoary-greyish or often reddish and all over villous-hairy, the hairs rather long and spreading whitish more or less glutinous or glandular. St. single almost always strongly curved at the base or ascending, then erect, hard, stiff, 1–3 lines in diam., round, simple, branched corymbose and bushy upwards, clothed with a few scattered soon-falling l. L. at first, but for a very short time, forming a flattish somewhat loose rosette, then scattered on the st. and panicle, soon falling and leaving the st. naked, hoary dull or pale gr., mostly like the whole pl. bright reddish, smaller but in shape like those of *S. divaricatum*, abruptly rhomboidal with rounded angles, 4–10 or 12 lines broad, somewhat shorter in length, subcordately and abruptly cuneate at the base, with the petiole distinct 2–12 or 15 lines long. Fl. with rather long and
slender pedic. large and numerous in proportion to the size of the pl., about \( \frac{3}{4} \) in. in diam., full golden-y., yet somewhat paler though certainly rather larger than in \( \textit{S. dumosum} \), forming a conspicuous handsome more or less corymbose leafy panicle. Pet. mostly 8, often 7 or 9, sometimes 6, lanceolate, sometimes in the first-opening fl. ovate, finely hair-pointed spreading or recurved, \( 2\frac{1}{2} \) lines or 5 mill. long, 1-1\( \frac{1}{4} \) line broad. Hypog. glands orange mostly somewhat distinctly bipartite or bilobed, one lobe or the other unequally 2-3- or even 4-fid, rarely simple, perhaps more clavate than palmate i. e. higher or longer than broad, yet flattened with a distinct narrow-oblong rather than wedge-shaped stalk. Stam. 12-18 much shorter than the pet. Styles and ov. mostly as many as and y. like the pet., smooth and shining.—On immersion in hot water this sp. gives out a peculiar fishy disagreeable smell a little like scalded codlin apples.

\( \textit{S. villosum} \) Haw., Buch Canar. and DC. Prodr. iii. 411, is supposed to be \( \textit{S. (Aichryson) radicescens} \) Webb Phyt. Can. i. 183. And \( \textit{S. villosum} \) Lindl. Bot. Reg. 18. t. 1553 is \( \textit{S. (\textit{Aeonium}) Lindleyi} \) Webb Phyt. Can. i. 189. t. 33.

\( \textit{S. villosum} \) Ait. has never been found in the Canaries, unless the imperfectly known \( \textit{S. pygmaeus} \) Chr. Sm. (Aichryson \( \textit{WB. i. 184} \)) may be supposed to be a starved or depauperated state of it. But a very similar and closely allied sp., intermediate between the true Mad. pl. and the Can. \( \textit{S. punctatum} \) Chr. Sm., represents it plentifully in Gomera (\( \textit{S. subvillosum} \) Lowe), differing \( \textit{primâ facie} \) in its gr. merely subpubescent not hoary villous aspect. It is Bourgeau's "\( \textit{Pl. Can. no. 443, Aichr. villosum} \) Webb, Ins. Gomera, Degollada de San Sebastian Apr. 1845," and also probably his "\( \textit{no. 1277, Aichr. immaculatum} \) Webb MSS. Teneriffæ, Baxamar; ex itin. 2\( \textit{do} \) 1855," in BH. and HH. I found it abundantly on rocky banks up the valley of S. Sebastian in Gomera, 2 or 3 miles above the town, in Febr. 1858 and Apr. 1861. It seems to have been mixed up by Webb formerly with \( \textit{S. punctatum} \), to which it approaches indeed very closely. In the Banksian Herb. I have also found two spec. of the Gomeran \( \textit{S. subvillosum} \) on a sheet marked "1 Madera Fr. Masson 1776." The sheet contains 5 spec.; the three middle ones being true \( \textit{S. villosum} \) Ait., and the 2 outer on the right and left \( \textit{S. subvillosum} \). Thus the latter may possibly prove to be also a Mad. pl.; though from another instance of probably similar confusion of Mad. and Can. spec. in the case of
Ranunculus cortusæfolius Willd. mentioned supra p. 4, it cannot be conclusively affirmed from this mixture in BH. of the two sp. on one sheet so to be. It will be better, however, under the circumstances, to subjoin the diagnosis of S. subvillosum:

S. herb. ann. s. hapaxanthum pusillum glandulosæ-puberulum, caule tenui e basi erecto nudo deorsum glabro sursum paniculatim laxe dichotomo-ramoso; fol. rhomboïdea v. spathulatís basi in petiolum cuneato-attenuatis sparsís caduís glabriusculis lucidis viridulis margine integro epunetato; fl. majoris laxis aereis plerumque longissime pedicellatis; paniculæ laxe foliis subplicatis ramulis magnis patentibus v. deflexis tenuibus flexuosissimis pedicellisque bracteis glandulosâ-puberulis; pet. 8–10 ovato-lanceolatis sepala duplo excrescentibus; squamis hypog. palmato-fimbriatis.—Aichryson villosum Bourg. ! (non Webb) Pl. Can. no. 443 (non Semperv. villosum alior.) et Aich. immaculatum Webb MSS. ejusd. ! no. 1277 (ex itin. 2a) in BH. et III.—Pl. 2–4 v. 5 poll. alta tenuis pusilla, inter S. villosum Ait. et S. punctatum C. Sm. quasi media, buie propior. Variat caule omnino ramisque deorsum foliisque omnibus glabris.—Hab. in convalle St. Sebastian Ins. Can. Gomeras sat. vulg.

§ 2. Patinaría Lowe. Herb. or suffr. bienn. or subper., nearly or quite stemless and unbranched except in fl. L. imbricate in close rosettes. Fl. y. Hypog. glands simple notched retuse or lunate.

4. S. GLANDULOSUM Ait. Ensaíao de Pastu or Pastinha.

Herb. bienn. once-flowering more or less glandular-pubescent mostly viscid, stemless before fl.; 1. rhomboidal-spathulate or obovate-ligulate inconspicuously or irregularly fringed with short subremote often clavate or capitate subcartilagineous cilia, bright gr. closely imbricate in a flat or discoidal sessile radical rosette lasting till the appearance of the single central succulent branched fl.-stem; fl. large and numerous in 2–3-cleft cymes on rather long lax spreading or declining stalks or branches forming a large thick or close subcorymbose panicle; pedic. cal. br. and floral 1. glandular-pubescent; pet. 10–15 mostly 11–13 lanceolat. hypog. glands shortly spathulate or wedgeshaped retuse.—Ait. Hort. Kew. (ed. 1) ii. 148; Haw. Syn. 166; Buch 197. no. 366; DC. iii. 411. S. glandulosum and S. tabulæforme Holl in J. Bot. i. 21 (not S. tabulæforme Haw.). S. patina Lowe MSS. obim.—Herb. 2–3-ennial Mad. reg. 1, 2, 3, ccc; PS. reg. 1, 4, 5; GD. reg. 1, 5. Seacills and perpendicular rocks, sides of ravines, walls, &c. everywhere in Mad. especially in the north. P[2] S[3] sparingly, on the N. coast, at P[2] dos Frades, and on the principal rocky peaks, P. do Facho, do Castello, de Juliana, &c. July, Aug.—Root slender long tortuous and wiry striking deep
into the crevices or fissures of bare subcolumnar walls of basalt rock on which it chiefly loves to grow. St. none or very short and conical, the whole pl. consisting of a single sessile radical flat or slightly concave orbicular disk or rosette of horizontally and regularly imbricated close-pressed l., from 3 or 4 to 12 or more in. in diam., like a plate or shallow saucer and of a bright full not at all glaucous gr. L. very closely and compactly imbricated, gradually enlarging from the centre, fleshy, very variable in degree of pubescence and viscosity, ranging from scarcely more than puberulous to velvety-pubescent, minutely downy on both sides but especially beneath, the hairs often viscid, and the edges sometimes regularly sometimes scarcely perceptibly or only here and there ciliate with distinct or subremote short white subpellucid somewhat cartilaginous mostly capitate or clavate glands or setulae, mostly viscid more or less all over and not particularly at the margins; the outer spathulate-wedgeshaped, very obtuse or truncate and retuse with a small point; the inner rhomboidal-wedgeshaped or broadly ovate. When about to flower (in June), the central l. rise into a little mamilliform cup, and the pl. assumes exactly the appearance of a cup and saucer. As the low short bushy fl.-stem rises from the centre of this cup, all the l. become presently flaccid and loosely deflexed, falling off altogether as the fl. advance. The fl.-stem grows very rapidly, and within a month or six weeks from its first appearance the whole pl. dries up and perishes. It is very rarely but still occasionally slobiferous, producing one or two globose leaf-bulbs or offsets on short strings or runners from below the leaf-disk. Fl.-stem short rarely more than 6 or 8 in. high thick fleshy and with its branches pale straw or flesh-colour, the whole glandulose-pubescent almost villous. Corymb candelabrum large and bushy with numerous long spreading or declining naked side-branches, each ending in a cymose panicle. Fl. secund large and handsome, of a rather pale golden-y. in Mad., of a fuller darker y., tinged outside with red, in P° S°. Pet. mostly 12 or 13 rarely 15, rather short 4 lines long, 1½ broad, lanceolate or ovate-lanceolate acute. Stam. in a double row about ¾ length of pet.; anth., pollen and fil. bright y. Hypog. glands y. broadly spathulate or wedgeshaped retuse rather than notched.

When the sun shines hot upon a rock or cliff covered with these pl., they fill the air with a delicious balsamic fragrance like that of ripe nectarines or peaches.

Though erroneously described originally in HK. as “frutescent,” and though no authentic spec. remains to verify the reference, the more exact identification of the other Mad. and Can. sp. within the last few years almost necessitates the recognition of S. glandulosum Ait. in this most abundant and uni-
It is true that Solander’s restriction of his “S. glandulosum” to a single Mad. locality, “Paul do Mar in muris—affinis S. canariensi” (MS. list of Mad. pl.), is difficult to be explained: but it is still harder to suppose that he or Masson could have overlooked a pl. so common, striking and peculiar as the present sp., for which however S. glandulosum is the only name (except indeed the still more obscure “paniculatum”) remaining unappropriated on his list of Mad. Semperviva. And although De Candolle’s very restrictive comparison of S. ciliatum Willd. with S. glandulosum (Mém. ii. sur les Crassul. p. 59) seems quite opposed to the identity of the latter (sensu Candolleano) with my pl., and although, again, S. glandulosum Haw. Rev. 65 (not Syn. 166) with “fimbriated” hypog. glands was also probably something different,—still the original sp. of Aiton was, I can doubt no longer, founded principally if not solely on the common Mad. pl. to which I have assigned it.

S. tabula-forme Haw. Suppl. 69, Rev. 63, a strictly Can. pl., has been often confused with the present, having been first set down by Haworth and then by DC. (Prodr. iii. 412) erroneously as a Mad. sp. It is however easily distinguished by the remarkably long and regular pectinate close-set fringes of the l.; and it is indeed an altogether larger pl., differing no less by its more distinct sometimes (at least in cultivation) once- or twice-branched subperennial suffrutescent st. bearing often 2 or 3 rosettes, than by its perfectly smooth l. elegantly and regularly fringed with long close-set soft white cartilaginous simple cilia. Though entirely omitted by Webb, it occurs in vast profusion on the N.W. coast of Tenerife along the seacliff road from Realejo to S. Juan de la Rambla, and also beyond Icod de los Viños on the road to Garrachico, with a few pl. intermixed here and there of the true Mad. S. glandulosum, which has equally escaped the observation of Webb and other botanists as a Canarian pl.

The principal indigenous Mad. Semperviva curiously correspond with several of the Can. sp. Thus the Mad. S. divaricatum, villosum, glutinosum and glandulosum represent both in habit and abundance the Can. S. punctatum DC., subvillosum Lowe, canariense L. and tabula-forme Haw., all except S. glandulosum being strictly confined to their respective group of islands.
§ 3. *Æonium* Webb. Shr. branched per. L. in lax terminal rosettes. Fl. y. or pale gr. Hypog. glands simple transversely oblong notched or toothed.

5. *S. glutinosum* Ait. *Ensaião* or *Ensayão.*

Smooth suffruticose, branches few decumbent straggling naked downwards, viscid as if varnished; l. terminal loosely aggregate spathulate or rhomboidally wedgeshaped with a short abrupt point, clammy shining, indistinctly cartilaginously ciliate; fl. in remote forked spreading cymes disposed in a terminal large loose straggling leafy panicle with long distant spreading or declining branches; pet. 8–11 mostly 9 or 10 lanceolate; hypog. scales short broad subbilobed and notched or eroso-crenulate.—Sol. ! in BH.; Ait. ! H. K. (ed. 1) ii. 147; Jacq. Hort. Schoenbr. iv. 32. t. 464; Haw. Syn. 165; BM. t. 1963; Buch! 197. no. 367; DC. iii. 411; Bot. Reg. t. 278; Tr. Linn. Soc. 16. pp. 396–398. *S. canariense* Sol. ! in BH. a prima manu; Buch! 197. no. 364 (not Linn.).—Shr. per. Mad. reg. 1, 2, 3, ccc. Seaciffs and perpendicular dry rocks in ravines, &c. everywhere up to a height of 5000 feet. June–Sept.—A per. herbaceous pl. becoming shrubby, with few remote thick stout decumbent or ascending straggling reddish or chestnut-coloured branches 1–2 ft. long, minutely puberulous and leafy towards the ends, naked and woody downwards and especially in summer viscid as if varnished. L. smooth in loose crowded terminal tufts, 1½–4½ in. long and 1–2 in. broad towards the end, broadly spathulate and rounded upwards with an abrupt short more or less recurved point, attenuated downwards, flat but thick and fleshy, bright yellowish full gr., viscid and shining but less so than the younger branches; the cilia at their edges short thickish and irregular or inconspicuous. Panicle from the centre of the terminal tufts of l., about a foot long, sparingly and remotely branched, with a single deciduous l. at each division, its branches extremely glutinous as if coated with fresh moist varnish, shining and brightly tinged with red or purple, at first compact, but soon becoming loose and straggling with few remote horizontal or drooping branches. Fl. orange or golden-y. Sep. as many as pet. united halfway up into a cyathiform or cup-like base, their segm. short broadly triangular or half-ovate fleshy. Pet. mostly 9 or 10 lanceolate acute 5 mill. long, 2 broad, bright y. internally, with mostly a bright red or ruddy streak at the back, which disappears on immersion in hot water. Stam. about as long as pet. Hypog. scales broader than high subbilobed with a single faint notch or minutely and irregularly toothed or crenulate.

The bruised l. and juice are esteemed efficacious in outward or internal injuries from bruises, falls, &c. But a more important use of the pl. consists in its employment by the fishermen
to harden or stiffen and at the same time strengthen and preserve their lines. For this purpose a large quantity of the plant being collected, the bark of the stems is stripped off, and pounded small in a large rude mortar. The fishing-lines are then stretched out and rubbed well backwards and forwards for some time with handfuls of the pounded bark, and steeped afterwards in some alkaline liquid. The viscous resin has no doubt the chief efficacy in this process, acting mechanically like wax on thread. The result is the imparting of stiffness, strength and durability to the lines, which are also rendered black and shining by the operation. See Trans. of Linn. Soc. i. c.

In Lanzarote Semp. (Æonium) balsamiferum WB. is used by the fishermen, under the name of Alfarroba or Farroba, for the same purpose. See WB. i. 192, 193, with a note on the derivation of the word Ensayão.

This sp. has never yet been found in the Canaries. On the other hand the common Can. true S. canariense L. is certainly not found in Mad., though young vigorous large-leaved pl. of S. glutinosum Ait. before fl. have much resemblance to it in habit and general aspect. The mistake of including S. canariense L. in the Mad. lists originated from Solander having so named prima manu an undoubted Mad. spec. from Masson (Madera Fr. Masson 1776 in rupibus) of S. glutinosum. This indeed he or Mr. Brown afterwards corrected; erasing the words “canariense Linn.” and writing “glutinosum MSS.” over them. Still he has certainly enumerated in his MS. List of Maderan Semperviva S. canariense L. as well as S. glutinosum, which last he appears also to have once called bituminosum and which is perfectly identified, even in this list, by the word “Insayam” in brackets appended. He has however still one name, “S. paniculatum,” in this list for which I am quite unable to account*, and can only suppose it (for there is no clue beside the name whatever for its exact identification) possibly to stand for the true S. arboreum L.; his spec. marked “Semperv. arboreum Linn. Sp. Pl. 664, Madera” in BH., being certainly merely a vigorous young pl. of his own Sedum divaricatum.

* Semperv. dumosum supra would have been called a Sedum by Solander.
S. arboreum L. "Saião" Broth.

Smooth, not viscid, fruticose and even tree-like, with stout subumbellate erect straight very smooth and even regularly quinuncially scarred branches; l. in disk-like terminal rosettes narrow lanceolate-cuneate or acutely spathulate, elongate and much attenuated downwards, shortly and minutely but closely ciliate upwards; cymes in terminal compact close half-oval or oblong obtuse thyrsoidal heads or panicles; pet. 9–12 linear-lanceolate; hypog. glands shortly and broadly wedgeshaped notched or bilobed and minutely toothed.—Desf. i. 389; Broth. ii. 378; Spr. ii. 468; DC. Pl. Grass. t. 125 and 125*; DC. iii. 411; Bot. Reg. 2. t. 99; Haw. Syn. 164, Rev. 63; Fl. Gr. t. 473 (not Buch's Mad. List). S. paniculatum Sol. MS. in BH. P—Shr. per. Mad. reg. 1, cult. or half-naturalized, r. On the tops of walls and roofs of houses here and there in Funchal, growing spontaneously, but merely as a straggler or outcast from gardens, and certainly not indig. in Mad. Apr.–June.—A small sparingly but proliferously branched erect dwarf tree-like shr., 2 or 3 ft. high, with a distinct st. and stout stiff naked very round and even upright branches as thick as the little finger, fleshy and somewhat thickened upwards, pale brown very smooth but regularly scarred quinuncially below the terminal rosettes or disks of flat and rather thin but fleshy very shining bright gr. 1., which are 2–3½ in. long and only 6–8 lines broad towards their end. Fl. bright clear y. in thick close terminal oval or oblong thyrs-like bunches 6–12 in. long; at first short and pyramidal but lengthening out as the fl. expand. Branches of thyrs, pedic., br. and cal. very minutely glanduloso- or furfuraceo-puberulous. Upper l. and br. lanceolate deciduous. Sep. ovate-lanceolate. Pet. mostly 12; stam. twice as many; ov. and styles 9 or 10. Hypog. glands short truncate broadly wedgeshaped notched or bilobed, the lobes very minutely eroso-denticulate.

A spec. in BH., marked "Semperv. arboreum Linn. Sp. Pl. 664 Madera," collected by Banks and Solander, is assuredly not S. arboreum L., but a vigorous young pl., first beginning to branch before flowering, of S. divaricatum (Ait.). This was however doubtless the sole original authority for S. arboreum of both Solander's and Buch's Mad. Lists.

Though unrecorded as indigenous in the Phytogr. Can., and merely referred to by Webb as a northern precursor of the Macaronian sp. (WB. i. 185), I have met with Semp. arboreum L. abundantly and apparently quite wild in two or three islands of the Can. Archipelago: viz. Tenerife up the Barranco de Martínez about a mile above the Montaña del Orco near Orotava,
in vast profusion on the wild rocky cliffs of the ravine; in Lanzarote in beds of *Opuntia Tuna* L. at a village called El Valle on the middle road from Arecife to Aria at least perfectly naturalized; and again, as I believe, in Hierro, and beyond all doubt quite wild, on the lofty wooded cliffs up the road called Las Vueltas above La Casa Blanca in El Golfo, though I have not entirely assured myself of the identity of the Hierran pl. with those from Tenerife and Lanzarote.

Order XL. SAXIFRAGACEÆ.

The Saxifrage Family.

Fl. mostly perfect regular. Cal. 4–5-cleft inferior or superior persistent imbricate in bud. Pet. 4–5 very rarely 0. Stam. 4 or 5–8 or 10 free perigynous or hypogynous. Ovary of 2 coherent many-ovulate carpels. Styles 2 (rarely 3–5) persistent. Fr. a 2–1-celled many-seeded capsule, bursting at the inner suture. Embryo axile with fleshy albumen.—Shr. or herbs mostly per. and alpine with w., p. or y. (rarely b.) scentless fl., rarely shr. or tr. L. without stip. alternate or opposite.

Tribe I. HYDRANGEÆ.

The Hydrangea Tribe.

Shr. with opposite simple undivided 1. Fl. 5-pet. 10-androus 2–5-styled corymbose, the outer and sometimes nearly all often sterile or abortive with enlarged coloured petal-like cal.-teeth or sep. Fr. a 2–5-celled caps. or berry.

1. HYDRANGEA. Fl. mostly of two kinds, fertile and abortive. Cal.-tube semiglobose 10-ribbed subtruncate adnate to the ov., limb 5-toothed persistent. Pet. regular. Styles 2. Caps. 2-celled with inflexed valves, many-seeded. Seeds reticulate.—Barren fl. with cal.-teeth large dilated and coloured or petal-like, the true pet. and other parts remaining abortive.

Tribe II. SAXIFRAGEÆ.

The Saxifrage Tribe.

Herbs mostly alpine with alternate very rarely opposite lobed or divided 1. Fl. 5-pet. 10-androus 2-styled racemose or pani- cled rarely single, all fertile. Fr. a 2-carpelld caps.
HYDRANGEA.

2. SAXIFRAGA. Cal. 5-fid or 5-partite more or less united to the ov. or free. Pet. 5. Stam. 10 rarely 5. Caps. 2-celled 2-beaked opening by a pore between the beaks.—Herbs per. or ann. Fl. corymbose.

Tribe I. Hydrangeae.

1. HYDRANGEA L.

+++1. H. hortensis Sm.

L. ovate or oval acute serrulate and with the branches wholly smooth and shining; corymbs large globose; abortive fl. very numerous crowded, with the enlarged cal.-lobes rounded and quite entire; fertile very few 2–3-styled.—Smith Ic. Pict. i. t. 12; H. Hortensia DC. iv. 15. Hortensia opuloides Lam. Enc. iii. 136. H. speciosa Pers. Syn. 505. Primula mutabilis Lour. Coch. i. 127. Viburnum serratum aut V. tomentosum Thunb.?—Shr. per. Mad. reg. 2, cult. cc. The Mount, Camaxa, S’to Anto da Serra, Mexico, P’to da Cruz, S’ta Anna, S. Vicente, &c., common as a fence about houses and gardens, above 1000 ft. July–Oct.—A low shr. branched from the base 2–4 or 5 ft. high wholly smooth with stiff straight thickish hollow or pithy branches and habit altogether of a Viburnum. L. 3–5 in. long, 2–4 broad, coarsely ribbed dark or full gr. very shining deciduous. Fl. in vast globose crowded heads, of a peculiar copperas-blue, very rarely in Mad. pink or rose. At a distance large masses of the pl. in fl. seen near the ridge of a mountain-slope look like gaps or holes through the hill-side with the blue sky beyond. The almost constant blue of the fl. in Mad. is doubtless attributable to the prevalence of iron-oxide in the soil.

Almost every one at first sight, deceived like Thunberg by its resemblance to Viburnum and especially to V. Opulus L. β. stérilis (the common Snowball-tr. or Guelder-rose), would refer Hortensia to Caprifoliaceae rather than to Saxifragaceae. Yet is the resemblance to the former more apparent than real: for the sterile radiant fl. of Hydrangea hortensis owe their size and beauty to the monstrous enlargement of the cal.-lobes or sep., whilst in V. Opulus β. the same effect is produced by development of the pet. And the difference from the latter is one at most of habit and foliage,—owing in great measure to partial or confined ideas of Saxifragaceae from acquaintance only with the European normal type Saxifraga,—whilst the fl. and fr. are essentially Saxifragaceous.
Tribe II. Saxifragae.

2. Saxifraga L.

Sect. Dactyloides Tausch. Per. with decumbent barren shoots; fl. panicled, fl.-st. leafy, sep. erect or spreading, superior.

1. S. maderensis Don.

Cespitose rigid viscid all over as if varnished; st. short suffrutescent ascending or decumbent densely leafy; l. crowded on long stalks, the lower reniformly subquinto-palmatifid, the lobes subtrifid, teeth acute half-ovate or triangular; upper l. trifid or entire and lanceolate; fl.-st. short leafy mostly glandular-pubescent upwards, about 5-fld.; sep. half-inferior ovate or ovate-lanceolate acute; pet. oblong-spathulate 2–3 times as long as sep.—Don “in Tr. Linn. Soc. xiii. 114”; Spr. ii. 371; DC. iv. 30. S. geranioides Buch 197. no. 362 (not Linn., Host, &c.).—Herb. per. Mad. reg. 3, 4, |; PS. reg. 4, r. Craggy rocks all along the Caminho central from the Primeira Vista do Curral to the Encumeada; Curral das Freiras on both sides; Rib. de Sta Luzia near the Waterfall and in all the principal Ravines in the north of the Island; at Pd do Pargo on a bank below the Church, &c. In PS. on the craggy top of Pico do Facho, P. do Castello, &c. Apr.–June.—Forming usually large thick beds or spreading tufts, rarely solitary, very stiff and glutinous in almost all its parts, as if varnished, like Semperv. glutinosum Ait. and with a resinous fragrance like the buds of the Horse Chestnut (Æsculus Hippocastanum L.) in early spring. The whole pi., as Haller says of Ger. lucidum L., “amat rubescere”; the petioles, fl.-st., edges of l. and often their whole surface turning at least in withering bright red. St. 2–4 in. long almost shr. downwards hard and stiff thickly clothed with old dried l. or petioles. L. crowded upwards dark full gr. quite smooth but clammy, somewhat fleshy, stiff or brittle, roundedly or sub-reniformly palmatifid more or less cuneate ¼–1 in. broad or long, 4–9 lines long or broad, faintly 3-nerved, coarsely and unequally cut into 5–10 (mostly about 14) acute teeth in sets of 3 or 5, the middle set always 3-toothed, the 2 side lobes often 2-toothed. Petioles 1–1½ in. long flattened dilated at their base and sometimes slightly fringed or puberulous, smooth upwards and often so altogether, though always very clammy. Fl.-st. slender about 2 in. high red shining varnished and clammy smooth below, upwards with the ped. more or less glandular-pubescent, bearing at top a loose subcorymbose panicle of 3–7 (mostly about 5, rarely 1 or 2) conspicuous pure w. fl. St.-l. rather distant, the upper simple lanceolate or linear. Fl. large and elegant, in size and aspect much like those of S. granulata L. Cal. united to the ov. halfway up, less pubescent than the pedic. and upper part of fl.-st., sometimes quite smooth always viscid, sep. short
41. UMBELLACEÆ.

(1½ line long) in fl., rather longer in fr., a little shorter than the cal.-tube, fleshy stiff erecto-patent nearly or quite smooth. Pet. inserted at the top of cal.-tube pure w. with 3 faint gr. nerves at base, oval or slightly obovate-oblong or spatulate, 2–3 times the length of sep., 3–4 lines long, 2 lines broad. Styles divaricate nearly smooth; stigmas clavate downy. Caps, globosely half-ovate. Seeds extremely minute ellipsoidal mucronulate at one end, dark reddish-brown roughly granulate.

*Saxifraga granulata* L. was reported to the late Dr. C. Lemann by his sister to have been once observed by her on rocks by the road (Caminho central) along the brink of the Curral between the Jardim and Pico Grande, close to the remains of the first of the houses of refuge formerly built for travellers in remote and dangerous passes of the mountains by the late Robert Page, Esq. I have repeatedly searched (as Dr. Lemann had before me) in vain on and about the spot for the pl. in question; and I cannot doubt, which was also Dr. Lemann's own conviction, that either some detached pl. of *S. maderensis*, or possibly of *Arabis albida* Stev., or *Cerastium vagans* Lowe, had been mistaken for it, all three being found plentifully at or about the place.

Order XLI. UMBELLACEÆ.

Fl. umbellate mostly regular and perfect. Cal. adherent to ov. 5-toothed or entire, the teeth rim or border often obsolete. Pet. 5 inserted at top of cal.-tube imbricate or involute in bud and notched with an inflexed middle lobe or point, the outer sometimes enlarged and radiant. Stam. 5 free alternate and inserted with the pet., incurved in bud. Ov. inferior adnate to the cal.-tube, 2-celled, cells each 1-ovulate. Styles 2 persistent more or less thickened at the base into a fleshy cone or disk (stylopod). Fr. dry of 2 one-seeded indehiscent carpels (*mericarps*) coated by the cal. and adhering by their inner face (*commissure*) to a bifid or bipartite axis (*carpophore*) from the base of which they finally separate upwards remaining suspended or pendulous from its top. Seed single pendulous adnate to the pericarp rarely free consisting almost entirely of albumen. Embryo minute at top of the large horny alb.—Herb. or suffr. resinously aromatic pl. with alternate l. dilated and sheathing at their base and mostly more or less decompoundly pinnatifid. Fl. in twice-compound umbels (with or without general and partial bracts or involucres) small, mostly w., rarely y. p. or purplish. Styles and carpels one outside the other with respect to the centre of each partial or secondary umbel. Fr. aromatic; carpels each with 5 stronger (*primary*) ribs and often 4 intermediate (*secondary*) ribs or striae, having longitudinal linear
resin-glands \((vittae)\) imbedded in the substance of the pericarp or on the surface of the seed alternating mostly with the primary ribs and on the commissure.

**Suborder I. Orthospermæ.**

Seed (albumen) flat or convex (not grooved) on the inner (commissural) side or face. (Umbels compound or perfect in all the Mad. sp.)

§. *Fr. with primary ribs only* (except in *Œanathe*). Ribs of each carpel (*mericarp*) 5, 3 dorsal, 2 lateral or marginal.

**Tribe I. **AMMINEÆ.

The Parsley Tribe.

*Fr. laterally compressed or didymous*, the transverse section oval-oblong or 8-shaped.

1. **APiUM.** Cal.-rim obsolete. Pet. roundish entire with a short simple inflexed lobe or point. Stylopod flattened depressed. *Fr. roundish-ovoidal didymous; ribs filiform equal, the dorsal with single alternating vittæ, the lateral with 2 or 3. Carpophore entire.—Inv. general and partial o.


3. **Helosciadium.** Cal.-rim minutely 5-toothed or obsolete. Pet. ovate acute entire with the tip simple straight or scarcely incurved. Stylopod pulvinate flattened lobed. *Fr. ovoid or oblong; ribs filiform prominent equal with single alternating vittæ. Carpoph. free entire.


5. **Bunium.** Cal.-rim obsolete. Pet. obovate with a somewhat large or produced inflexed lobe. Stylopod conic or pulvinate. *Fr. oblong; ribs filiform with 1-3 alternating vittæ. Carpoph. free bifid at top.

6. **Bupleurum.** Cal.-rim obsolete. Pet. roundish entire with a strongly involute broad retuse lobe. Stylopod de-
pressed broad flat dilated. Fr. subdidymous compressed; ribs winged or sharply filiform or obsolete with or without 1–3 alternating vittae. Carpoph. free bipartite.—L. simple. Fl. y.

Tribe II. SESELINEÆ.

The Fennel Tribe.

Fr. round or roundish, its transverse section more or less circular or o-like.

7. (ENANTHE. Cal.-rim 5-toothed enlarged in fr. Pet. obcordate with an inflexed narrow lobe. Stylopod tumid. Fr. ovoid-oblong or ellipsoidal crowned with the erect elongated styles; carp. spongy or corky towards the commissure or suture, ribs simple rounded or obtuse, 3 dorsal, the 2 lateral remote; with 4 secondary intermediate striae and single alternating vittæ. Carpoph. indistinct.

8. (FÆNICICULUM. Cal.-rim tumid obsolete. Pet. roundish entire involute with a broad squarish reute inflexed lobe. Stylopod conic or globose. Fr. cylindric-oblong or ovoidal crowned with the very short erect styles, its transverse section somewhat circular or broadly oval; ribs equal prominent sharp simple with single alternating dorsal vittæ but without intermediate striae. Carpoph. bipartite.—L. finely decompound. Fl. y. Inv. o.

9. (CHRITHMUM. Cal.-rim obsolete. Pet. entire roundish-ovate or elliptical involute with a ligulate lacinula. Stylopod conic. Fr. oblong-ovoidal or elliptical rounded fungose or spongy; ribs sharp prominent scarcely winged, the 2 lateral or marginal strongest or broadest. Carpoph. obsolete. Seed free loose many-vittate.—L. fleshy.

Tribe III. PEUCEDANEÆ.

Fr. much compressed or flattened dorsally, winged all round on each side at the margin, wing single.

10. IMPERATORIA. Cal.-rim obsolete. Pet. obovate or obcordate with an involute lacinula. Stylopod conic. Fr. broadly or roundly oval, with a thin broad dilated simple wing or border; ribs equidistant, 3 dorsal filiform, 2 lateral more obsolete each at base of wing, with single alternating vittæ. Carpoph. free bipartite.—Said to differ from Peucedanum only in the obsolete i.e. very obsolescently 5-toothed cal.-rim.
§§. Fr. with both primary and secondary ribs.

Tribe IV. SILERINEÆ.

Fr. more or less lenticularly compressed dorsally, not winged; ribs all apterous, the secondary sometimes obsolete.

11. Krubera. Cal.-rim 5-toothed. Pet. roundish-ovovate or obcordate notched with an inflexed point. Stylopod large and tumid. Fr. elliptic-oval thickish; primary ribs thick obtuse strongly cancellated and crenately plicate on their sides, the 2 lateral broader tumid; secondary 0. Vittæ 0. Carpoph. bifid.

Tribe V. THAPSIEÆ.

Fr. compressed and flattened dorsally, or sometimes roundish; 3 dorsal primary ribs simple, 2 lateral hidden on the commissural face; secondary 4, the 2 outer or all 4 winged or dilated.


13. Monizia. Cal.-rim distinctly 5-toothed. Pet. distinctly fringed and pubescent elliptic-oblong entire with an inflexed ligulate lacinula. Stylopod large tumid depresso-pulvinate. Fr. elliptic-oblong flattened many-ribbed with a tumid dilated corky rim or border; ribs all (except the commissural) thickened obtuse corky or spongy; primary, 3 dorsal and 2 commissural on each mericarp; secondary, 2 dorsal and 2 lateral marginal, the 2 latter very large thick tumid and obtuse. Vittæ 2 dorsal and 2 lateral beneath the secondary ribs and 2 very broad commissural. Carpoph. bipartite. Seed flattened.—Stemless or shortly and thickly caespitose suffrutiaceous per. pl. with a large terminal crown of finely decompound fern-like smooth and shining foliage and branched central umbel-panicle.

Tribe VI. DAUCINEÆ.

Fr. more or less compressed dorsally; 3 dorsal primary ribs obsolete filiform shortly setulose, 2 lateral hidden on the com-
missural face; 4 secondary stronger more prominent prickly-winged or ciliate-setose in a single row.

14. DAUCUS. Cal. 5-toothed. Pet. obovate notched with an inflexed acute lacinula, the outer often radiant unequally bifid. Stylopod tumid depresso-pulvinate. Fr. ovate oval or oblong; 3 primary dorsal ribs filiform setulose, secondary (4) more prominent equal with a single row of prickles or bristles more or less connate at the base into a wing and a single vitta beneath each. Carpoph. free entire bifid or bipartite.—Herbs mostly bienn. with decompound finely divided 1. and mostly a large fleshy blackish-purple sterile centre-fl. or abortive partial umbel in the middle of the main umbel. Rays of umbel numerous mostly incurved in fr. Inv. gen. and partial many pinnatifid.

SUBORDER II. CAMPYLOSPERMÆ.

Seed (albumen) longitudinally grooved or furrowed on the inner (commissural) face, with the margins laterally involute or inflexed.—Umbels compound or perfect.

Tribe VII. CAUCALINEÆ.

Fr. laterally subcompressed or roundish many-ribbed armed; 5 primary ribs filiform setose or prickly, 3 dorsal, 2 lateral on the commissural face; 4 secondary more prominent setose and prickly or effaced by prickles covering the grooves (valleculæ) between the primary ribs. Vitta 1 beneath each secondary rib and 2 commissural.—Fl. w. or p.

15. TORILIS. Cal.-rim 5-toothed. Pet. obovate notched with an inflexed notched or retuse lacinula, the outer often radiant bifid. Stylopod tumid depresso-pulvinate. Fr. laterally subcompressed, all over prickly-setose; 5 primary ribs setose, 4 secondary indistinct hidden or effaced by the thickly crowded prickles of the interstices of the primary, with a single vitta beneath each. Carpoph. setaceous free bifid.—Herbs more or less subscabrous; hairs on st. reflexed, on umbels erect. Fl. w. or reddish, of the disk abortive capitate.

Tribe VIII. SCANDICINEÆ.

Fr. laterally compressed elongate often beaked, unarmed; primary ribs equal filiform sometimes obsolete, secondary 0.

16. SCANDIX. Cal.-rim obsolete. Pet. obovate truncate or notched with an inflexed point. Stylopod very large and prominent with a raised frill-like rim or border. Fr. linear-oblong with a long beak; primary ribs obsolete equal ob-
tuse. Vitæ 0 or obsolete. Carpoph. free entire or bifid only at top.—Ann. herbs with finely decompound capillary-multifid 1, few-rayed umbels and w. fl. General inv. 0 or 1-leafed.

**Suborder III. Cælospereمرا.**

Seed (albumen) hemispherically concave or hollow like a bowl on the inner commissural face, the margins incurved both vertically and laterally and both the vertical and transverse sections crescent-shaped.

**Tribe IX. Coriandreaæ.**

Fr. globose or didymous; primary ribs depressed or obsolete, 4 secondary more prominent; all apterous unarmed.

17. CoriandrUM. Cal.-rim unequally 5-toothed, teeth persistent very distinct leafy and enlarged in fr. Pet. obovate notched or obcordate with an inflexed point, the outer radiant bifid. Stylpod conic. Fr. globose scarcely splitting or dividing; primary ribs flexuose obsolete, the 2 lateral each at the base of the riblike accessory edge or border; 4 secondary simple filiform sharply prominent or keeled. Dorsal vitæ 0, commissural 2. Carpoph. entire splitting only in the middle. Commissural face of alb. or seed circularly concave, covered with a loose free membrane.—Inv. 0.

**Suborder I. Orthospermaæ.**

**Tribe I. Ammineæ.**

1. Apium L.


Smooth and shining; 1. subternately pinnate or pinnatisect; lfts. of the lower 1. large inciso-ternate stalked rhomboidally and broadly or ovately wedgeshaped inciso-toothed at top, of the uppermost small ternate sessile lanceolate trifid or entire.—Desf. i. 266; Brot. i. 463; EB. t. 1210; Sm. E. Fl. ii. 76; DC. iv. 101; WB. ii. 150; Koch 311; Bab. 140; RFG. t. 1854. f. ii. —Herb. ann. or bienn. Mad. reg. 1, chiefly, but also 2, 3, c. PS. reg. 2, c. Seacliffs mostly in Mad. almost everywhere, but also occasionally far up the principal Ravines, as the Curral dos Romeiros, Rib. de Sta Luzia, &c., and in the North, Rib. de S. Jorge, &c. In the Serra de fora, PS., abund. May-Aug.—Root shortly fusiform not thickened but hard and woody at the crown. St.
Petroselinum.

erect stiff straight $1\frac{1}{2}$–$2$ ft. high sparingly stragglingly and di- varicately branched, angular strongly ribbed or furrowed fistu- lose, often red or purple downwards like the l.-stalks. Foliage dark shining gr.; lfts. of lower l. an inch or more long or broad, of uppermost $\frac{1}{4}$–$\frac{1}{2}$ in. long, 1–2 lines broad. Umbels lateral and terminal numerous small inconspicuous very shortly stalked or sessile with a ternate or 3-partite l. or two at their base, very unequally 4–12-rayed, not confluent and without either general or partial inv. Partial umbels remote distinct small. Fl. minute and inconspicuous dull greenish–w. Stam. scarcely longer than the pet. Styles short divergently recurved, not longer than the depressed stylopod.

The use of this pi. as an esculent is confined to a very few gardens in Mad., chiefly at Camacha or the Mount. By the country people it is entirely neglected.

2. Petroselinum Hoffm.


Smooth and shining; st. erect branched; l. 2–3-pinnate, lfts of the lower l. inciso-ternate stalked rhomboidal or broadly wedge- shaped with toothed obtuse subtruncate lobes, of the upper- most linear-lanceolate entire; umbels many-rayed, rays sub- equal spreading; styles recurved longer than the stylopod.— DC. iv. 102; Seub. Fl. Az. 42; Koch 311; Bab. 140. Apium Pe- troselinum L., Desf. i. 265; Brot. i. 463; EBS. t. 2793.—Herb. ann. or bienn. Mad. reg. 1, 2, c. PS. reg. 2, c. Rocks and cliffs in ravines or by the sea almost everywhere, Rib. de Sª Luzia, &c. PS. in the Serra de fora, &c. May–July.—Root whitish strong thick long tapshaped or fusiform. St. stout erect stiff hard round striate 12–18 in. rarely 2–3 ft. high mostly somewhat low and straggling, much branched, full bright gr. never reddish. Foli- age bright gr., lfts of lower l. $\frac{1}{2}$ in. long or broad, of uppermost 1 in. long, 1 line broad. Umbels terminal moderately large di- strictly stalked, not very unequally 10–20-rayed, not confluent, with 1–3 general and 5–10 partial linear invol. Partial umbels separate distinct. Fl. small inconspicuous greenish–y. Stam. considerably longer than the pet. which are very small and strongly incurved. Styles moderately long, divergently recurved, longer than the raised tumid stylopod. Fr. compressedly ovoi- dal dark brown with distinct pale ribs. Vitce 6 subequidi- stant, 4 dorsal, 2 commissural.

Of the same universal use in cookery in Mad. amongst all classes as elsewhere. The curled or crisped-leaved var. $\beta$. DC. is also occasionally cult.
3. Helosciadium Koch.


St. procumbent rooting at the base; 1. pinnate, lfts. ovate or ovate-lanceolate equably serrulate; umbels opposite to the 1. nearly sessile or longer than their ped. which is much shorter than either their rays or the opposite petiole; gen. inv. 0 or 1-2-leaved deciduous.—DC. iv. 104 (excl. var. β, γ); WB. ii. 149; Koch 312; Bab. 141 (excl. var. β). Sium nodiflorum L.; Buch 195, no. 295; EB. t. 639; Sm. E. Fl. ii. 57. Sison nodiflorum Brot. i. 423. Apium nodiflorum RFG. t. 1846.—Herb. per. Mad. reg. 1, 2, 3, ccc. Edges of streams and watercourses almost everywhere; Levada de Sª Luzia, Rib. dos Cayados, de Machico, at Porto da Cruz, Sª Anna, S. Vicente, Magdalena, &c. May–July; but at most seasons. —Very variable in size and luxuriance with succulent fistulose st. from 2 or 3 in. to 2 ft. in length forming large beds or patches and rooting only at the lowest joints, the ends ascending. Branches remote forked straggling. Whole pl. smooth of a bright shining gr. All but the uppermost 1. with long petioles. Lfts. opposite sessile rather large about an in. long, those of the lower 1. occasionally lobed. Fl. minute inconspicuous dull greenish–w. in small shortly stalked inconspicuous not confluent lateral umbels of 5–8 unequal rough and angular primary rays (which are ¼–½ in. long) and considerably more numerous secondary forming little separate remote heads. Partial inv. persistent about 6 rather broadly lanceolate leaflike and conspicuous with broad membranous whitish margins. Gen. inv. very rarely present in Mad. and then of one leaf shaped like the partial. Styles short but twice as long as stylopod. Fr. small broadly ovoidal short.

The 1. and st. are eaten occasionally by the country people like water-cresses.

The nearly allied true H. repens (L. fil.) Koch 312, RFG. t. 1845. f. iii, distinguished by its rounded lfts, umbels with ped. longer than their rays and 3–5-leaved persistent gen. inv., has not occurred in Mad., nor have I ever observed the var. H. nodiflorum β. ochreatum DC. 1. c., intermedium Coss. et Germ. Fl. (ed. i.) i. 208, said to be “exactly intermediate between H. nodiflorum and repens,” with “slender prostrate rooting st., umbels more or less stalked, with their ped. sometimes longer than the rays and gen. inv. 0 or 1–2-leaved,” though found, according to Seub. Fl. Az. 42, in Terceira one of the Açores.
4. AMMI L.

1. A. MAJUS L. *Salsa de Burro*, PS.

Glaucous; st. low flexuose repeatedly fork-branched from the base, branches straggling widely divaricate spreading; l. mostly heterophyllous, lower or root-l. pinnate or subbipinnate with leaflike simple oblong-obovate or spatulate sharply finely and evenly cartilagineously mucronate and serrulate lfts.; upper l. always decompound or finely multifid 2-3-pinnatisect with flat narrow-lanceolate or linear-lanceolate regularly serrate or entire segments, each ultimate tooth or segm. ending in a fine cartilagineous awn or point; umbels opposite the l. moderately stalked 10-30-rayed, the rays (gen. and partial) finely scabrous spreading, erect or subincurred in fr.; gen. inv. several distinctly shorter than the rays, mostly about half as long, setaceous-pinnatifid or trifid, partial numerous simple linear with membranous margins and produced into fine setaceous awn-like points.—Herb. ann., Mad., PS., GD. reg. 1, 2. Apr.—Aug.—From 6 to 18 in. rarely 2 ft. high stragglingly branched throughout, but though low neither bushy nor with a distinct erect straight main stem developed at the expense of the shortened or partially suppressed side branches. Whole pl. altogether smooth and more or less (especially the broad undivided lower lfts. in a. and y.) glaucous, almost or quite scentless and tasteless. St. branched flexuose or zigzagged from the base, regularly and widely forked, pale and whitish with narrow gr. lines or striae downwards, slender but hard and stiff, round smooth and even or only angular and faintly ribbed upwards. Lfts. of the root and lower st.-l. mostly but not always undivided and leaf-like, and then somewhat stiff and coriaceous shining 2-4 times as long as broad finely and closely cartilagineo-serrate; of the upper l. gradually narrower and more lanceolate with the margins either gashed and regularly serrate or entire: but sometimes all the l. are finely decompound and 2-3-pinnatisect with narrow linear-lanceolate segments which are either serrate or entire.—Umbels confluent of moderate size or rather small, their stalks 2-3 in. long round striate smooth and even, with from 8 or 10 to 20 or 30 equal slender minutely subscabrous rays spreading in fl., suberect in fr.; partial rays very numerous unequal scabrous especially upwards, spreading in fl., suberect in fr. Fl. rather large pure w. all fertile with large pet.; ovary subpuberulously scabrous; styles divergent a little longer than the distinct convex presently conical conspicuous stylopod, deflexed in fr. Gen. inv. about 6 short, never exceeding $\frac{1}{2}$ or $\frac{3}{4}$ the length of the rays, simple or compound with fine almost setaceous divisions, and either tridially pinnate or ending in a trifid segment, each segm. finely cartilagineo-cuspidate; the whole quite smooth and even. Involucels simple and subscabrous numerous linear-lanceolate with broad
w. membranous margins, and produced into fine w. awn-like points, longer than or equalling the rays. Fr. small 1½—2 millim. long, shortly oblong or oval erect smooth strongly angular with conspicuous prominent sharp pale ribs. Vittae 6, 4 dorsal equidistant, 2 commissural subapproximate. Varr. or rather transitory forms:

a. *heterophylla*; root and lower st.-l. pinnate or bipinnate with broad leaflike simple lfts., upper l. 2-pinnatisect or multifid with lanceolate or linear gashed or serrate lfts.—*A. majus* Linn. Sp. 349 (not Herb. Linn.); Gouan! Bertoloni! Kotschy! Bourgeau! Bromfield! in HK.; Sloane! Herb. in BH. vol. 9. p. 16; 83. p. 138 (from Plukenet); 84. p. 16 (do.); 85. p. 23 (do.); 167. p. 317; Vill. Dauph. ii. 591; Desf. i. 245; Prot. i. 143; Buch 195. no. 291; DC. iv. 112 (excl. forsan syn. Sibth. Fl. Gr.); WB. ii. 149; RFG. t. 1864. *A. vulgaris* Ger. 881. f. 1.—Mad., PS., sides, &c. everywhere especially about Funchal to the E. (Canigo road) and W. (Loo-fields, Praia, &c.). Apr.—Aug.—From 6 to 18 in. high. Lfts. of lower l. very glaucous round or roundish obovate or oval closely and sharply serrulate with w. sphaecelate or cartilaginous fine teeth. Upper lfts. gradually more and more narrowly lanceolate and either gashed or deeply serrate. Umbel 20—30-rayed.

This, especially in the form with more finely multifid upper l., is no doubt the pl. mainly at least intended by Linnaeus in his Sp. Pl., though the original spec. in his Herb. (marked "1. majus") is something altogether different (in habit more resembling *Petroselinum sativum* Hoffm. than this or any other Ammi with which I am acquainted), and although he has pinned to this pseudotype a spec. from the Upsal Garden (marked by him originally "Ammi perenne HU." with the word "perenne" erased and "majus" written over it), which, from its finely decompound l. with fine linear segm., many- (35—42-) rayed umbels and long conspicuous gen. invol. longer or as long as the very slightly scabrous rays, is rather possibly an upper portion of my *A. procerum*. Indeed but for the improbability that so fine a sp., if it existed really on the continent of Europe, could have been overlooked by more recent botanists, I should be tempted to refer to *A. procerum* several of the older synonyms quoted by Linn. for his *A. majus*,—a name which I once thought might have been intended specially to indicate *A. procerum*, but which on investigation seems to have been merely taken up by him
from Bauh. Pin. 159, where it stands in contrast with an "Ammi parvum foliis faniculi" (=Sison Ammi L.) and where it clearly seems to designate the following var. of A. majus, viz.

β. isophylla; all the l. 2–3-pinnatisect with linear-lanceolate or linear gashed or serrate Ifts.—A. majus foliis plurimum incisis et nonnulli crisps C. Bauh. Pin. 159. A. majus var. A. Desf. l. c.

A. majus var. tenuifolia &c. Brot. l. c. 444. A. intermedium DC. iv. 113?—Mad. reg. 1, 2, 4. Occasionally here and there with a, into which it gradually passes. Equally spreadingly branched and with quite the habit of a, but mostly perhaps somewhat larger and from 1 to 2 ft. high, having the lower st.- or root-l. decompound with their segm. finely linear-lanceolate and serrate like the upper.

γ. tenuifolia; root and lower st.-l. as in a, upper 2–3-pinnatisect with linear-lanceolate or linear nearly or quite entire Ifts.—Mad. reg. 1, 7. Pta de S. Lourenço, on the dry exposed rocky sunny slope of the Penedo do Saco.—This seems to differ from A. glaucifolium L. (Vill. Dauph. ii. 592; DC. iv. 112; Guss. Fl. Sic. i. 317) described as having the lower as well as upper l. (as in β.) decompound or 2-pinnatisect with the Ifts. linear-lanceolate or linear but very entire or only 1–2-toothed instead of regularly serrate,—merely as a. does from β. in the simply pinnate or 2-pinnate root-l. with broad leaflike Ifts. It is altogether a more dwarfish slender pl. of humbler more straggling growth than a. or β., with the umbels about 10-rayed, the gen. invol. scarcely half the length of the rays and the fine linear entire segm. of the upper l. ending in a pale w. awn or point or sometimes in 2, 3 or 5 bristle-pointed teeth. It is evidently a mere depauperated state of a, grown in a maritime hot dry sunny spot.

2. A. PROCEBUM Lowe.

Subglaucous or greyish; st. round tall straight stout erect virgate branched upwards only and mostly above the middle, branches erect little developed and subordinate to the distinct main st. throughout; l. heterophyllous, lower st.-l. pinnate or 2-pinnate with long petioles and leaflike simple roundish-oval, broadly obovate, oblance-obovate, or cuneato-lanceolate, sharply finely and evenly cartilaginously serrulate Ifts.; upper l. finely decompound 2–3– or even 4-pinnatisect sessile on the sheaths of the petioles, with flat linear or linear-lanceolate partly entire partly gash-toothed or serrate Ifts., each ultimate tooth or segment cuspately awned; umbels opposite the l. on long stalks 30–50-rayed, the rays (gen. and partial) scabrous spreading, the former erect, latter subincurved in fr.; gen. inv. several conspicuous nearly or quite as long as the rays, setaceo-pinnatifid or trifid, partial simple linear with w. membranous margins and produced into fine se-
tanceous hair-like points much longer than the rays.—Herb. ann. Mad. reg. 1, r. In cornfields to the E. of Funchal, S. Gonçalo 1856, Sr J. M. Moniz. May, June.—At once distinguished from the former common sp. by its altogether vastly larger size, tall erect habit with a distinct erect stout main stem developed at the expense of the side branches as in *Imperatoria Ostruthium* L. or *Conium maculatum* L. Whole pl. smooth, greyish rather than glaucous. St. 3-5 ft. high robust hard firm filled with pith 3-5 lines in diam. or as thick as the little finger, round smooth or faintly striated, not branched below $\frac{1}{3}$ or $\frac{3}{4}$ of its whole length downwards. Lower l. 12-18 in. long of which the petiole is $\frac{1}{3}$ or $\frac{3}{4}$ds, with large lfts. 1-2½ in. long and proportionately broad, pale- rather than glaucous-gr. The middle st.-l. pass by irregular intermediate gradations as to the size and shape of the lfts. into the upper which are finely decompound and sessile at the top of the sheaths of the shortened petioles. Every variety of decomposition is found in the l. which are truly heteromorphous; one part of the same l. having often leaf-like broad divisions, and the rest decompoundly linear-lanceolate or linear. The ultimate segm. of the upper l. are equally variable in being either serrate toothed or perfectly entire. Ped. of umbel 6-10 in. long ribbed and angular. Umbels large many-rayed 3-5 in. in diam., confluent flat spreading; rays subequal slender 1-2½ in. long rough with a few scattered minute points; inv. large with very long linear-setaceous segm. Partial rays very numerous short and unequal, incurved in fr. scabrous 1-3 lines long; involucels much longer than the rays and numerous. Fl. rather smaller and less pure w. than in *A. majus* above. Ovary quite smooth. Styles a little longer than the stylopod, strongly deflexed in fr. Stylopod convex, in fr. conical. Fr. smooth angular with strong sharp pale ribs.

I met with what seemed at the time to be entirely this pl. growing plentifully amongst corn in the S. of Grand Canary at Maspalomas, near the house of the Conde de la Vega Grande, in March 1858; but I neglected unfortunately either closely to examine or (from confidence in its identity) to preserve a spec. It is unrecorded by WB. in Phyt. Can. Sr Moniz had first in 1856 called my attention to it as distinct from the common *A. majus* L. in all its varying forms in Mad.

But for the improbability of the occurrence in Europe of so fine a pl. as *A. procerum* in the absence of all notice of it by more recent authors, the following syn. would seem rather to belong to it than to the true *A. majus* L. Sp. Pl. 349.

*Ammi majus* Herb. Linn.! quoad ex. Hort. Upsal., ideoque

3. **A. VISNAGA** (L.)

Dark or full-gr.; st. round stout erect branched and leafy throughout, bushy; 1. all finely decompound 3−4-pinnatisect with very narrow-linear channelled elongate entire almost capillary segments; umbels subterminal on short stalks scarcely rising above the foliage, spheroidal large and many-rayed; rays from a dilated thickened disk or head at top of ped. quite smooth and even, strongly inflexed and rigid in fr.—Desf. i. 245; Brot. i. 444; DC. iv. 113; WB. ii. 150. *Daucus Visnaga* Linn. Sp. 348; Buch 195. no. 290.—Herb. ann. Mad. reg. 1, 2, r; PS. reg. 1, r. Dry waste places about villages and amongst cornfields. E. end of the beach at Machico; village of Canical; about the Pico de S. Martinho, da Cruz, &c. to the W. of Funchal; cornfields about a mile above Porto Moniz, &c. In PS. about the town in dry bed of the Ribeiro and cornfields. May−Sept.—From 1 to 3 ft. high altogether smooth with stiff erect stout hard solid shining striated bright gr. st. and copious dark or full gr. fennel-like foliage. Umbels densely confluent flat on stout stiff stalks 2−4 or 5 in. long which expand at the top into a round dilated hemispherical disk; rays very numerous crowded rather short dilated at top like the ped.; general inv. many, finely pinnate with remote long linear segments like the 1. and much elongated after flg. Partial rays very numerous crowded; inv. many simple linear-setaceous. Fl. minute densely crowded w. tinged with purple in the bud. Styles and stylopod w. in the fl., afterwards often purple, the former in fr. strongly divaricato-deflexed and the latter conico-convex but less conspicuously than in the two preceding sp. Ov. quite smooth. Fr. very small proportionately, ½ line long, smooth shortly oblanceolate or subovate strongly ribbed.

General rays after fl. becoming very hard and stiff, bending strongly inwards as in *Daucus Carota* L. and forming of the umbel a hollow inverted cone, with the general inv. hanging down from its inverted apex. In the Canaries they are some-
times used for toothpicks, but I have never seen them so employed in Mad.

5. BUNIUM L.

1. B. BREVIFOLIUM Lowe. **Norça, nozinha.**

St. simple, somewhat stout and mostly straight, erect round glaucous; l. all alike, shortly stalked and broadly deltoidal, rigid decompound pectinately and subternately 2-4-pinnatisect, segments flat entire short linear-lanceolate opposite remote, sheaths of the short petioles large and broad; umbel 8-10-rayed, gen. and partial inv. 0; stylodop at first tumid or pulvinate then conic; styles very short erect, in fr. divergent; fr. oblong with the stylodop conic and valleculæ 3-vittate.—Novit. p. 21 or 543.

—Herb. per. Mad. reg. 3, rrr. Highest mountain slopes or ledges of the Serra d'Agua and Curral das Freiras. At a place called the Cantareiras above the spring of the Capella das Almas, on grassy slopes or banks at a height of 5000 ft. at the base of rocky cliffs along the lofty ridge or chain running N. from the summit of the Pico Grande on the path leading down from the latter to the Encumeada de S. Vicente (Lowe). Encumeada alta on Pico Ruivo (Moniz). Said also to be found in several parts of the mountains above the Jardim towards the Serra d'Agua and Pico Grande by the shepherd-boys, who seek eagerly for the roots to be eaten raw like Pignuts (the roots of the nearly allied *B. flexuosum* With. or *denudatum* DC.) in England. To this and to their destruction by the wild pigs, which are also said to search for and devour them greedily, may be ascribed in great measure the present rarity of the pl. June–Aug.—Root a globose or oval firm hard and solid dark brown roughish tuber buried an inch or two below the surface, yellowish-w. within, from the size of a hazel-nut to that of a walnut, not crisp or fibrous but farinaceous in consistence, with an agreeable sweet nutty flavour combined with a somewhat strong taste of carrots. St. single and simple or unbranched except at top, attenuated below the surface of the ground almost to a thread quite at its origin from one of the several prominent "eyes" of the tuber and sometimes a little waved or flexuose but mostly nearly or quite straight with only a single abrupt twist at its origin: above the soil straight erect unbranched from 6 to 12 or 15 in. high and 1–2½ lines or 5 mill. in diam., robust and firm or stiff, appearing almost swollen in the middle, fistulose quite round and smooth (like the whole pl. in every part), striated faintly below, more strongly upwards, glaucous. L. small few remote and inconspicuous, scarcely glaucous shortly triangular broader at the base than long, with short very broad sheathing petioles ½–1 in. long, being themselves 1–4 in. long; their divisions mostly opposite and the ultimate segments subternate, those of the upper l. being simply acute, of the lower subobtuse with an abrupt mucro; all remote narrow
finely pectinate and somewhat stiff or rigid. Umbels 1–3 or 4, terminal and lateral with a l. at the base of the ped., the latter 1½–2 in. long, ribbed and furrowed, the former about an in. broad level-topped but not confluent, with 6–11 (mostly 8–10) unequal primary rays ¾–1 in. long quite smooth but ribbed or furrowed. No trace of general inv. Partial rays mostly numerous (6–10 or 15) unequal short; constantly without any partial inv. Fl. w. not small crowded close in separate distinct heads, not radiant, many of the outer without stam. but all perfecting fr. Pet. pure w. rather large curled or crisped at the edges with an incurved or inflexed rather long acute lacinula. Stam. about the length of pet.; fil. w., anth. pale purple. Styles at first a mere short minute erect point on the large conspicuous tumid and prominent but depressed cushion-like hemispherical distinct stylopod; in fr. the latter becomes conical and the styles a little lengthened out and divergent but not reflexed. Ov. very small and inconspicuous. Fr. dark brown quite smooth and shining as if gummed or varnished, oblong or ovate-oblong, compressed laterally, the diam. at least twice the breadth of the commissure, the 3 dorsal ribs subapproximate, all sharp and pale, their interstices (valleculae) wrinkled and 4-striate, each 3-vittate. Commissural vittae 4, superficial only, not sunk or grooved like the dorsal in the substance of the seed or albumen.

6. Bupleurum L.

a. Annual herbaceous.

1. B. protractum Link.

St. mostly branched from the base, branches decumbent or diffuse and straggling; l. glaucous flaccid perfoliate, the lower lanceolate-oblong amplexicaul, the upper ovate perfoliate; umbels 3-rayed, gen. inv. 0, partial 5 always spreading horizontally leafy broadly ovate mucronate coloured; fr. thickly granulate or verruculate between the filiform slender ribs and without vittae.—DC. iv. 129; Koch 321; RFG. t. 1880. f. i. B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.). B. rotundifolium Brot. i. 452 (not Linn.).
and broadly ovate; all mucronate. Fl. conspicuous and hand­some from the large bright greenish-y. partial inv. and orange­y. pet. Umbels numerous mostly 3-rayed, never more, rarely less. Partial inv. unequal, the 3 outer larger than the 2 inner and 3 or 4 lines long or broad, in fr. as in fl. horizontally spread­ing. Cal.-rim quite obsolete. Pet. deep waxy-y., middle lobe broad strongly involute. Stylopod waxy dull y.-gr. flat broadly discoidal or dilated hemispherical very large much broader than the very short styles. Fr. large tumid short abruptly truncate. —One of the handsomest pl. of its tribe, the large leafy golden­y. partial inv. twice or more than twice as long as the crowded deeper-y. tufts of fl., which they enclose like a 5-leaved cal. or the fl. bracts of a Cornus.

b. Perennial shrubby.

2. B. salicifolium (Sol. MSS.) Lowe.

Glaucous, erect; branches smooth slender elongate erect or pendulous naked downwards; l. sessile coriaceous flat many­nerved narrow lanceolate acuminate at each end; umbel 6–12 or 14-rayed, gen. and partial inv. small very short lanceolate or ovate lanceolate reflexed; fr. linear or narrow-oblong, vallecular longitudinally striate 1-vittate.—Novit. p. 21 or 543; Buch! 195. no. 288. B. aciphyllum WB! ii. 154. t. 70.—Shr. per. Mad. reg. 3, §. On perpendicular rocks and sides of most of the principal ravines; Rib. de Sta Luzia near the Waterfall, Rib. da Metade, Curral das Freiras, Serra d’Agua under and beyond Pico Grande, &c. June–Sept.—A straggling often pendulous shr. with few remote long weak slender naked very smooth and even, straight or slightly curved ascending or flauntingly erect branches 1–2 lines in diam. and 1–2 or 3 ft. long, hard stiff and woody, leafy only upwards. Whole pl. 2–4 ft. high very glaucous and smooth in every part. L. somewhat oblique, but not inequilateral, about 3 in. long, 3–6 lines wide, crowded towards the ends of the branches, some­what stiff and coriaceous but thin with many straight parallel and equal nerves on each side of the somewhat stronger but inconspicuous midrib, gradually acute at both ends with a slightly hooked or curved point at the tip. Umbels terminal and lateral at the ends of the branches forming a sort of loose naked ter­minal panicle with a small inconspicuous narrow l. at each division; their stalks 1–2 in. long angular striate. Fl. small y.; partial umbels distinct or not confluent, 10– or 12-fld., with 6 or 7 minute ovate abruptly pointed inv. Gen. rays slender smooth about an inch long with 5 or 6 short lanceolate inv. 1–3 lines long. Stylopod large dilated waxy-y. Styles very short di­vergent. Fr. 2½–3 lines long not quite 1 line broad, often a little curved by abortion of one of the mericarps; ribs prominent, their interstices not granulate but longitudinally ribbed and striated.
Vittæ 5, 4 dorsal alternate with the 5 primary ribs and 1 com­missural.

Tribe II. Seselineae.

7. CENANTHE L.


Stoloniferous with large sessile filipendular-fasciculate fusi­form tuberous roots; 1. decompound 2–4-pinnatisect, lfts. cu­neato-ovate or lanceolate inciso-toothed or pinnatifid, their seg­ments or teeth acute or mucronate; umbel of about 12 always slender rays; fr. elliptic-oblong slightly compressed striated, tumid and coryc at the sides or commissure, simple at the base, the length of its own pedic. or of the erect elongated persistent styles.—Prim. p. 30. *Selinum divaricatum* Buch l 195. no. 292.

—Herb. per. Mad. reg. 2, 3, c. Wet dripping perpendicular rocks in most of the principal ravines, as Rib. de St. Luzia, dos Cayados, da Metade, de S. Jorge, Serra d’Agua under Pico Grande at the fountains, &c., and even on seaciffs in the north at S. Vicente, Passo d’Aréa, &c. June-Aug.—A large robust branched rank-growing pl. altogether smooth, with handsome bright-gr. fern-like foliage and watery innocuous, not thick coloured acrid or poisonous juices. Roots creeping underground forming here and there at the base of the ann. st. bundles (like those of the common garden Ranunculus (*R. asiaticus* L.)) of large often reddish-purple smooth tubers attenuated at each end, often as long and thick in the middle as the fingers and sessile at the crown of the st. St. ann. 2–5 ft. high and often an inch in diam. erect stout hollow round and even below, throwing out roots or fibres from the lower joints, angular strongly ribbed or furrowed and fork-branched up­wards, bright gr. juicy crisp and edible; often purplish down­wards. L. very large often 2 ft. or more long and 1 ft. broad, the lower with broader ovate, the upper with narrower linear­lanceolate very distinct or remote and proportionately small lfts. Umbels rather small or inconspicuous on moderately long (2–4 in.) strongly ribbed stalks, not confluent, of from 7 or 8 to mostly 10 or 12 unequal primary rays about an in. long not thickening in fr., and numerous partial rays forming small dis­tinct heads of crowded minute dull w. or in bud greenish fl. Gen. inv. 1–5 or 6, partial about 10; all short linear acute gr. with the edges pellucid. Cal.-teeth distinct ovate acute erect in fr. Fl. all perfect equal. Pet. very unequal with a long strongly inflexed or incurved point or narrow lobe. Stylopods large glo­bose and tumid. Styles in the fl. shorter or not longer than the pet. and divaricate; in fr. much elongated slender and erect, as long as the ripe fr. and pale red or purplish, with their bases or stylopods still tumid and globose. Fr. about 2 lines long and
half as broad, a little thicker in the middle than at either end and subcompressed or with the commissure or juncture distinctly narrower than the transverse diam., without any callous ring or swelling at the base, crowned by the erect persistent cal.-teeth and elongated styles. Mericarps each dorsally 7-ribbed i.e. with 3 filiform dorsal and 2 remote dilated corky or spongy marginal primary ribs, the interstices 1-ribbed 1-vittate, the 4 secondary ribs scarcely less prominent than the 3 dorsal primary. Commissural vittae two. Carpophore obsolete. Colour of the whole dark brown with the broad raised even spongy spaces on each side the commissure pale.

The succulent and juicy stalk is often eaten by the country-people, but not the root-tubers. The taste is weakly aromatic, something like Angelica. Smell scarcely any.

Enanthe apiifolia Brot. (Phyt. Lusit. fasc. i. no. 16; Fl. Lusit. i. 420) by spec. from Dr. Welwitsch kindly procured for me at Lisbon in June 1863 by my active and energetic friend the Barão do Castello de Paiva, is a perfectly distinct sp. with a wholly different habit and aspect, closely resembling OE. crocata L., but with limpid aqueous juice as in OE. pteridifolia.

8. FENICULUM L.

1. F. OFFICINALE All. Fennel. Funcho.

St. round and taper, sometimes subcompressed especially downwards; 1. finely decompound 3-4-pinnate, the lower distinct; segments of lower 1. stiffly divaricate short and rigid, of upper feathery or tufted and crowded rather long slender capillary-linear soft or somewhat flaccid and drooping; in the uppermost or floral 1. very remote few and elongate; umbels from 4-6- to 10-20-rayed flat or concave.—Koch 323; Bab. 145. F. vulgare Ray Syn. 217; "Gærtn.", DC. iv. 142; Seub. Fl. Az. 42. Meum Feniculum Sm. E. Fl. ii. 85. "Meum Feniculum a. Spr. in Schult. iv. 433." Anethum Feniculum Linn. Sp. 377; Desf. i. 264; Broät. 465; EB. t. 1208; Buch 195. no. 297.—Herb. per. Mad. reg. 1, 2, cc; PS. reg. 2, rr.—Seaciffs or barren hills and rocks near the sea everywhere up to 1500 ft., Funchal, Magdalena, &c. In PS. scarcely anywhere except in the Serra de fora.—Root large pale or whitish, often as thick as the fore finger and penetrating deep (2 ft. or more) into the ground, like that of Horse-radish (Armoracia rusticana Rüpp.), branched or divided at the crown. Fl.-st. several, one from each branch of the root-stock, 1 or 2 to 4 or 5 ft. high truly herbaceous and ann. dying quite down to the root in aut. and winter after the seeds are ripe, remotely and stragglingly branched, very smooth
or even, stiff and hard, filled with pith, naked-looking upwards. St. petioles rachis and sheaths of l. especially the lower glau­
cous. Foliage dark gr. lowest l. distichous stiff rigid with the
segments all distinct and stiffly divaricate, the ultimate only
½–2 lines long, those of the upper becoming gradually softer and
longer (6–8 lines) and those of the uppermost or floral 1–2-pin­
nate l. 1–2 in. long yet not pendulous or flaccid but very few
and remote; in all the l. channeled and flat not truly capillary
setaceous or subulate. Sheaths of l. large ample, of upper l.
longer than the l. themselves. Principal umbels 3–4 in. broad,
not confluent, rays unequal. Involucres 0. Fl. small, y. Stigmas
sessile large globose; styles developed in fruit only, very short
erect or subdivergent. Fr. oblong subcylindric (in English gar­
den spec. thickly and shortly ovoidal) with 5 equal and nearly
equidistant sharply prominent strong pale ribs without inter­
mediate striae. Vitae 4 dorsal intercostal and 2–4 commissural:
of the latter, 4 in the large central seeds of the main umbel and
mostly 3 or sometimes only 2 in the rest.—A most variable pl.
in height, foliage, size of umbels, &c.—The st., especially the
barren leaf-st., clothed at the base with the closely-clasping
distichously imbricated broad glaucous sheaths, always appear
compressed, and often really are so, more or less, at least down­
wards; and the segments of the l. vary no less in length than
remoteness. Thus all the characters ascribed by DeCandolle
to his three sp. of the genus, F. vulgare Gaertn., F. dulce C. Bauh.
and F. piperitum DC., are found united in different states (large
or dwarf) or even stages (young or full-grown) of the present
pl., as it is commonly seen wild in Mad. and the Canaries; and
an examination of spec. in BH. and HH. has afforded no better
grounds for their conservation.

FUNCHAL doubtless is derived from Funcho (Fennel) as Car­
valhal (a grove or place of Oak-trees) from Carvalho (an Oak);
Sabugal from Sabugo (an Elder-tr.), Fayal from Faya, Seixal
from Seixo, Pedregal from Pedre, Parreiral from Parreira, &c.

9. CRITHMUM L.


Linn.! Sp. Pl. 354; Desf. i. 248; Brot. i. 436; EB. t. 819;
Sm. E. Fl. ii. 73; DC. iv. 164; Koch 329; WB. ii. 159; Bab.
146. C. maritimum and C. latifolium Buch. 195. nos. 293, 294.—
Herb. per. Mad. reg. 1, r. on the S. coast, cc. on the N.; PS.
reg. 1, r. ND. r; GD. reg. 1, c; SD. reg. 1, r. Seacliffs and
rocks at the Gorgulho, Praia Formosa, Ptâ do Sol, Ptâ de S.
Lourenço, &c. here and there only on the S. coast. In the N.
everywhere, S'ta Anna, S. Jorge, S. Vicente, Rib. de Janella, &c.
abund. July–Sept.—Whole pl. glaucous. St. several 6–12 rarely
18 in. high diffuse ascending, one from each short stout brown and woody strongly ringed or jointed suffrutescent branch of the rootstock, which is often \( \frac{3}{4} \) in. or more in diam. L. ternately 2-pinnate 3 or 4 in. long. Lfts. ternate remote or distinct, rather few, mostly 5–10 times rarely only 2–3 times as long as broad, elliptic or linear-lanceolate or ligulate acute or pointed at each end, stiffly succulent or fleshy crisp and juicy with a saltish aromatic taste, \( \frac{1}{2} \)-nearly 2 in. long 1\( \frac{3}{4} \)–3 lines broad. Umbels confluent 10–20-rayed, the rays short thickish ribbed. Fl. minute greenish dirty w.; pet. very small. Stylod-pod large conic. Styles very short erect. Gen. and partial inv. several ovate or ovate-lanceolate spreading or reflexed. Fr. large oblong-oval very pale brown with 3 sharp prominent entire dorsal ribs and plain flat interstices, apt to be infested with some larvae that eat out the seed which when perfected is roundish oval and loose in the thick spongy or corky coat of the fr.

The Pta de S. Lourenço occasional state of the pl. with excessively thick hard and brittle less glaucous broader and shorter elliptic-oval or oblong lfts. only 2 or 3 times as long as broad, and often combined into a single broadly obcuneate 3-fid lft. (*Crithmum latifolium* Buch; *C. maritimum* B. Canariense (Cav.) DC., ll. cc.) is too accidental and even transient a form or young depauperated state to be properly reckoned a var., occurring only in arid spots on the N. seacliffs excessively exposed to the wind and weather. *Astydemia canariensis* DC. is a wholly different pl.; and although pretty general in the Canaries on the beach or sea-rocks, is not found in Madeira.

The l. and young st. simply boiled in vinegar are a favourite and indeed excellent pickle, esteemed by all classes in Madeira.

**Tribe III. Peucedaneae.**

10. **Imperatoria L.**

1. **Ostruthium L.** Masterwort.

L. biternate; lfts. of lower l. broadly ovate, of upper lanceolate, the two side-lfts. strongly inequilateral, all sharply serrate, here and there lobed or incised; petioles long with large sheaths; general inv. 0.—Linn. Sp. Pl. 371; EB. t. 1380; Sm. E. Fl. ii. 78; Buch 195. no. 296; Spr. Syst. i. 916; DC. iv. 183; Koch 336. *Peucedanum Ostruthium* "Koch Umb. 95"; Bab. 147.—Herb. per. Mad. reg. 2, 3, 5. Waterfalls and wet rocks in all
the principal ravines. Rib. de João Gomes, de Sta Luzia, da Metade, de S. Jorge, &c.; Pico Grande ascending from the Curral das Freiras, Passo d’Area, &c. in the N., July—Oct.—A tall-growing pl. with large handsome shining foliage; once esteemed a sovereign remedy under the name of Masterwort, and hence a not unfrequent weed in old gardens &c. in England, though now long since disused. Root large thick creeping, dark brown. St. 2—4 or 5 ft. high simple or sparingly branched round and even or very faintly striated, rather slender pale gr. smooth and shining like the whole pl. Lfts. large bright shining gr. slightly coriaceous or rigid with sharp rigid pale or whitish teeth; those of the lower l. 3—6 in. long and half as broad, the 2 side-lfts. being sessile very inequilateral with the outer side broadly rounded or half-cordate at the base, the middle lft. subequilateral and cuneate-stalked. Lfts. of upper l. about 3 in. long and 3/4 in. wide. All are acute or acuminate. Umbels large confluent with very numerous unequal rays. Partial inv. inconspicuous linear-setaceous few or numerous, as long as or longer than the very numerous partial rays. Gen. inv. mostly 0. Fl. w. or whitish moderately large. Styles divaricate capitate nearly as long as the ov. persistent. Fr. (unripe in spec.) small oblong or elliptic, compressed transversely, the juncture broader than the tranverse diam. and slightly winged. When fully ripe it is described by Sm. (E. Fl. 1. c.) as "orbicular having a sinus at top and bottom and a rounded dilated closely compressed margin;" and by Grenier et Godr. Fl. de Fr. i. 691 as "ovate-orbiculaire, émarginé à la base et au sommet, à côtés rapprochés, à marge large et plane."

Tribe IV. Silerineæ.


1. K. Peregrina (L.).

The only known sp.—K. leptophylla "Hoffm. Umb. 104. t. 3"; DC. iv. 199; WB. i. 163 (errore typ. K. leptiflora). Tordylium peregrinum Linn. Mant. 55; Mart. Mill. Dict. no. 3. Conium dichotomum Desf. i. 246. t. 66. "Capnophyllum dichotomum Lag. Gen. et Spec. 13." "Ulospermum dichotomum Link Enum. Hort. Berol. i. 267." Cachrys dichotoma Spr. Syst. i. 892.—Herb. ann. Mad. reg. 1, rr; PS. reg. 2, rr.—Cornfields and in waste or fallow ground amongst them. Fields above the E. end of the Praia Formosa to the W. of Funchal. In PS. about Camacha here and there sparingly. April.—A rather elegant small dichotomously branched somewhat bushy stiffly erect pl. of very short duration, 6—10 or 12 in. high, with finely decom-pound smoky rather than glaucous dull gr. foliage. Root long simple tapshaped whitish with the smell and taste of a carrot.
St. single stiffly erect flexuosely fork-branched upwards or sometimes quite from the base with spreading side-branches and bushy; branches regularly dichotomous widely divaricate and straggling very stiff and rigid, thickish and strongly ribbed or furrowed, quite smooth except a few minute muricate points or granulations scattered here and there. L. chiefly in a loose radial tuft somewhat flaccid 3-4-pinnatisect, the primary divisions opposite, lower very remote from the upper, all deeply channeled; ultimate segments flat oblong or linear, acute or cuspidate. Sheaths large and long broadly membranous pale whitish. Umbels inconspicuous small oppositifolious in the forks of the upper branches on short stout erect furrowed stalks or nearly sessile not confluent, with 3 to 5 short stout unequal wide-spreading primary rays and about twice as many partial; both gen. and partial strongly angular ribbed and more or less muriculate. General inv. 2 or 3 ovate acuminate or broadly lanceolate short; partial 5 or 6 similar but rather narrower and longer. Fl. small inconspicuous dull w. Cal.-teeth thick fleshy distinct ovate acute persistent. Pet. very small broadly ob-ovate and notched or roundedly obcordate, with a short acute inflexed point. Stylopod large and tumid. Styles very short and thick abrupt erect approximate purplish. Stam. about as long as pet.; anth. large, purplish. Fr. large, oval, the juncture considerably broader than the transverse diam.; each mericarp with 5 primary ribs; 3 dorsal approximate with deep interstices, sharp and entire, their sides strongly and elegantly ribbed or plaited; 2 lateral thicker obtuse and strongly ribbed or sulcated across. Secondary ribs and vittae 0.

Tribe V. Thapsiceae.

1. M. decipiens Schrad. et Wendl.

The only known sp.—DC. iv. 208; Novit. 20 or 542. Selinum decipiens “Schrad. et Wendl. Sert. Hann. iii. 23. t. 13.” (DC.); Spr. i. 909.—Herb. arboriform subbiennial hapaxanthous, Mad. reg. 3, rr. Shady rocks and banks far up ravines in the north only; Rib. de S. Jorge, da Metade, do Seixal, do Inferno, &c.; in the Boa Ventura abund. on a rock to the right of the road a little below the Lombo da Palha; at S. Vicente on the perpendicular wall of rock closing the head of the little glen about 300 yards above the Limestone Quarry (Forno de Cal). May—July.—Quite one of the nobles of its tribe with its tall simple Palm-like slender st. and terminal umbrella-like tufted head or crown 3 or 4 ft. in diam. of fine pale apple-gr. foliage. Root branched hard and woody. St. smooth simple erect straight round or cylindric nearly throughout and slender, but
naked suffrutescent hard and woody downwards, 2-4 ft. (rarely 5 or 6) high and 3/4-1 in. in diam. or about as thick throughout as the forefinger, with a fine ample terminal spreading tuft or crown of large handsome pale but bright y-gr. foliage. L. 1-2 ft. long 2-3-pinnatisect or -pinnate with the terminal leaflets confluent; the petioles, rachis, stalks of leaflets and their midrib beneath copiously clothed, at least whilst young, with soft downy whitish spreading pubescence. Petioles remarkably broad and large, winged, with extremely broad dilated smooth and shining sheaths which are striated with pellucid pale-gr. lines. Leaflets distinct large leaf-like 1 1/4-4 or 5 in. long, 1-3 in. broad ovate or lanceolate acuminate sharply and unequally inciso-serrate (the serratures mucronate), smooth and shining except the midrib beneath, delicate alike in texture and colour, finely and closely pellucid-reticulate with the ribs and nerves more distinct on the upper than the under side. From the centre of the terminal leaf-crown shoots forth after 1-2 or more years the large much-branched leafy broad and crowded panicle or head, 2 or 3 ft. high of very numerous umbels, of a lighter and more delicate gr. even than the rest, and with the branches and whole inflorescence more or less hairy or pubescent. Each branch ends in an umbel, and the upper 1. assume gradually the form of the general inflorescence. Lateral umbels or branches soon rising above the central or primary which is 6-9 in. in diam. with a short stout hairy ped. General inflorescence 10 or 12 leafy oblong-lanceolate acuminate inciso-serrate more or less, sometimes pinnatisect sometimes nearly entire, the edges membranous and ciliate-hairy, 1 1/4 in. long, 3-4 lines broad spreading or reflexed. Partial inflorescence 8 or 10 lanceolate entire purplish. Umbels confluent convex in the middle, much like those of Angelica sylvestris L., with very small crowded dirty w. or purplish more than usually fragrant fl. Primary rays about 30 unequal, the outer about 2 in. long, round slender pubescent, pale, often purplish; partial 20-25 unequal crowded pubescent, the outer fl. without stam. Ovary hirsutely pubescent. Cal.-teeth very small shallow and obsolete tipped with a minute mucro. Petals all equal with a very distinct claw like those of a Malpighia, suddenly expanding into a rounded limb notched in the middle with an in flexed or involute-acuminate lacina, their edges very minutely irregularly and indistinctly fringed or puberulous, always purple in the bud and often afterwards. Stamens longer than petals, fil. w., anther purple. Styles long slender divergent capitate purple; stigmas very large and turbid pulvinate not conic somewhat lobed pale wax-like. Fr. dorsally flat and rather thin, oblong with nearly straight or parallel sides, abrupt or subtruncate at each end and a little cordate at the base, 5 or 6 lines long, 2 1/4 broad, 1 thick, finely and shortly pubescent especially upwards, dark coffee-brown or black somewhat shining, obso-
letely 10-ribbed; 5 dorsal ribs (3 primary and 2 secondary) approximate equidistant subequal fine filiform obsolete or inconspicuous, the 2 commissural primary ribs at or within the inner base of the wings distinct remote. Marginal wings thin but stiff or firm, subpellucid or paler than the rest, unequally toothed or serrulate, about half a line broad, widening a little and more closely and evenly serrulate and slightly waved or plicate upwards, each ending in a prominent tooth with a deep notch at top and a shallow notch at bottom on each side. Vitte 9; 5 dorsal, 2 marginal under the wings, and 2 commissural very broad and approximate in the middle of the juncture.

Though properly only once-flowering, and then altogether perishing with the very root, sometimes the branched umbel-panicle alone dies down to the central main st. which survives; and thus the pl. becomes very rarely once or twice forked or branched and more than hapaxanthous, though in no case flowering in two years consecutively. The length of time before it flowers varies according to elevation, situation, soil, supply of water, &c. Thus in gardens at Funchal the pl. is truly ann., flowering and then perishing within the same year; but in its native glens its term is rarely less than 2 or more than 3 or 4 years.

The whole pl. when cut or bruised gives out a copious fragrant glutinous transparent shining y. gum or resin with a strong scent of spirits of turpentine and carrots, or something like the fl. of the large blue Iris (I. germanica L.). In drying the l. turn a peculiar dull olive-brown.

First discovered wild up the Rib. de S. Jorge in 1829 (Novit. 20 or 542). Though some time previously cult. in Europe, its native country had remained unascertained. It is strictly and peculiarly indigenous to Mad., being found neither in the Açores nor the Canaries, though in the latter it is well represented by Tinguarra cervariaefolia (DC.) = Athamantha cervariaefolia DC., WB. t. 71, a pl. with equally fine foliage and frutescent st., but with apterous, fusiform, rounded (not winged and dorsally compressed or flattened) fr. and belonging to the tribe Seselineæ.

DeCandolle attributes the name decipiens to the fact of the pl. in cultivation having been formerly mistaken for Bubon Galbanum L. by gardeners or horticulturists.

The very minute obscure irregular pubescence at the edges of the pet. is a sort of rudimentary indication of a character developed in Monizia.
The only known sp.—Hook. Journ. Bot. viii. 295.—Herb. frutesc. per. GD. reg. 1, rrr. Seacliff on the E. side of the Great Deserta about 1000 ft. above the sea, in crevices or hollows and on ledges. March–June.—More than rivalling Melanoselinum decipiens in the delicacy and beauty of its large shining varnished Fern-like foliage, this fine pl. is scarcely less remarkable in size and habit. It is truly per. flowering annually many years in succession with a thick woody subarboreous but very short obese mostly simple or only once or twice branched st. or rather more or less elevated stem-like caudex or rootstock. Root as thick at the crown as the wrist or arm, strong and more woody than fleshy, dividing downwards sparingly and irregularly at remote intervals into a few long simple round tapering naked branches like thin carrots or cow's horns except in colour, covered with a thin very smooth membranous black skin or outer pellicle, beneath brownish, and internally, when broken, of a delicate pure w. and farinaceous dryish substance like a Pignut or tuber of Buniurn flexuosum With., which it resembles in taste also when raw. It is much more woody hard and fibrous than a carrot, and when boiled rather resembles a bad stringy parsnip. St. or subaerial root or caudex often a foot or more high above the ground and as thick as the wrist or arm, strong and woody, black, covered upwards with the remains of old L., simple erect straight subobese or more or less swollen in the middle. Fl.-st. ann. terminal single erect 1–3 ft. high stout stiff copiously branched into a wide-spreading panicle of fl. from its base at the top or crown of the subaerial root or rootstock. L. chiefly radical broadly triangular in outline, about a foot long and as wide at the base as long, of a peculiar bright y.-gr. with a shining varnish-like polish, slightly rigid and in feel and texture recalling those of Balantium Culcita (Sw.); the lower finely, regularly and equably decompound 3–4-pinnatisect, the ultimate segments very distinct or subremote equal narrow-oblong or linear subobtuse sharply and regularly inciso-serrate rigid shining and very smooth their rachises throughout being on the contrary all finely puberulous; upper st.- and floral I. 2–3-pinnatisect with broad short subovate incised leafy Parsley-like segments, but otherwise like the lower I. Petioles and sheaths large thick highly developed and both closely but very shortly and finely pubescent like the petioles alone of Melanoselinum decipiens. Fl.-st., branches of panicle and ped. round strongly striated finely and shortly pubescent especially upwards. Umbels compact globose densely rounded confluent 20–25-rayed, rays subequal crowded about 1 in. long stout ribbed minutely pubescent; partial rays about as many and other-
wise similar but only 2–3 lines long. General and partial inv. 6–10 lanceolate or linear-lanceolate finely setaceous-acuminate and downy i.e. very shortly velvety at the back, hairy-fringed at the edges. Fl. small dull w. Ov. and the distinct ovate erect mucronate sep. thickly pubescent. Pet. clothed all over outside at the back with short and ciliate or fringed at the edges with longer hairs quite to the mostly blunt sometimes acute tip of their ligulate or narrow-spathulate lacinia. Stam. twice as long as pet., anth. lilac or purple. Styles short thick erect mutually incurved or forci pate in fl., in fr. divergent. Stylopod tumid in fl., conic in fr. Fr. dorsally flattened but thickish, oblong-oval or elliptic, a little pointed or contracted at each end, 4–6 lines long, \(2\frac{3}{4}\) broad, \(1\frac{1}{4}\)–2 thick, finely and shortly and thickly pubescent all over, pale sienna-brown or fawn-colour, 14-ribbed, the ribs all thickened obtuse corky, the 4 lateral very large, the dorsal smaller unequal. In each mericarp are visible externally 7 ribs, 5 dorsal and 2 (very large) lateral or marginal. Of the 5 dorsal ribs 3 are primary and the 2 alternate secondary, the latter often quite as prominent or even more so than the middle one at least of the 3 primary; the 2 remaining primary are small simple and invisible except on a transverse section of the fr., being placed almost on the commissure close behind the 2 remaining lateral or marginal vastly enlarged thickened and dilated fungose secondary ribs almost within the edges of the mericarp. Vittae 6; 4 dorsal slender, one under each secondary rib, and 2 commissural very broad and shallow. Carpophore bipartite.

First discovered in company with T. V. Wollaston, Esq., in June 1855, but with ripe fr. only. I am now enabled to complete its description by adding the somewhat peculiar details of the fl., which confirm its approximate position to Melanoselinum, by the help of dried flowering spec. raised in Funchal by Sr. J. M. Moniz, the excellent and zealous botanist whose name this very rare, remarkable and interesting pl. so worthily commemorates.

Recourse is had to its roots, boiled or raw, as an esculent by the goatherds, Orchil-gatherers, or fishermen temporarily sojourning amidst those desolate and barren rocks, well named the Desertas, in lack of other supplies of food from stress of weather. They are however very stringy, dry and tasteless.
Tribe VI. Daucineae.

14. DAUCUS L.

1. D. CAROTA L. Cenoura or Cenoura.

Whole pl. hoary stringosely pubescent or hispid; st. erect sparingly and erectly branched, altogether (with the ped.) rough and reflectedly hispid or strigose, often hirsute towards the base; l. hispid oblong or ovate-oblong 3—4—pinnatisect; lfts. ovate or ovate-oblong membranous leafy deeply cut and toothed, teeth ovate or ovate-oblong or ovate-lanceolate mucronate; umbels very broad and large on long hispid stalks not dilated at top, with a large stalked fleshy central abortive atropurpureous fl., hollow with the rays very unequal hispid and strongly incurved in fr., the outer fl. large radiant; gen. inv. pectinately 1—2—pinnate, partial pinnately 3—5—fid or simple as long as the rays, segments linear; bristles of the oblong-oval fr. equalling its breadth distinct straight slender compresso-subulate spreading, minutely capitate and stellately glochidiate.—Linn. Sp. PI. 348; Desf. i. 240; Brot. i. 444; EB. t. 1174; Sm. E. Fl. ii. 39; DC. iv. 211; Koch 343; Bab. 148. D. polygannus Gouan, DC. iv. 212?; Seub. Fl. Az. 42? D. Carota f. Pers. Ench. i. 307 (“excl. syn. Jacq.” DC.)? D. aureus WB. i. 165; Bourg. Pl. Can. no. 818 in BH. (not Desf.). D. parviflorus Bourg. Pl. Can. no. 401 in BH. (not Desf.); WB. ii. 164? D. neglectus a. asperocaulon Lowe Novit. 20 or 542. Pastinaca sylvetris tenuifolia Ger. (ed. 1597) 873 (ic. opt.).—Herb. ann. Mad. reg. 1, rrr. In barren rocky or stony places near and 200—500 ft. above the sea plentifully on the W. brink of the Rib. de S. Gonçalo a little out of Funchal to the E. along the Canico road. March—May.—Root strong somewhat woody tap-shaped often as thick as the forefinger at the crown, whitish, smelling like garden-carrots. Whole pl. bristly with short stiff strigose whitish hairs. Foliage rather dull dark gr. and somewhat grey or hoary. St. 1—2 ft. high erect and straight or only slightly flexuose, scarcely more than once or twice erectly branched above and rarely from the base, strigose-hispid all the way up with short spreading whitish hairs becoming longer more copious and strongly deflexed towards its base. L. hispid chiefly beneath, and on their rachises, nerves and petioles, with copious short bristles; uppermost lfts. nearly or quite smooth on the upper side. Lfts. of all the l. close or crowded leafy and their teeth or ultimate segm. even in the uppermost l. as broadly and shortly ovate or lanceolate as in the lower and not at all remote or elongately linear-lanceolate as they are usually in D. Carota L. Ped. of umbels very long, round striated thickly strigose-hispid all their length, simple and not dilated at top. Umbels large broad confluent, in bud and in fr. concave, in fl.
convex; rays hispid round striated slender very numerous and unequal, the outer much lengthened spreading or ascending and strongly incurved in fr. Gen. inv. mostly considerably shorter than the outer rays pectinately multifid with finely linear acuminate segm. hispid beneath, and broad widely membranously bordered stalks and main divisions. Partial inv. 3- or 5-fid, the inner simple linear with broad w. membranous edges; all hispid beneath and as long as the rays or longer. Fl. dull w. not turning y. in drying, reddish in the bud, the inner small, outer large radiant; central abortive fl. or umbellet large fleshy stalked prominent conspicuous, at first crimson, then fine dark atropurpureous or almost black, its pedic. very much shorter than its ped. and with several 3-fidly pinnate or 2 or 3 linear erect sheathing broadly w.-bordered bractlets and 2 or 3 inner bristles at its base. Sometimes there are more than one such abortive umbellet or fl. Fr. oval or oval-oblong 3-4 mill. long, half as wide without the bristles which are 1½-2 mill. long slender subulate and distinct down to but subconfluent and compressed at the base, subcapitate with 1-4 very minute stellate recurved points, shining bright chestnut. Carpophore free simple entire.

This is the only Daucus found either by Bourgeau or myself in any of the Canary Islands: for his D. parviflorus Pl. Can. no. 401 from Gr. Canary in BH. differs from his Tenerifan D. aureus no. 818 in no essential point, being only somewhat less robust and smoother than usual with the st. rather less villous, whilst his D. aureus no. 818 is perfectly the more robust and hispid-villous ordinary state of the Mad. pl. In Tenerife it is not uncommon, especially about Souzal between Laguna and Orotava. I found it also in Palma and Gr. Canary. Hence it is very probably both, as it is certainly one, of Webb's two very imperfectly described Canarian Dauci referred by Prof. Parlatore in Phytogr. Can. to two distinct Algerian sp. of Desfontaines (D. parviflorus and D. aureus) with y. fl. It is assuredly however a mere form of D. Carota L. with less finely divided foliage, and all the lfts. and ultimate segm., even of the uppermost l., broader or shorter and more leafy and crowded than usual. Thus indeed originally I had named it, though I was led afterwards erroneously to regard it as the normal state of certain specimens of D. neglectus previously found by Webb in 1828. Gerard's fig. at p. 873 in habit and foliage (except the two upper l. with linear segm.) exactly represents the pl.
DAUCUS.


Nearly or quite smooth dark-gr. and somewhat shining not hoary, branched from the base, the branches mostly diffuse or spreading and ascending smooth; 1. ovate-oblong or lanceolate 3-4-pinnatisect nearly or quite smooth at least above, lfts. ovate-oblong or lanceolate membranous-leafy deeply cut and toothed, teeth ovate-oblong or lanceolate mucronate; umbels dense or compact, not broad or large, on long and slender nearly smooth or naked stalks a little hispid upwards close beneath the umbel but not dilated at top, without or with a small stalked inconspicuous ill-developed atropurpureous central abortive fl., the rays smooth slender not very unequal, strongly incurved in fr.; fl. small crowded w., the outer radiant; gen. inv. as long in fl. as the rays, shorter in fr., finely ternately or quinately pectinate-pinnate with long linear segm., partial trifidly pinnate or simple linear as long as or longer than the rays; bristles of fr. crowded rather exceeding its breadth pale or whitish distinct straight slender compresso-subulate spreading scarcely or obsolete capitate or stellately glochidiate.—D. neglectus B. leio-caulon Lowe Novit. 20 or 542.—Herb. ann. Mad. reg. 1, rrr.

Waste rocky places near the sea at Ponta do Sol, in the Passeio dos Platanos at the back of the beach and 200-300 ft. higher up above the village on the road towards the Lombada, as also along the seaciff road to Rib. Brava; also about 2 miles up the Machico valley, on the hill above the cave or grotto near S. Christovo. July, Aug.—Differs prima facie from the Mad. D. Carota L. in its altogether less coarse or robust habit, more slender st. diffusely branched from the base, comparative smoothness and more delicate shining dark-gr. not at all hoary foliage. Root pale tap-shaped long and slender. St. about a foot high branched chiefly from the base or crown of the root, branches several diffuse or ascending and at least equalling in height the main st. which is mostly altogether smooth and shining like the rest, but sometimes at the base (with the sheaths, petioles, rachises and nerves of the lower l. beneath) a little hispid or pubescent, the upper surface of all the lfts. being always and the lower surface usually quite smooth. Foliage in general char. and subdivision much as in D. Carota L. above, but more delicate with all the segm. usually less crowded and more lanceolate, not at all thickened stiff or fleshy. Ped. slender usually 6–8 in. long always a little rough or hispid at top close beneath the umbel and sometimes sprinkled more or less further down with short reflexed bristles. Umbels smaller and more compact than in D. Carota L. and without the very long irregular outer rays of that sp., the fl. (especially the outer radiant) smaller w. sometimes in drying turning lemon- or sulphur-y. Abortive central fl. shortly stalked with a pair of sheathing bracts at the base of its pedic, quite small and inconspicuous
though dark atropurpureous; often entirely suppressed. Fr. as in *D. Carota* L. above, but the bristles paler, rather longer and very indistinctly capitulate or glochidiate. The rays are strongly incurved, but the umbels are scarcely "hollow" or "nest-like" in fr., owing to the much less disproportionate length of the outer rays.

In a single particularly robust or luxuriant spec. from Sr. Moniz, not only the ped. but st. also are sprinkled throughout with short w. reflexed bristles, and all the 1. are hispidulous beneath.

Nearest apparently to *D. Bocconi* Guss. or *D. Gingidium* L. (*D. hispanicus* Gouan) judging from the descriptions of these pl. in Gren. et Godr. Fl. Fr. i. pp. 666, 669; and yet, though much resembling a spec. marked "D. hispanicus Gouan illustr. p. 9, Montes Pyrenaei Dr. Broussonet 1783" in BH., it is very unlike *D. Gingidium* L. in the same collection.

The characters of *D. neglectus* Novit. 20 or 542 were unfortunately taken chiefly from spec. of the S. Gonçalo *D. Carota* L. But the pl. originally intended by the former name was the one to which I now restrict it, and which first became known to me by spec. found by Webb at Pta do Sol in 1828. These I was afterwards induced to blend erroneously with the S. Gonçalo pl. discovered in 1830 by myself and at first referred correctly to *D. Carota* L., though afterwards supposed to be the normal state *a.* of the Pta do Sol sp.

**Suborder II. Campylospermae.**

**Tribe VII. Caucaulineae.**


Smoothish or scarcely at all harsh or scabrous; st. virgate and with the numerous branches erect and slender, nearly or quite smooth downwards; foliage soft and decompound with fine or deeply cut divisions, mostly light gr.; 1. 2–3-pinnatisect soft flaccid, upper 2-pinnate, uppermost finely ternato-pinnate; lfts. deeply and finely cut, mostly narrow-lanceolate (not broadly leafy), the terminal one of the upper 1. sometimes a little produced but not or scarcely drooping; umbels terminal erect in bud on long slender ped. and with 4–8 fine and slender rays; partial umbels convex; fl. rather large pure w., radiant pet. twice the
length of ov.; gen. inv. 1-leafed or 0; styles in fl. short and thick twice the length of stylopod or half that of ov., in fr. conspicuous but scarcely overtopping the rather long spreading or ascending glochidiate retro-seabrous bristles.—Caucalis arvensis Mscr. Madere Sol. ! in BH.; Buch! 195. no. 289 (not Huds.). T. africana Bourg. ! Pl. Can. no. 822 in BH. (? (not Spr.).—Herb. ann. Mad. reg. I, 2, 3, ccc. Banks and waste ground among brambles by roadsides, in chestnut woods, borders of thickets &c. everywhere. Rib. de Sa Luzia, S. Vicente, Seixal, &c. a universal weed, especially in dry shady places. May—Sept.—Scarcely at all harsh or seabrous. St. erect slender nearly or quite straight and virgate 1—1 ½ ft. high, much branched from the base upwards, the branches slender erect or erecto-patent; st. quite smooth downwards, but inconspicuously more or less sprinkled upwards, like the petioles and ped., with minute short reflexed very close-pressed pellucid strigose hairs slightly bulbous at the base. Foliage rather bright or full gr. finely cut or divided, minutely and inconspicuously but thickly adpresso-strigulose yet not at all harsh; the uppermost 1. ternately pinnate, not simply ternate. Ped. 2—4 in. long slender, the umbels quite overtopping the foliage and very numerous, 1 in. in diam., not confluent, with mostly 5 or 6 slender rays which are ½ in. long and adpressedly erecto-strigulose. Fl. pure w. comparatively large and conspicuous, radiant pet. 1 line to ½ in. long. Anth. pink or lilac. Gen. inv. (about as often present as wanting) of one finely linear-acuminate 1.; partial of several similar 1. Styles thick capitate with large or conspicuous presently dark-coloured stigmas, in fl. short not more than twice the length of stylopod or scarcely more than half the length of ov.; in fr. subelongate and conspicuous but still thick and shortish or not longer than the bristles. Fr. rather large oval with the bristles often purple.

Pl. altogether smoother, smaller finer and more delicate in habit, more copiously and less stragglingly branched, with more finely cut soft foliage and larger fl. than the two following sp. It comes nearest to T. africana Bourg. ! (not Spr.) Pl. Can. no. 822 in BH., a Tenerifan pl., chiefly differing in the shortness of the styles: a character however which I have some reason for suspecting to be not altogether constant in the Mad. pl. From T. helvetica (Murr.) Gmel., Koch (= T. infesta Sm., Bab. = Caucalis infesta Curt. = C. arvensis Huds. = ? C. helvetica Jacq. Hort. Vind. iii. t. 16) and from T. neglecta Schult., DC., Koch (= Scandix infesta Linn. !; Jacq. ! Fl. Austr. i. t. 46) it is quite distinct in fl., fr., foliage and habit; approaching in some respects nearest to the latter, but again receding in the short styles,
which, however, are not almost wholly invisible in fr. as they are in *T. helvetica* (Murr.).


Strigosely harsh or scabrous; st. and branches stout straggling widely divaricate strigose throughout, the latter remote; foliage harsh somewhat coarse and scanty or remote with large leafy divisions, dark lurid gr.; 1. few and distant harsh ternately 1-2-pinnate, upper twice ternate, uppermost simply ternate; lfts. remote large leafy or broadly lanceolate coarsely inciso-toothed, the terminal one of upper 1. conspicuously produced elongate and drooping; umbels terminal, erect in bud, on long ped., 8-12-rayed; partial umbels flat; fl. small dull w., radiant pet. as long as ov.; gen. inv. 1-leafed or 0; styles long and slender, in fl. 3 or 4 times the length of stylopod or as long as ov., in fr. elongate and quite overtopping the rather long spreading or ascending retro-scabrous glochidiate bristles.—Herb. ann. Mad. reg. 1, 2, c. Waste ground among vineyards near Funchal, about the Quinta do Valle, seacliffs to the eastward, &c. June, July.—Very distinct from *T. tenuifolia* by its robust straggling habit, stout widely forked branches, coarse scant dark-gr. leafy drooping foliage and many-rayed small-fld. umbels. Pl. 1-2½ ft. high sparingly and stragglingly fork-branched, branches stout and stiff deflexedly adpresso-strigose. Foliage peculiarly dark and lurid gr. large distinct scanty harsh and strigose, with large broad leafy recurved and drooping ternate lfts. coarsely but not deeply cut or toothed. Ped. 2-4 in. long, stout strigose; umbels not numerous or distinctly overtopping the foliage, 1-1½ in. diam. not confluent with mostly 9 or 10 slender rays which are ¼-1 in. long and adpressedly erecto-strigose. Fl. dull w. small and inconspicuous, the radiant pet. ½ line long. Gen. inv. mostly 0, when present, like the several partial, linear-acuminate. Styles capitariate divaricately spreading or recurved, in fl. distinctly long and slender, and in fr. conspicuously elongate or longer than the bristles, and thus, besides the shape of the fr. itself, which resembles otherwise that of *T. tenuifolia*, at once distinguishing this pl. from the British or European *T. helvetica* (Murr.) to which in habit and foliage it in some degree approaches. Commissure of mericarps very narrow-linear with a hispid or bristly rib on each side.


Smoothish or obsolesly and not harshly scabrous; st. and branches stout erect or the latter erecto-patent and subremote, both with the petioles very minutely subpuberulous and nearly or quite smooth downwards; foliage soft and decompound with rather fine and deeply cut divisions, dark or full gr.; 1. not harsh 2-3-pinnatisect, upper 2-pinnate, uppermost ternately 2-pinnate
or pinnate (not merely ternate); ifts. somewhat leafy lanceolate deeply cut, the terminal one of upper 1. somewhat produced and drooping; umbels lateral oppositifolious, erect in bud, on short stout ped., 8-10-rayed; partial umbels flat; fl. small dull w., radiant pet. as long as ov.; gen. inv. 1-leafed or 0; styles long and slender, in fl. 3 or 4 times the length of stylopod or as long as ov., in fr. elongate and quite overtopping the rather long spreading or ascending retro-seabrous and stellately capitulato-glochidiate bristles.—Herb. ann. Mad. reg. 1, rrr. Waste ground amongst crops and vineyards above the Quinta do Valle near Funchal, descending from the end of the Levada de Sta Luzia. July 5, 1829.—With more the foliage of T. tenuifolia and the fl. of T. obscura, this is distinct in habit from both. St. erect straight smooth and even, about 2 ft. high, with shortish erect or erectly spreading side-branches at regular intervals all the way up, not widely fork-branched and straggling. Foliage ad pressedly pubescent but soft not harsh or strigose, as decom pound as in T. tenuifolia but with larger or more leafy subdivisions. Umbels numerous but from their short ped. chiefly lateral and not rising above the foliage exactly as in Anthriscus vulgaris Pers. (Scandix Anthriscus L., EB. t. 818). Ped. stout 1/4-1 1/2 (mostly 3/4-1) in. long strongly angular closely retro-hispid. Partial rays 3-6 or 7 lines long, not slender, closely erecto-hispid. Umbels mostly 9- or 10-rayed, 3/4-1 in. in diam. Fl. small dull w. and inconspicuous, the radiant pet. half a line long. Styles in fl. long distinct and prominent. Gen. inv. mostly 0, when present linear-setaceous like the several partial inv. Fr. rather large thickly clothed with rather long bristles longer than the semidiameter of the fr. yet not more than half the length of the prominent conspicuous slender capitate divaricately spreading or recurved styles.

The foregoing description is taken from the single spec. discovered by myself in 1829 and communicated in 1832 to my friend J. J. Bennett, Esq., by whom it has been kindly returned to me for the purpose. Considering the obscurity hanging over this whole genus and the strong general resemblance of its sp., it is less surprising that it has not since been noticed either by myself or other Mad. botanists.

The Canarian Toriles, combined into one mass with 4 or 5 distinct European sp. in WB. ii. 166 under the name of T. infesta Smith, will require a careful separate investigation. At present I can only say that of the 4 or 5 that have come under my observation, with possibly the exception of T. africana Bourg. (not Spr.) Pl. Can. no. 822 in BH., they all appear distinct alike from every European and Mad. sp.
T. brevipes differs from T. obscura in its smoother scarcely scabrous less straggling or divaricate branches, more cut and divided 1. without a conspicuously large and drooping elongated terminal lft., and in the smaller lateral short-stalked umbels. Approaching T. tenuifolia in foliage, it is at once distinguished by the short-stalked lateral umbels, small fl. and long slender styles.

4. T. NODOSA (L.).

Strigose; st. procumbent decumbent or diffuse, remotely forked; lfts. finely 2-3-pinnate, lfts. regularly and evenly inciso-pinnatifid, the segm. parallel narrow linear-lanceolate acute entire; umbels nearly or quite sessile lateral 2- or 3-rayed small and dense without gen. inv.; styles in fl. very short, in fr. about half the length of the bristles; fr. partly bristly partly warted.

—Sm. E. Fl. ii. 44; DC. iv. 219; WB. ii. 166, 167 (in part); Koch 345; Bab. 149. Caucaulis nodosa EB. t. 199; Desf. i. 236, 7; Brot. i. 447; Pers. Syn. i. 306; Hook. Fl. Scot. i. 88. Tordylium nodosum Linn.—Herb. ann. Mad. reg. 1, 5; PS. reg. 2, 7. Cornfields and fallow ground to the W. of Funchal between the Rib. Seco and Praia Formosa. PS. cornfields up Pico Branco and P. do Facho. March, April.—An inconspicuous pl. of humble growth, at first tufted, afterwards with weak spreading branches 6-12 in. long from the crown of the fibrous root, widely forked slender but stiff and rigid, straggling, minutely strigulose, sometimes nearly smooth, often purplish. L. harshly substrigose dark y.-gr., their ultimate segm. very regular and uniform narrowly-oblong or sublanceolate acute. Umbels either sessile or with very short stout ped. 1-2 lines long, very small globose capitately dense confusedly and obscurely 2- or 3-rayed, rays very short. Gen. inv. 0; partial many longer than the pedicels. Fl. minute regular crowded, always w. in Mad. Styles in fl. excessively short, scarcely longer than the stylopod. Fr. globose agglomerate rather large oval or ovate heteromorphous i.e. bur-like and bristly or warted; sometimes both mericarps entirely, sometimes only the outer one, or the exposed outer part of one or both, in the outer row of fr. clothed with very rough or scabrous, whitish scarcely glochidiate bristles twice the length of the inconspicuous styles and mostly but not always exceeding in length the breadth of the fr.; the inner fr. wholly and the inner parts merely of the outer fr. granulate or warted.

T. nodosa WB. ii. 166, 167 seems to be composed of two distinct sp. or at least remarkable varr., T. nodosa (L.) and T. in-festa Bourg. Pl. Can. no. 821 in BH.
Tribe VIII. Scandicineae.

16. SCANDIX L.

1. S. PECTEN-VENERIS L. Agulha.

Partial inv. 2–3-fid; beak of fr. very long dorsally compressed, strigose only at the edges.—Desf. i. 258; EB. t. 1397; Sm. E. Fl. ii. 46; DC. iv. 221; WB. ii. 167, 168; Bab. 149. *Charophyllum rostratum* Brot. i. 460.—Herb. ann. Mad. reg. 1, 2, c; PS. reg. 2, c. Cornfields to the E. and W. of Funchal, along the Levada de Santa Luzia, beyond Camera de Lobos up the Pico do Rancho &c., and in PS. general up Pico do Facho, towards the Fonte d'Área, &c. Dec.–May.—Root nearly simple tapering. Pl. mostly bushy and leafy branched from the base 6–12 in. high, with numerous ribbed spreading or diffuse short more or less hispid once or twice fork-branched st. L. numerous bright gr. finely and equably decompound 4-pin-nate, segm. all linear flat of equal breadth, the ultimate acute entire, apparently smooth but with the lens minutely strigose. Umbels stalked mostly forked or 2-rayed sometimes 1- or 3-rayed; stalks and rays stout and stiff. Gen. inv. none; partial 5 or 6 leafy ovate or broadly lanceolate, deeply 2–3-fid, sometimes simple, longer than the pedic., their edges ciliate. Fl. w. rather large subradiant. Stylopod dark purple large raised and prominent surrounding the base of the styles with an angular lobed cuplike elevated erect rim or collar. Styles very short not rising above the rim of stylopod. Carpels or seed-bearing part of the fr. 3–5 lines long compressed laterally, minutely rough or scabrous with raised points and a few short strigose bristles pointed forwards; the grooves between the primary ribs shallow, darker than the rest, like 8 dusky stripes. Beaks 1–3 in. long, 3–8 times the length of the carpels, 2-edged, the edges strigose or very rough with copious short stiff adpressed bristles pointing forwards, finely acuminate tipped with the angular plaited atropurpureous stylopods and straight erect approximate short styles. Carpophore entire undivided.

*S. brachycarpa* Guss. with entire partial inv. and beak of dorsally compressed fr. short scarcely twice the length of the carpels, and *S. australis* L. Fl. Gr. t. 285 with fr. laterally compressed and hispid all over, have not occurred.
SUBORDER III. CŒLOSPERMÆ.

Tribe IX. Coriandreae.

17. CORIANDRUM L.


The only established sp.—Desf. i. 258; Broth. i. 462; EB. t. 67; Sm. E. Fl. ii. 67; Fl. Gr. t. 283; DC. iv. 250; WB. ii. 170; Koch 353; Bab. 151.—Herb. ann. Mad. reg. 1, #. Vineyards and waste ground in and about Funchal, the Vale &c. Apr.–Sept.—Whole pl. smooth of delicate and slender habit with fine flaccid drooping foliage. St. slender erect straight 1-2 ft. high loosely branched upwards. Lower l. ternately pinnate with broad roundish or obovately wedge-shaped leafy unequally cut or toothed lfts.; upper 2-pinnate with narrow or linear segments. Fl. large conspicuous pure w. or pinkish with large drooping deeply bifid radiant pet. Umbels stalked 2–3-rayed mostly 3-rayed. Gen. inv. 1 setaceo-linear, or more frequently 0; partial several linear leafy on the outer half only of the ray. Fr. globose \( \frac{1}{10} \) in. in diam. shining. Whole pl. very fetid with a strong smell of bugs (*Cimex lectularius* L.).

Order XLII. ARALIACEÆ.

Fl. perfect mostly regular. Cal. mostly 4–5-toothed or entire adnate to the ovary. Pet. 5–10 or more, very rarely less or 0; astivation valvate. Stam. alternate with and as many or rarely twice as many as pet., inserted below the edge of an epigynous disk. Ov. inferior 2- or many-celled, each cell 1-ovulate, ovule pendulous. Styles as many as cells of ov. Fr. a dry or fleshy 1–many-celled berry, each cell 1-seeded. Seed pendulous with copious albumen; embryo (except in *Hedera*) minute.—Mostly shr. or tr. often climbing, with stimulant and resinously aromatic properties. L. alternate without stip. often quinately lobed palmate or pedate. Fl. small umbellate or capitate.

1. HEDERA. Cal. superior 5-toothed. Pet. 5–10 wholly free and not cohering at the tips. Stam. 5–10. Styles 5–10 connivent or concrete. Berry dry 5–10-celled 5-seeded crowned with the persistent cal. Embryo large axile as long as the seed.

1. HEDERA L. Ivy.


St. woody climbing attaching itself by root-like fibres; 1.
coriaceous smooth and shining angularly 3-5-lobed, those of
the fl.-branches entire ovate oval or elliptic; umbels globose
simple in terminal starry-pubescent or mealy panicles.—Brot.
i. 299; Buch 195. no. 287; EB. 1262; Sm. E. Fl. i. 334; DC.
iv. 261 (var. a); WB. ii. 173; Koch 353; Seub. Fl. Az. 42;
Bab. 152.—Shr. or suburb. per. Mad. reg. 2, 3, c. Banks and
rocks or cliffs in ravines, Rib. de S'ta Luzia opposite S. Roque,
de S. Jorge, de S. Vicente, &c. and abundantly along the road
from P'ta do Pargo to Porto Moniz. Aut.—St. either loosely
trailing on the ground or climbing rocks (not tr. in Mad.). L.
stalked dark gr. with pale milky veins especially when trailing
on the ground. Fl. pale gr., pet. reflexed, style simple pointed.
Berries black.

Coarse ropes or cables for their boats are manufactured from
the stems of this pl. by the fishermen, but they are neither very
strong nor durable.
A MANUAL FLORA
OF
MADEIRA.

PART IV.

Subclass III. COROLLIFLORÆ.

Stamens inserted on the more or less tubular (gamopetalous or monopetalous) cor. Pet. more or less united or coherent.

Sect. A. Cal.-tube adnate to the ov., limb superior. Cor. superior.

Order XLIII. CAPRIFOLIACEÆ.
The Honeysuckle Family.

Fl. perfect. Cal.-tube united with the ov. mostly bracteate, limb superior shortly 4-5- rarely 2-3-toothed. Cor. 4-5-cleft, the lobes imbricate in bud. Stam. 4-5 free i. e. adnate only to the base or bottom of cor.-tube and alternate with its lobes. Ov. inferior 3-5-celled. Style 0 or filiform. Stigmas 3-5 or single and 2-3-lobed capitate. Fr. 1-3- or many-celled indehiscent mostly berry-like fleshy or juicy rarely dry. Alb. fleshy. —Shr. sometimes climbing or subarboreous rarely herbs and then perennial. L. opposite simple without stip. Fl. terminal and corymbose or axillary. Berries mostly red or black rarely w. or y. often connate, rarely and then scarcely eatable.

Tribe I. SAMBUCEÆ.
The Elder and Guelder-rose Tribe.

Cor. rotate regular, pet. 5 equal mostly coherent only at their base. Style mostly 0 and stigmas 3 sessile; in Adoxa styles 4-6. Cells of ov. 1-ovulate. Fr. berry-like. Raphe of seeds ventral or introrsal. Fl. small mostly corymbose.
1. Sambucus. Cal.-limb small 5-fid. Cor. 5-fid rotate or urceolate. Stam. 5. Style 0; stigmas 3 sessile. Fr. pulpy or juicy 3-5-seeded.—Shr. or subarb. rarely herb. fetid. L. odd-pinnate. Fl. w. or pinkish.

†Tribe II. Lonicereae.
The Honeysuckle Tribe.

Cor. more or less tubular funnel-shaped or bell-shaped, limb irregularly or regularly 5-fid. Style filiform; stigma 3-lobed capitate.—Cells of ov. many-ovulate. Raphe of seeds dorsal or extras. Fl. rather large axillary often agglomerate in whorls and fragrant, w., y. or r. Fr. mostly baccate and often connate, sometimes dry or capsular.

†2. Lonicera. Cal.-limb small 5-cleft persistent. Cor. tubular funnel- or bell-shaped, limb mostly irregularly 5-fid. and bilabiate or ringent. Stam. 5. Fr. berry-like crowned by the persistent cal.-limb, 1-3-celled each cell 2-3 seeded. —Shr. often twining. L. simple often connate mostly entire.

Tribe I. Sambuceae.
The Elder and Guelder-rose Tribe.

1. Sambucus L.

†1. S. ebulus L. Dwarf Elder or Danewort. Engos.

Herbaceous smooth; 1. pinnate, lfts. oblong-lanceolate gradually acuminate sharply closely and finely serrate; the lowest pair ovate remote stipulary; cymes 3-partite, fl. all perfect and distinctly stalked. Brot. i. 474; EB. t. 475; Sm. E. Fl. ii. 109; Buch 195. no. 285; DC. iv. 322 (excl. β); Koch 356; Bab. 154.—Herb. per. Mad. reg. 2, r. Shady places near cottages, by road-sides &c., nowhere apart from cultivation and principally in the north; S. Vicente, Rib. da Achada do Marques (Sta Anna), between Fajã d’Ovelha and Pta do Pargo, Canhas between the Pouso and the Carvalhal, Curral das Freiras on ascent to Pico Grande, Porto Novo between Funchal and Sta Cruz up the Levada a little above the mill. July.—Roots strong and large creeping extensively. St. annual succulent stout erect thickish furrowed 1-2 feet high. Foliage rather large dark full gr. very fetid; lfts. 3-5 in. long 1-1½ broad, the lowest pair shorter and broader, set low down the petiole close to the stem, like stipules. Cyme terminal mostly single; its branches subpubescent. Fl. rather large for an Elder, w. or pale flesh-colour pink outside with purplish anth.
Fr. rather large "purplish-black" or black" (Sm.) "reddish-black" (Bab.), not or scarcely eatable.

Used by the country people in fomentations for bruises or contusions.


Subarboreous smooth; 1. quinato-pinnate smooth, lfts. oblong-lanceolate elongate subabruptly acuminate sharply and closely serrate; cymes 3–5-partite, fl. all perfect partly sessile nearly or quite scentless.—Prim. (ed. 2) App. iv. S. lanceolata Herb. Banks! Buch! 195. no. 284. S. nigra / lanceolata Lowe Prim. 31.—Tr. Mad. reg. 2, 3, 5. Deep moist woods and thickets; occasionally in cottage gardens. Woods a little below the Encumeado de S. Vicente, at the bottom of the Voltas in the Chão de Madeira above Seixal, Rib. de Ponteclero or dos Queimados (W. branch of the Rib. de S. Jorge), Rib. de Bôa Ventura, Ravines above Sãa Anna; in gardens at Funchal, Camacha &c. Fl. May, June; fr. Aug., Sept.—A small tr. 10–20 ft. high with bushy head and straggling branches exactly as in S. nigra L., the trunk seldom thicker than the thigh. Whole pl. quite smooth. L. shining bright full gr.: lfts. mostly 2 rarely 3 pairs, the odd one sometimes double, all shortly stalked with a small inconspicuous stiff stipel at the base of the petiolet; terminal and upper pair of lfts. much elongated and acuminate, often 5 or 6 in. long and only 1–2 broad. Fl. and branches of cyme pale yellowish-w. or cream-col. almost quite scentless or without the peculiar Frontignac fragrance of S. nigra L., a few sometimes hexamerous and many of them sessile. Sep. acute. Pet. spreading or reflexed oval rounded at tip. Stam. spreading or reflexed; anthers rather large y.; fil. w. Ov. pale yellowish faintly ribbed. Fr. mostly pale yellowish-gr. rarely black, milder and sweeter than in S. nigra L. and not decidedly unpleasant. A xarope (syrup or decoction) of the fl. is a favourite remedy.

Very distinct from its Canarian representative, S. palmensis Link, which is equally arboreous and has oblong-lanceolate lfts., but is altogether pubescent. S. palmensis occurred not unfrequently in the ravines, Barranco de Galga, dos Nogales, del Agua, &c., towards Los Sauces in the N. of Palma, in 1858. It is remarkable, considering the abundance of Viburnum rugosum Pers. (BM t. 2082) in the Canaries, and that V. tinus v 2
L. and DC. flourishes in gardens even down in Funchal, that Madeira possesses no indigenous *Viburnum*.

†Tribe II. *Lonicereæ*.

The Honeysuckle Tribe.

†2. *Lonicera L.*

Honeysuckle.


Branches sarmentose flaunting and somewhat twining or twisting; 1. deciduous subcoriaceous obovate obtuse abruptly mucronulate shining above, glaucous beneath, the lower shortly stalked, the upper sessile broadly connate or perfoliate; heads of fl. terminal distinctly stalked mostly ternate.—Santi Viagg. i. 113. t. 1; Spr. i. 757; DC. iv. 331; Koch 357; Gren. et Godr. ii. 10.

β. *glabra*; wholly smooth. *L. caprifolium* Buch 195. no. 286 (not Linn.).—Shr. Mad. reg. 2, cc. Chestnut woods on trees banks and hedges in all parts of the island e.g. the Mount, Camacha, up the Machico valley, Jardim, Canhas, Fajãa d'Ovelha, Pta do Pargo, Prazeres, S. Vicente, Arco de S. Jorge, Sta Anna, Pço da Cruz, &c., but nowhere apart from cultivation. Apr., May.—An extensively spreading shr. smooth in every part, with long weak climbing smooth pale ash-grey shoots or branches; L. stiff flat not undulate 1-2 in. long 1-1 1/2 in. broad, the lower obovate or broadly and shortly spatulate, distinctly but shortly stalked; upper sessile very obtuse broadly connate; all quite smooth on both sides and with a minute abrupt mucro. Fl. in large subternate rather long-stalked heads at the ends of the branches, altogether finer or more slender than in *L. caprifolium* L., yellowish and more or less reddish, deliciously fragrant. Ped. of heads slender but stiff and erect 1/4-3/4 in. long, mostly ternate sometimes brachiately quinate rarely single from the uppermost connate pair of 1. Cal.-teeth short half-ovate subacute. Style smooth. Cor. altogether smooth, tube about 4th longer than the limb; upper lip obtusely 4-lobed, lower narrow entire. Berries agglomerate connate at the base crowned with the persistent cal., dark yet bright yellowish-red.

The 1. are, strictly speaking, in Mad. only half-deciduous, the old 1. usually remaining on the pl. during its period of rest throughout the winter till Feb. or March and falling only when the new buds begin to shoot. This is equally the case however in Madeira with the Oak, Plane, &c.
Order XLIV. RUBIACEÆ.

The Coffee and Madder Family.

Fl. mostly perfect regular. Cal.-tube united with the ov., limb superior mostly regular and 4–5-fid, rarely 2–3–6-fid or entire. Cor. regular infundibuliform or rotate, mostly 4–5-rarely 3–6–8-fid. æstivation mostly valvate. Stam. free inserted on the throat or tube of cor. as many as and alternate with pet. Ov. inferior mostly 2-celled rarely more or only 1-celled; ovules in each cell 2 or many but mostly single erect. Styles 2 united or distinct; stigmas mostly 2. Fr. dry or fleshy (drupaceous or baccate) mostly indehiscent often didymous and bipartite. Alb. horny or fleshy large enclosing the straight embryo. — Herbs, shr. or tr. with often square jointed st. or branches. L. simple entire with a marginal nerve, opposite or sometimes whorled, mostly 2-stipulate. Fl. mostly in cymes or panicles, sometimes in heads, distinct or connate. Fr. rarely edible, but roots as in the Madder (Rubia) or Ipecacuanha (Cephaelis, Psychotria), bark as in the invaluable Chinchona, or horny albumen of seeds as in the Coffee-tr., sometime of worldwide celebrity.

Suborder I. COFFEINÆ.

Ovules 1 rarely 2 in each cell of ovary. Fruit-cells 1- rarely 2-seeded.

††† Tribe I. COFFEEÆ.

The Coffee Tribe.

Style single, stigmas 2, sometimes concrete or capitate. Fr. baccate or drupaceous 2-celled 2-seeded. Seeds convex at the back, flat on the inner side with a longitudinal groove in the middle.—St. rounded or compressed. L. opposite.

††† I. COFFEA. Cal.-tube very short not produced or persistent in fr., limb 4–5-toothed. Cor. funnel-shaped, limb 4–5-partite, throat naked. Stigmas 2 linear. Berry or drupe umbilicate not crowned with the cal. 2-seeded, seeds enclosed in a membranous parchment-like skin or endocarp. —Tr. or shr. with entire coriaceous l. Stip. interpetiolar binate entire. Fl. axillary.

Tribe II. ANTHOSPERMEÆ.

Fl. often imperfect polygamous. Styles 2 distinct; stigmas elongate papilloso-pubescent or hairy. Fr. dry of 2 indehiscent 1-seeded carpels or mericarps separating when ripe.—
Small innocuous shr. or herbs. L. opposite or whorled. Fl. small inconspicuous scentless.

2. **Phyllis.** Fl. polygamous i.e. perfect or male and female: cal.-tube compressed obovate, limb obsolete. Cor. rotato-campanulate shortly tubular, limb deeply 5-partite. Stam. 5 inserted at base of cor. Stigmas 2 linear subsessile on the ov. Fr. dry obovate compressed 2-partite; carpels 1-seeded pendulous from the top of the central axis.—Small shr. with opposite or whorled l. and terminal panicles of small gr. often imperfect (male or female) fl.

**Tribe III. Galleæ.**

The Madder Tribe.

Fl. rarely imperfect. Styles 2 distinct; stigmas capitate. Fr. dry or rarely fleshy, of 2 indehiscent 1-seeded carpels or mericarps mostly separating when ripe.—Herbs occasionally suffrutescent. St. 4-angular. L. verticillate. Fl. small, cor. stellate, lobes valvate in bud. Roots often yielding a red dye.

3. **Sherardia.** Cal.-tube ovate, limb 6-fid, teeth enlarged after flowering. Cor. funnel-shaped, tube elongate, limb 4-fid spreading. Stam. 4 exserted. Style 2-fid. Fr. dry of two carpels, each crowned by 3 teeth of the persistent cal.

4. **Galium.** Limb of cal. obsolete faintly or obscurely toothed. Cor. rotate 4- (rarely 3-) partite. Fr. dry, not crowned by the cal. limb, didymous, of 2 globose or ovoidal indehiscent 1-seeded carpels.—Square-stemmed herbs sometimes suffrutescent with whorled l. or stip. and small w. sometimes y. fl. in axillary cymes often forming spuriously terminal panicles.

5. **Aspera.** Like Galium but fr. oblong or subcylindric composed of 2 linear-oblong mericarps or carpels.

6. **Rubia.** Like Galium but cor. 5-4-partite and fr. juicy baccate.

†††Tribe I. **Coffeeæ.**

The Coffee Tribe.

†††1. **Coffea L.**

†††1. **C. Arabica L. Coffee-tr. Caféiero.**

L. oblong-lanceolate acuminate; ped. short axillary aggregate; fl. 5-fid, stam. exserted, fr. ovoidal.—Linn. Sp. Pl. 245; Lour. Fl. Coch. i. 144; BM. t. 1303; DC. iv. 499.—Shr. or
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subarb. Mad. reg. 1, cult. cc. Frequent in gardens and vineyards (rarely in plantations) about Funchal, São Cruz, Machico, Rib. Brava, and other villages chiefly on the S. coast, and scarcely flourishing above 600 or 700 ft. Fl. May, June; fr. Aug., Sept.—Left to itself the Coffee-pl. is a slender pyramidal shr. from 6-18 ft. high, with generally 2 or 3 erect straight stiff virgate pale-barked st. or main branches and numerous simple elongate horizontal or slightly drooping leafy side-branches. Foliage evergreen very dark or blackish shining gr. L. coriaceous but not stiff, wavy drooping 4 or 5 in. long 1½-2 in. broad; petioles short. Stip. combined into a pair of opposite close-pressed ovate cuspidate interpetiolar scales. Fl. towards the ends of the side-branches all along the gr. last year's shoots, rather large and elegant, of a pure snow-w. contrasting with the dark l. and deliciously fragrant like Jasmine, but of very short duration. Pet. rather long and narrow. Berries or drupes mostly ovoidal ¾-1 in. long, ½ in. broad, sometimes nearly globose, becoming from bright red dark blood-red or almost black, their thick, tough, leathery skin or flesh slimy inside and sweet but not palatable.

Twenty or 30 years ago Coffee was much more cult. in Mad. than it has been for the last 10 or 15 years. This is partly owing to the destruction of the pl. by Oidium or other blights simultaneously with the Vines. But although formerly the yield was abundant and the produce of very superior quality—the small and delicate “berry” being considered in London not inferior in excellence to the best Mocha—the cultivation of Coffee must always be confined within too narrow limits in Mad. to allow it ever to become a growth of much commercial value, and particularly as it only flourishes in situations capable of being turned to more profitable account.

Tribe II. Anthospermea.

2. PHYLLIS L.

1. P. NOBLA L. Cabreira; Seisim or Seisinho.

The only sp.—Linn. Sp. 335; Buch 195. no. 283; DC. iv. 579; WB. ii. 191. “Simpla Nobla Canariensium Pluk. Alm. 347.” Valerianella Canariensis frutescens Simpla Nobla dicta, Dill. Hort. Elth. ii. 405. t. 209. f. 386.—Shr. Mad. reg. 1, 2, 3, 4 (chiefly 2, 3), ccc; PS. reg. 1, 4, r; GD. and SD. reg. 1, r. Rocky cliffs from the sea up to the tops of the highest peaks in Mad. everywhere; in Pto São on the I. Debaixo, cliffs on the
N. coast near the Fonte d'Aréa and rocky summit of P. do Facho. Apr.–July.—A small shr. 1–3 or 4 ft. high either entirely smooth or more or less pubescent with shining rather light or bright gr. foliage and copious terminal panicles of inconspicuous small gr. fl. scentless like the whole pl. Branches diffuse ascendently erect and mostly elongate. L. not deciduous yet not stiff or coriaceous stalked oblong-lanceolate or lanceolate 2–3 in. long, ½–1 in. broad entire, opposite in pairs or 3–4-nate in whorls. Pectioles dilated and amplexicaul or combined at the base by the half-ovate short or linear-ligulate or lanceolate entire very variable stip. Panicles oblong leafy many-flowered 6–12 in. long. Fl. in short stalked opposite leafy compound repeatedly forked small crowded and often close congested axillary panicles scarcely longer than the leaves, 1 line in diam., partly perfect, partly male or female on the same or different pl. Cal.-limb quite obsolete. Cor. obovate in bud, lobes in fl. reflexed caduceous. Anthers large oblong exserted. Fr. drooping pale brown small obturinate or pear-shaped slightly notched or 2-toothed at top, 1½–2 lines long. Pedicels and branches of panicle often slender capillary; the former erect in fl., in fr. slightly drooping.

It is impossible to draw any line between the smooth and hairy or pubescent states of this very variable pl. The former is by far the commonest, but passes insensibly into the latter. The few-fl. state *pauciflora* DC. (*P. pauciflora* A. Rich.) is even still less separable.

*Nobla* is a corruption from the Spanish *Simple noble* (i. e. *Herba nobilis*, the noble herb or pl.) by which name Plukenet reports it to be called, though in Tenerife, Palma, Gomera and Hierro where I met with it, I heard of no such name. Webb gives *Capitana* as its name in Palma; in Gomera at Hermigua it is called *Canotilla*. I heard nothing of its virtues, and in Madeira it is accounted worthless except partially, or in want of anything better, for fodder.

**Tribe III. Galieæ.**

The Madder Tribe.

3. *Scherardia* L.

1. *S. arvensis* L.

The only sp.—Linn. Sp. Pl. 149; Desf. i. 126; Broth. i. 152 (*Scherardia*); EB. t. 891; Sm. E. Fl. i. 196; Buch 195. no. 281;
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DC. iv. 581; Koch 358; WB. ii. 189; Seub. Fl. Az. 34, 35 (var. pubescens Hochst.); Bab. 155.—Herb. ann. Mad., PS., reg. 1, 2, 3, ccc. In vineyards, cornfields, waste and cult. ground or by road-sides everywhere; not observed in the Desertas. March—June, but here and there at most seasons.—A small unprofitable weed with rather pretty bright lilac fl. inclining oftener to bl. than pink and sometimes very pale or even w. Whole pl. setosely scabrous and more or less hirtosely pubescent. St. prostrate sometimes cespitose, the ends ascending, 3–9 in. long, sharply 4-angular, pubescent or sometimes almost hirtose. L. 4–6 in a whorl bright full gr. hirtosely pubescent all over above, on the midrib and edges only beneath, rather broadly and shortly lanceolate sharply cuspidate, very scabrous. Fl. small 4–8 together in little terminal crowded sessile heads surrounded by 8 spreading nearly smooth but scabrous bracts shaped like the l. but larger or broader and in fr. dilated pale and connate at the base, forming a persistent invol. Teeth of cal. in fr. enlarged ciliato-setose narrow-acuminate. Fr. setoso-scabrous, dark brown or black.

4. GALIUM L.

§ 1. Platygalium Koch. L. 3-nerved; root per.; st. unarmed without deflexed prickles; fl. in terminal panicles.

1. G. ELLIPTICUM Willd.

Suffrutescent hairy-pubescent or glabrescent; st. horizontally hirtoso-pilose or lanuginoso-villous ascending or diffuse, much branched and shrubby downwards, the fl.-branches elongate and suberect; l. 4-nate subsessile or shortly petiolulate oval or elliptic, the lower broad obtuse abruptly mucronate, the upper narrower and more pointed or acute, all pale gr. or hoary reticulate subcoriaceous persistent, more or less piloso-pubescent principally on the nerves and margins, the latter ciliate with longer stiffer hairs, all pointing forwards; panicles terminal leafy composed of many-fld. trichotomously compound cymes, the branches ped. and pedic. of these finely capillary and at first upright, then divaricately spreading; fl. pale greenish-y. or cream-col.; fr. subglobose more or less uncinato-setulose.

a. lucidum; shining more or less glabrescent; st. thinly or hirtosely pilose; l. mostly with the nerves and edges only ciliato-pilose nearly or quite sessile, mostly obtuse; branches of panicle, ped., pedic. and fl. nearly or quite smooth.—G. ellipticum Willd. "Enum. Suppl. (1813);" DO. iv. 599; Gren. et Godr. ii. 17. G. ellipticum Willd. var. glabrescens E. Bourgeau! Pl. Can. ex. Itin. 240 (Coss.) in HK, HB. and Herb. Mus. Paris. G. rotundifolium Linn. Sp. Pl. ed. 2. p. 156
(excl. var. β, p. 157); Buch! 195. no. 278 (not Linn.! Sp. Pl. ed. 1 nor Herb. Linn.!). G. rotundifolium var. glabrum E. Bourg. ! Pl. Can. no. 831 in Herb. Paris. (a remarkably narrow-leaved form or perhaps distinct var.). G. ovalifolium Schott. in Iside (Jena 1818)-p. 821. "G. Barrelieri Salzm. Bot. Zeit. 1821. p. 107." Bocc. Ic. et Deser. Pl. Sic. pp. 10, 11. t. 6. ff. 1. Moris. iii. § 9. t. 21. f. 5. Barrel. Ic. t. 324.—Per. suffrut. Mad. reg. 3, §. Dry rocky banks and cliffs in ravines; Rib. de St. Luzia about the Waterfall, Serra d'Agua under Pico Grande, &c. June-Aug.—St. 4-angular unarmed or without deflexed prickles, per. woody smooth pale brown rounded and naked repeatedly branched and trailing or procumbent downwards, with numerous erect or ascending ann. leafy moderately elongated fl.-branches 1-2 ft. long sprinkled more or less thickly with distinct moderately long or short spreading soft though stiffish hairs. L. subsessile or with very short ciliatio-hirtose petioles, of a peculiar shining pale subpellucid gr. and thin substance like oiled paper, yet stiff and subcoriaceous, not turning black in drying, normally 6-12 lines long and 4-8 lines broad but varying often both in size and shape, the upper or sometimes all proportionately narrower or elliptic-oblong, all except the uppermost mostly obtuse or subobtuse with a small abrupt apiculus or leafy micro, rarely 4-nerved, finely pelliculo-reticulate when held up to the light, very closely and minutely puncticulato-granulate, ciliated principally on the nerves and edges with quite soft whitish forward-pointing hairs, and sometimes also shortly adpresso-pubescent all over above, but mostly glabrescent and never villous-hoary. Cymes short many-fld. in terminal leafy panicles, and with their more or less divericate, not lax or elongate, capillary divisions almost quite smooth. Fr. 2 lines or 3-4 millim. in diam. Pet. ovate shortly apiculate. Fr. dark coffee-brown or black, somewhat sparingly or thinly echinulate with soft short hooked whitish bristles, globose or globosely reniform, each mericarp shortly kidney-shaped and 2 millim. long by 1½ broad or thick.

Though not described as a Can. pl. in the Phytogr. Can. by Webb himself, this precise var. certainly occurs in the Canaries (Tenerife at Las Mercedes near Laguna, &c., E. Bourgeau ex Itin. 2do). Somewhat more common however in the Can. (sent thence by Bourgeau and found by myself at Barlovento in the North of Palma and in an intermediate less villous-hoary smaller-leaved state at El Golfo in the north of Hierro), is Webb's G. rotundifolium var. villosum; a pl. not hitherto observed in Mad., though in Sir J. E. Smith's Herb. in the Linn. Society, there is an undoubted spec. (with a pencil.
note "near G. elegans of Wallich") supposed to have come from thence. This Can. pl. seems indeed at first sight very different in its grey or hoary aspect from the Mad. pl. above described; but I have failed entirely to discover any permanent or constant distinction stronger than varietal between the two. It will therefore stand as G. ellipticum Willd.,


The original G. rotundifolium Linn. Sp. Pl. ed. 1. p. 108 is assuredly, both by his diagnosis and quotation of Morison t. 21. f. 4, simply and purely G. rotundifolium of DeCandolle, Koch, Grenier et Godron &c.; mainly distinguished by its annual herbaceous erect simple st. not above 8 or 10 in. high, and few-fid. less developed cymes, and not found either in the Canaries or Mad.

G. rotundifolium Linn. Sp. Pl. ed. 2. pp. 156, 157, is a compound: formed primarily (p. 156) of a pl. not before contemplated by him in ed. 1, for which he quotes Moris, t. 21. f. 5 and Boccone, adding in MS. propriâ manu in his own copy of Sp. Pl. ed. 2, to his imperfect printed reference to the last named author, "ic. 10. t. 11. f. 5,"—which is clearly an error for t. 6. f. 1, caused by his having mistaken the number 11 of the page close above the plate at the right hand corner for that of the plate itself* which is in small inconspicuous print at its left hand upper corner, and then having counted the separate figures of the plate backwards from right to left.

* Lamarck (Dict. i. 299), quoting Boccone, has made precisely the same mistake as to the number of this plate.
Now this pl. is plainly, both by the syn. and diagnosis, G. ellipticum Willd., DC. &c., and to it he appends, unfortunately (p. 157) as a var. β, his former G. rotundifolium of ed. 1. p. 108.

The name rotundifolium belongs therefore plainly and simply to the pl. originally so designated by him in ed. 1. And his G. rotundifolium ed. 2. p. 156 (excl. var. β p. 157) merges into a syn. of G. ellipticum Willd., DC. &c.

It can scarcely be considered otherwise than a mere accident or inadvertence that in his Herbarium he has inscribed propriam manu the name rotundifolium on an indubitable specimen of a pl. subsequently called by him (Mantissa, p. 38) Asperula levigata and at variance in toto with the syn. and diagnosis of both his G. rotundifolia in Sp. Pl. ed. 1 and 2.

The widely diffused European true G. rotundifolium L. (ed. 1) is quite distinct from every form of the Mad. and Can. pl. by its altogether smaller size and more delicate habit, its slender simple erect herbaceous st. scarcely above 6 or 8 in. high, its smaller pedunculate leafless lax few-fld. less branched or decompound panicle, with the subdivisions longer and more spreading and the fl. more remote. Its correct synonymy will stand thus:


I have lately received as "sp. Mad. nov.?" from my vigilant and unwearied friend the Barão do Castello de Paiva, a single dried example of a pl. found recently by one of his collectors on "a rock above the Icehouse" in Mad. It is entirely smooth or glabrous, dwarfish with small l. (2–4 lines long, 1–2 broad) and depauperated few-fld. cymes exactly as in Moris. t. 21. f. 4 and Barrel. t. 323, i. e. G. rotundifolium L. (ed. 1) verum; in somuch that I was inclined at first to think it really was that
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Besides the perfect smoothness of its st., l. and panicle, the l. are stiffer or more coriaceous and the fr. is much more thickly clothed or hirsute with copious long pale or whitish hooked bristles than in the ordinary Mad. pl. Still the st. is branched upwards and distinctly suffrutescent and trailing or procumbent downwards: so that, at least for the present, I can only regard it as a starved depauperated dwarfed extreme glabrescent state of *G. ellipticum a. lucidum* supra, from a high mountain elevation (nearly 6000 ft.).

§ 2. *Eugalium* Koch. L. 1-nerved; root per.; st. unarmed without deflexed prickles; fl. in terminal thyrsse-like panicles.


Suffrutescent nearly or quite smooth shining; st. 4-angular ascending or diffuse slender stiff and wiry mostly elongate and climbing, woolly downwards; l. 6–8-nate persistent rigid coriaceous shining mostly smooth sometimes pubescent linear-lanceolate cuspidate stiffly reflexed with the margins reflexed or revolute (at least when dry) and either entire or obscurely or irregularly spinuloso-serrulate; panicles terminal oblong elongate many-fid. compound and much-branched trichotomously, branches and pedic. crowded short divaricate capillary; fl. rather large dirty w. or pale cream-col., pet. abruptly elongato-apiculate or acuminato-aristate; fl. small smooth and even.—Prim. 29; Novit. 541 or 19. *G. Mollugo* Buch. n. 277 (not Linn., Sm., &c.). *G. aristatum* Holl’s List (not Linn., Sm., &c.). Suffrutescent per. Mad. reg. 2, 3, ccc. Dry rocky places and amongst brambles everywhere. Apr.–Aug.—Varr.:

α. St. smooth; l. narrow, marginal spinules indistinct or altogether wanting.—*G. productum* Prim. et Novit. ll. cc.—Rocks between the Valle fermosa and the Rib. de João Gomes; at the Mount, &c.

β. Dwarfish bushy leafy; st. subpubescent; l. somewhat broader and shorter, their marginal spinules more distinct or regular.—Serra d’Agua under Pico Grande and elsewhere general above 2000 ft.

A very variable pl. in all its characters; so that β, though mostly distinguishable from α by its bushy leafy habit and short st. or branches beside the other notes above mentioned, is scarcely more than a dwarfed or starved state of the pl. from dry open or exposed higher elevations (2000–5000 ft.).

The following description is taken entirely from α, gathered
on the rocky west bank of the Rib. de João Gomes 400–800 ft. above Funchal.

- Whole pl. smooth and shining. Root and rootstock woody. St. slender brittle strongly 4-angular stiff, not at all nodulous or swollen at or above the joints or whorls of 1., quite smooth and even; the flowering branches produced and trailing extensively amongst rocks and stones or climbing to the height of 4 or 5 ft. amongst bushes, with short leafy side-branches, pale brown and shrubby downwards and clothed like the barren branches with the strongly deflexed imbricately crowded whorls of the old persistent 1. L. light gr. not at all glaucous, very shining hard stiff and stiffly spreading or strongly deflexed not reticulate, the margins revolute with a few irregular obscure forward-pointing spinules but sometimes quite even and entire, not often less than 7–8-nate even on the smaller branches, 2–4 lines long, ½–1 line broad, tipped with a fine short awn-like point. Fl. rather large for a Galium, 4–5 millim. in diam., w. with a very slight yellowish or cream-col. tinge, produced abundantly in short lateral leafy crowded 3-chotomously decompound cymes from the leaf-whorls towards the ends of the branches, forming an elongated terminal many-fld. oblong thyrs or panicle with finely capillary strongly divaricated (not erect or ascending) short crowded branches and pedic. or fruit-stalks. Pet. thickish ovate abruptly producto-apiculate faintly 3-nerved or furrowed submarginate much longer than the ov. Styles distinct nearly to the base; stigmas capitate globose. Fr. small 1½–2 mill. in diam. quite smooth and even, one of the two oblong-oval or slightly kidney-shaped mericarps of which it is composed usually smaller or abortive.

G. cinereum All., DC. is a very distinct sp. with glaucous l. and st., and erect subelongated pedic.—G. cinereum Sm. (EBS. 2783) is probably a mere var. of G. erectum Huds. (EB. t. 2067), which seems even still more distinct than G. elatum Thuill. (G. mollugo EB. t. 1673) from the Mad. pl.

It is remarkable that this almost universally diffused and abundant Mad. pl. has never occurred in the Canaries.

§ 3. Aparine Koch. L. 1-nerved; root ann.; st. armed more or less with deflexed prickles; fl. cymoso-paniculate or axillary and 1–3-nate.
a. Cymes on axillary stalks longer than the leaves or short subabortive side-branches, more or less compound, leafy; paniculate or subpaniculate, forming a more or less distinct panicle.

3. *G. parisiense* L.

St. slender brittle suberect or ascending smooth but rough at the 4 angles with numerous minute deflexed prickles; l. 5–8–(mostly 7–) nate at first erect, then spreading or deflexed linear or linear-lanceolate aristate or bristle-pointed, the margins serrulate and the nerve or sometimes more of the upper surface hispid or rough with forward-pointing spinules; cymes small few-fld. on short remote leafy stalks or side-branches nearly all the way up the st. forming an interrupted irregular indistinct sort of oblong elongate panicle, 2–3-chotomously twice or thrice forked with capillary divaricated branches and pedic., the latter smooth 3–4 or even 5 times the length of fr.; fl. very small 2–3-nate; pet. erecto-patent ovate subobtuse; fr. small hispid or smooth and finely granulate.—Linn. Sp. 157; Vill. Pl. Dauph. ii. 332; WB. ii. 184; Koch (ed. 2) 363; ejusd. γ divaricatum 1025 (excl. syn.)?

β. *leiocarpum*, Tausch, Koch l. c.; fr. smooth or naked and minutely granulated. *G. parisiense* β. *anglicum* WB. ii. 184; eorund. γ divaricatum (excl. syn.). *G. parisiense* b. Vill. Dauph. l. c. *G. parisiense* a nudum Gr. et Godr. ii. 42. *G. parisiense* Lam. Enc. ii. 584; Bab. 157. *G. anglicum* Huds. EB. t. 354; Sm. E. Fl. i. 209; DC. iv. 607; Seub. Fl. Az. 34. "*G. anglicum* α. Koch (ed. 1) 354;" Coss. et Germ. Fl. Par. ii. 363; eorund. var. β. erectum (excl. syn.)? *G. minutiflorum* Holl! Mad. List (not Brot.). *Aparine minima* Bay Syn. 225. t. 9. f. 1.—Herb. ann. Mad. reg. 1, 2, 3, c.; PS. reg. 3, 4, rr. On walls about Funchal, dry rocky banks in ravines, open mountain pastures, &c., in Mad. everywhere. In PS. on the rocky summit of P. do Facho, N. side of P. da Cabrita and rocks above the church of N. S. da Graça. May–July.—A small inconspicuous shortlived fragile delicate smooth pl., with slender brittle st. mostly 3–6 and rarely more than 8–10 in. long, and small remotely whorled 1. St. diffusely suberect sometimes procumbent one or many (often about 3) from the crown of the rather long fibrous root strongly aculeolate and clinging by the numerous deflexed prickles at their 4 angles, sometimes very finely filiform and capillary, but still much oftener erect than procumbent or ascending. L. reticulate rather dark gr., the lower 4- or 5-nate broader or obovate, acute, the upper mostly 7-nate narrower or finely linear and produced into a fine bristly point, the disk above and nerve beneath mostly sprinkled with a few forward-pointing setules like those of the
margins. Cymes on erecto-patent stalks or short side-branches exactly as in *G. aparine* L. but 4–10-fld. and 2–3-compound, the divisions finely capillary and sprinkled with a few very minute prickles, 3–2-forked, the ultimate division with a single leaf or br. as long or sometimes twice as long as the quite smooth divaricate or often in fr. deflexed 1 1/2–3 millim. long, mostly binate pedicels. Fl. reddish or purplish outside, very small, pet. not longer than the ov. not apiculate, scarcely spreading. Fr. notched, transversely reniform, 1/3–2/5 millim. long, 2–3 millim. broad; mericarps globosely oval, mostly quite free from all trace of pubescence but finely granulated.

Two opposite extreme forms or states of this plant occur occasionally, equally diverging from the normal type. In hot sunny situations or open hill-sides and mountain pastures, it becomes more robust, with shorter stouter st., more crowded whorls of l. and close congested cymes of fl. and fr., turning very black in drying, and when growing on exposed flat tops of walls or rocks with numerous procumbent st. radiating from the crown of the root. On the other hand, in holes or crevices of walls or rocks, or when drawn up amongst other herbage in damp and shady spots, it assumes a very different aspect, becoming excessively attenuated and delicate in all its parts with erect often unbranched single st. of extreme tenuity not thicker than a hair, long internodes, finer or thinner l. in remote whorls, and loosely divaricate cymes with more elongated spreading pedicels and branches; and the whole pl. also turns less black or sometimes not at all so in drying. Such spec. in the Canaries were considered by Webb l. c. to be identical with *G. divaricatum* Lam. Dict. ii. 580 (DC. Ic. Pl. Rar. Gall. t. 24); which however, notwithstanding the adverse opinions of Smith E. Fl. l. c., Koch (ed. 2) 1025, and Cosson and Germain Fl. Par. ii. 364, appears to be sufficiently distinct. Indeed Cosson and Germain’s *G. anglicum ß erectum*, with st. “fortement denticulées-scabres,” agrees thus far as exactly with this form of the Mad. *G. parisiense ß* as it differs from the true *G. divaricatum* Lam.

Holl and Reichenbach’s reference (Mad. List) of this delicate form of the Mad. pl. to *G. minutiflorum* Brot. is doubtless incorrect; for Brotero’s pl. belongs by its “hispid fr.” rather to *G. parisiense ß a trichocarpum* Tausch (*G. litigiosum* DC.),
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a pl. which has never occurred in Mad. though it is not uncommon in the Canaries. However I am fortunately enabled to refer Holl's pl. with certainty as above to my *G. parisiense* by possession of a sp. from its collector himself, gathered near Camera de Lobos in July 1827.

*G. anglicum* *parvifolium* DC. l. c. seems to be merely a depauperated state from drought, with short stoutish stunted erect st. 2–3 in. high and crowded whorls of l., which occurs very commonly amongst the short turf in dry burnt-up mountain pastures in Mad.

Linnaeus, by quoting Ray t. 9. f. 1, seems to have intended to include *β leiocarpum* under his *G. parisiense*, and I have quoted him accordingly.


St. villose at the joints succulent stout but weak and rampant climbing or clinging tenaciously by the copious reflexed prickles of their angles and of the keel or nerve beneath and margins of the rough punctate-hispid subspathulately oblongo-lanceolate or linear-lanceolate abruptly aristate or mucronate 6–8-nate l.; cymes depauperate few- (2 or 3–6-) flld. stalked verticillately leafy subpaniculate in fr.; fr.-stalks divaricated straight; fr. uncinately-setose rather large—Linn. Sp. 157; Desf. i. 130; Brot. i. 151; EB. t. 816; Sm. E. Fl. i. 210; Buch 195. no. 279; DC. iv. 608; WB. ii. 183 (excl. varr. β, γ); Koch 362; Seub. Fl. Az. 34; Bab. 157. "Valantia aparine *β* Lam. Fl. Fr. iii. 383" (ex DC.).—Herb. ann. Mad. reg. 1, 2, c. Banks and bramble hedges about Funchal in vineyards up the Rib. de Sta Luzia, cornfields along the Caniço road, Loo fields &c., and Chestnut woods at S. Vicente, general. March–June.—Bright full gr. with brittle juicy elongated straggling 4-angular branched st., 2–4 ft. long mostly villose above the joints, clinging to everything it touches by the hooked prickles or bristles of its st. and of the l. and fr., flaccid and fast withering. L. often 7-nate mostly broadish all over rough with short erect hooked forward-pointing bristles, the stronger prickles of their keel and margins pointing backwards except near their tips. Cymes reduced to mostly 2 or 3 axillary fl. from the upper whorls of the short side-branches, not more than once or twice forked and furnished with whorls of 5 or 6 (not merely 1 or 2) floral l. at their divisions. Pedic. short, straight and stiffly divaricate in fr. Fl. very small pure w. not gr. or buff. Fr. large 4–5 millim. in diam. densely hispid, a double globe, one seed or globe often abortive.

The expressed juice of the pl. is sometimes drank remedially
in England as an antiscorbutic. The seeds have been recommended as a substitute for Coffee. No use whatever is made of the pl. in Mad.

The nearly allied *G. spurium* L. (EB. t. 1871) "distinguished by its" less depauperated cymes of "more numerous" (3-9) "gr. fl., floral l. solitary ('or in pairs'), fr. of about half the size and smooth" Bab. (or in β. *G. Vaillantii* DC.= *G. Vaillantii* EBS. t. 2943, hispid) has not occurred either in Mad. or the Can.

*b.* Cymes depauperated reduced to 2-3-fld. axillary ped. shorter than the l. or to 1-3 one-fld. pedic.; not panicled.

†5. *G. tricornis* With.

St. procumbent nearly simple stout but weak and straggling, the angles very rough or armed like the keel and margins of the 6-8-nate linear-lanceolate smooth l. with numerous strong reflexed prickles; ped. axillary short erecto-patent mostly 3-5-fld., pedic. strongly recurved in fr.; fl. small w., the 2 side-fl. perfect but seldom both fertile; fr. dark brown mostly binate large drooping finely and sharply tuberculated smooth, mericarps globose scarcely combined, one mostly abortive.—With. Brit. Pl. (ed. 2) 153 (ex Sm.); EB. t. 1641; Sm. E. Fl. i. 205; DC. iv. 608; Koch 302; WB. ii. 182; Bab. 156. *G. spurium* Roth Tent. i. 66 (ex Koch) (not Linn.). *Valantia tricornis* Roth Neu. Beytr. i. 142 (ex DC.). *Val. triflora* Lam. (ex DC.). *Val. spuria* Pers. Syn. 129.—Herb. ann. PS. reg. 2, rr. Cornfields at the base of the Pico do Castello," Barão do Castello de Paiva, Febr. 1859.—St. 1-2 ft. long, with a few short branches only towards the base, smooth like the l. but strongly and copiously prickly at the angles as also are the ped. and pedic. L. narrow 6-8 lines long, 1-1½ wide; gradually aristate or cuspidate, their margins and keel strongly and often doubly aculeolate. Ped. shorter than the l. sometimes twice 2-3-fld.; pedic. strongly recurved in fr. 1-3-nate mostly binate. Fr. coffee-brown or blackish, mericarps nearly distinct or slightly combined, globose, 3 millim. in diam., bald or naked but thickly covered with minute subacute abrupt tubercles.

The ped. are axillary on the main st. or on the short side-branches. In the latter case especially the inflorescence is nearly that of *G. aparine* L.

Described from dried PS. spec. kindly communicated by my indefatigable friend the Barão do Castello de Paiva. I never met
with it either in PS. or Mad. In the Canaries it is an abundant weed in cornfields.


St. procumbent numerously branched at the base smooth, the angles slightly rough with a few feeble minute reflexed prickles; l. 6-nate lanceolate abruptly aristate or mucronate smooth, their margins serrulato-ciliate with small forward-pointing spines; ped. axillary short 3-fl.d., recurved in fr.; fl. small cream-col., the 2 side-fl. imperfect sterile; fr. solitary large drooping w. or cream-col. finally light brown coarsely granulate or warded smooth; mericarps globose scarcely combined, one mostly abortive.—"All. Ped. no. 39;" DC. iv. 607; WB. ii. 182; Koch 362; Bab. 156. *G. verrucosum* Sm. in EB. t. 2173; Fl. Gr. t. 133; Sm. E. Fl. i. 204. *Valantia aparine* L. Sp. 1491; Pers. Syn. 129; Desf. ii. 390; Brot. i. 207; Buch 195. no. 282. *V. aparine a* Lam. ex DC.—Herb. ann. Mad. reg. 1, 2, 3, ccc; PS. reg. 2, r. Waste ground in vineyards, by road-sides, on walls and in cornfields in Mad. everywhere; in PS. only in the Serra de Fora. Dec.—June principally, but almost at all seasons.—Whole pl. smooth and shining, rather dark full gr. St. branching numerously from near the root, stout and simple upwards, procumbent or ascending 6–12 in. long. Ped. solitary thickish shorter than the l. strongly recurved or deflexed in fr. Fl. minute, the 2 lateral male barren fl. shortly stalked opposite. The strikingly large and handsome drooping pyramidally warted or tuberculated cream-col. or whitish fr., each mericarp of which is 3 millim. in diam. and coarsely granulated like a sugared almond, marks out at once the species, which is further easily distinguished from *G. tricorne* by the forward-pointing marginal spines of the l.

7. **G. geminiflorum** Lowe.

Nearly smooth or but slightly hispidulous dwarfish; st. short erect or subdiffuse slender filiform or capillary diversely fork-branched from the base and especially upwards, nearly smooth or glabrescent, the four angles here and there with a few remote minute reflexed spines; l. 4–6-nate subpetiolate elliptic-obovate aristato-cuspidate spreading or deflexed, their margins ciliate and upper surface often rough with forward-pointing setules; pedic. smooth axillary, either in pairs or single at each whorl and shorter than the l., or binate on a once-forked 1-leaved ped. and longer than the l., in fr. divaricate or sometimes recurved; fl. w. very small; fr. small densely hirsute or uncinately setose.—Novit. 541 or 19.—Herb. ann. PS. reg. 4, r. North side of the rocky summit of Pico do Facho and on Pico do Castello (often intermixed with *Aspera muralis* (L.)); abundant in the clefts of rocks and mountain
turf, as also on the walls of the old ruined Fort on P. do Castello more robust and luxuriant. Apr.-June.—A small inconspicuous extremely delicate and fragile short-lived pl., growing subcespitosely amongst the short fine mountain turf or filling crevices of rocks. Root very small and slender. St. 2-4 in. long, rarely 5 or 6 in. and then more spreading or diffuse, repeatedly and regularly dichotomously branched from the base upwards, extremely fine and brittle shining smooth remotely and sparingly aculeolate. L. small thin and delicate not reticulate remarkably broad and short, 2-4 millim. long, 1-2 broad, the lowest roundish oval, all conspicuously and abruptly aristate at the tip and attenuated at the base into a more or less distinct petiole, dark gr., turning rather black in drying. Fl. sometimes single but mostly two together each on its own axillary pedic. 1-3 millim. long, rarely depauperato-cymose i. e. elevated singly or in pairs on a common 1-leaved ped. and then a little longer than the l. (in other words, cymes bifid stalked 1-folate 2-fld.), and especially in more robust luxuriant pl., by the shortening or abortion of the upper internodes or branches, congested into little dense leafy 3-6-fld. terminal glomerules or heads, but still properly and truly axillary and in no sense paniculate. Pedic. from once to twice the diam. of the fr. in length, in fr. divaricate and sometimes reflexed; but the ped., when there is any, always straight and erect: both are quite smooth and unarmed. Fr. 1-1½ millim. in diam. globose or a little transversely oval, thickly clothed with rather coarse brownish-grey strongly hooked seta?, equalling or rather exceeding in length its own semidiam., brownish and thickened downwards.

This elegant little pl. comes nearest to G. recurvum Req. in DC. iv. 609, but disagrees with the description l. c. in its erect or diffusely suberect regularly dichotomous st., mostly geminate pedic. or sometimes 2- (but never 3-) fld. ped., the former never hirsute and only rarely deflexed in fr. It also approaches G. minutulum Jord.

Another apparently undescribed sp., closely allied to the preceding as well as to G. recurvum Req., found by myself in Febr. 1864 abundantly a little below the summit of Monte Gordo in the island of Sao Nicolao, one of the Cape Verdes, and again, 1866, in Fogo another of the group on the Chao da Relva at the foot of the great Volcanic Cone, at an elevation of 6000 or 8000 ft., may be thus characterized:

G. intricatum Lowe: annuum puberulum glabrescens, caulibus numerosis gracilibus tenuissimis capillaris basi intricato-ramosis subcespitosis superne simplicibus elongato-prostratis v. procumbentibus retrorsum minutissime setulosocominulosis v. acu-
leolatis; fol. 6-natis linearibus v. lineari-lanceolatis cuspidatis patentibus v. subrecurvis glabriusculis serrulatim ciliato-setulosis; cymis axillaribus ad dichotomiam unifoliatis 2–4-floris foliiis verticillorum longioribus pedicellisque 1–2-natis 1-floris isidem brevioribus setuloso-subpuberulis patentibus v. reflexis; fl. minutis albidis; fr. minutis breviter nec dense (sepe sparse) uncinito-hispidulis globosis.

Hab. in montibus Insularum Viridensium ad alt. 6000–8000 ped. A Cape Verde spec. of this plant exists in Herb. Mus. Paris., brought from Lisbon in 1808 by M. Geoffr. de St. Hilaire, and marked "(Aspera) Galium filiforme R. et S.?" It is without fl. or fr., and was therefore probably either purposely omitted or overlooked by Webb in his Spicilegia Fl. Gorg. Nor is there any mention of the pl. in J. A. Schmidt's Flora der Cap. Verd. Inseln.—G. filiforme R. and S. is a mere syn. of Aspera muralis (L.).

5. Aspera Mnch.

1. A. muralis (L.).

Sherardia muralis Linn. Sp. 149; Pers. Syn. 124. Scherardia muralis Brots. i. 153. Aspera nutans "Mench. Meth. 641." Callipeltis muralis Moris. Sard. ii. 309. Galium murale DC. iv. 610; Koch 1025; WB. ii. 151; Gren. et Godr. ii. 46. Valantia filiformis Ait! Hort. Kew. (ed. 1) iii. 428. Galium filiforme DC. iv. 610. Asperula verticillata muralis Moris. § 9. t. 21. f. 6.—Herb. ann. PS. reg. 4, r; SD. reg. 2, r. In PS. on the N. side of most of the rocky peaks; P. do Castello, in the short fine turf, intermixed abundantly with G. geminiflorum Lowe (as in the Canaries usually with G. parisiense L. a); SD. at the top. Apr.–June.—A small inconspicuous pl. of a light or y.-gr., not turning black in drying, otherwise of much the same aspect or habit as G. geminiflorum or G. parisiense, but at once distinguished by the curious horn-like fr. which remains strongly attached to the st. even when the latter are dried up. St. slender often filiform sparingly or irregularly branched dichotomously, 2–4 or 5 in. long, decumbent, often subcespitose, more or less hispid and here and there subaculeolate with deflexed prickles. Lower and middle l. 4–6-nate, uppermost 2–3-nate, the middle more broadly the uppermost more narrowly elliptic-lanceolate, the lowest obovate and subpetiolate, all cuspidate or aristate, setuloso-ciliate at the margins and with the whole upper surface hispid or glabrescent. Pedic. 1–3 mostly 2, geminate or opposite, axillary, each 1-fl., or 2–3-nate on an axillary dichotomous ped. often furnished at the fork with a single l. or br., the whole with the fr. in either case very much shorter than the l., the pedic. about half the length of the fr., stout and in fr. strongly deflexed. Fr. drooping linear-oblong 1–1½ millim. long, not quite half as broad,
black but hoary and shaggy or hirsute all over or at the tip with long w. hooked bristles, at first straight, finally sub-incurved or horn-like.

I did not meet with Dr. J. A. Schmidt’s *G. filiforme* (Fl. Cap. Verd. 209) in the Cape Verdes, and therefore cannot speak with absolute certainty about it: but judging from numerous Mad. and Can. spec. I cannot but agree with Webb in believing *Val. filiformis* Ait. and Chr. Smith’s Laguna (Tenerife) pl. (*G. filiforme* DC.) to be both identical with *Sherardia muralis* L.; and I must further observe that Dr. J. A. Schmidt mentions no char. in his pl. at all at variance with the belief of its identity also with the same. The l. vary in Mad. spec. more or less linear-lanceolate or glabrous even on the same pl.

*Aspera*, however objectionable, is a less evil than a new name, and may be tolerated like *Asperula, Mirabilis, Impatiens* &c. *Valantia muralis* L. and *V. hispida* L., both much resembling *A. muralis*, should be looked for in P 10 S 10 and the Desertas.

6. **RUBIA L.**

1. **R. ANGUSTIFOLIA L. Ruvinho. Madder.**

St. shrubby rampant climbing, the angles upwards very rough and harsh like the keel beneath and edges of the l. with strong minute hard reflexed points or prickles; l. evergreen persistent coriaceous very harsh and rigid shining not reticulate beneath 6-8-nate sessile linear or linear-lanceolate mostly 6-12 times as long as broad, the nerve and margins above mostly more or less rough with forward-leaning points besides the reflexed prickles of their keel beneath and edges; cymes on axillary short side-branches many-fld. trichotomous; fl. 5-fld, lobes ovate apiculate or acuminato-aristate; anthers sub-globose, stigmas globose.—Linn. Mant. 39; Pers. Syn. 130; Brot. i. 154; Ait. Hort. Kew. (ed. 2) i. 243; DC. iv. 589. *R. peregrina* G. angustifolia WB. ii. 187; Gren. et Godr. ii. 13. *R. tinctorum* Buch 195. no. 280 (not Linn.).—Shr. per. Mad. reg. 3, cc. Woods and wooded banks in ravines everywhere (Rib. Frio, da Metade, Serra d’Agua &c.) especially in the north.—Apr.-Aug.—Roots long fibrous strong woody, often as thick as the little finger, running extensively but not deep below the surface, brown outside, dull red within. St. woody but flexible round naked simple and pale brown or ash-col. downwards and as thick as the little finger, running up bushes and under-wood like thin ropes or cords often to the height of 10 or 15 ft., much branched upwards and clinging and supporting them-
selves by their cumbrous dense festoons of matted branches and foliage which are of a peculiarly dark bright-shining gr. and harsh stiff dry rigid nature, clinging as tenaciously in masses together or to the shrubs they overspread as G. aparine L. L. persistent or perennial very harsh stiff and rigid, 1-3 in. long, 1-3 lines broad or 3½-18 (but mostly 6-12) times as long as broad, the upper often nearly altogether smooth or with only a few very minute rough points inclining backwards on the keel and edge beneath, the nerve above and whole upper surface being quite smooth; but the rest of the l. have not only the keel beneath and edges harshly retrosaccabrous with a single row of larger distinct prickles but the nerve above and upper surface towards the margins also antrosally scabrous more or less though sometimes nearly or quite smooth like the upper l. of the panicle. Fl. small very numerous in crowded lateral trichotomously compound cymes forming large oblong ample leafy panicles pale greenish-y. or cream-colour and strong-scented, 5-fid; lobes acuminato-apiculate or long-pointed. Anthers subglobose or shortly oval. Stigmas abruptly globose; styles distinct at least halfway down. Fr. shining black globose 3-3½ lines in diam. Pedic. divaricate in fr.

This pl. is as distinct from R. peregrina L. as most sp. of the tribe Galieæ are from one another.

Order XLV: VALERIANACE.Æ.

The Valerian Family.

Fl. mostly perfect subirregular. Cal.-tube united with the ov., limb sup. various, toothed or entire, often obsolete or involute in fl. forming at last a crown or sometimes feathery pappus to the fr. Cor. tubular funnel-shaped 3-5-lobed, the lobes imbricate in bud, more or less unequal or irregular with the tube spurred or gibbous. Stam. 1-5 free inserted in the tube. Stigmas 1-3. Ov. 3-celled, one cell only perfect with a single pendulous ovule. Fr. dry indehiscent 1-seeded 1-celled or 3-celled with 2 cells barren, crowned with the persistent more or less developed cal.-limb. Albumen 0.—Herbs with bitter tonic antispasmodic or anthelmintic and strong-scented roots or rhizomes. L. opposite without stip. Fl. small cymose mostly red or w., often blue or lilac, very rarely y.

1. CENTRANTHUS. Cor. 4-5-lobed, tube spurred at the base or gibbous on the side or throat. Stam. 1. Fr. 1-celled crowned with the cal.-limb unrolled and developed into a feathery pappus.—Cymes corymbose.

2. VALERIANELLA. Cor. 5-lobed, tube regular not spurred
or gibbous. Stam. 3. Fr. 3-celled crowned with the erect persistent unequally toothed simple unchanged or only enlarged cal.-limb, 2 of the cells barren.—St. dichotomously branched; fl. at first solitary in their forks, becoming aggregate in close bracteated cymes or fascicles at their top.

1. Centranthus DC.


L. ovate or ovate-lanceolate; spur distinct basal, twice as long as ov., shorter than the tube of cor.—DC. iv. 632; Koch 371; Bab. 160. Valeriana rubra a Linn. Sp. 44. V. rubra Desf. i. 27; Brot. i. 47; EB. t.1531; Sm. E. Fl. 142. V. marina latifolia Moris. iii. §7. t. 14. f. 15; ejusd. Pl. Umbell. t. 11.—Herb. per. Mad. reg. 1,2, c. Walls and rocks about Funchal chiefly, an outcast of gardens. At most seasons.—More or less glaucous smooth 1-2 ft. high thickly bushy and leafy. St. suffrutescent at the base, succulent and fistulose upwards. L. entire more or less stalked, the upper lanceolate. Cymes brachiate forming close pyramidal terminal thyrses or panicles. Fl. more or less deep rose-red, sometimes pale pink or w. Style filiform and with the single stamen somewhat exserted. The remarkably long slender spur originates from the very base of the tube of cor. Lobes of cor. very unequal and often arranged bilabiately. Expanded pappus large, elegantly feathery, deciduous.

2. C. CALCITRAPA (L.).

Lower 1. lyrate, lowest often simple ovate or rounded, upper lyrato-pinnatifid, lobes of upper sharply of lower bluntly toothed or crenate; spur very short from above the base of cor.-tube.—DC. iv. 632 (excl. var. β); Buch 195. n. 276; WB. ii. 196; Bab. 160; Gren. et Godr. ii. 53. Valeriana calcitrapa L. Sp. 44; Desf. i. 28; Brot. i. 47; Fl. Gr. i. t. 30.—Herb. ann. Mad. reg. 2, 3, 4, c. Rocks and banks in ravines up to the highest peaks; Rib. de Sta. Luzia &c., Peaks about the Icehouse, at the Entrosa on the N. coast, Pico da Cruz, Seixal, &c. March-June.—Whole pl. smooth and shining succulent, very variable in stature and luxuriance, with a single very erect straight st. from 2 in. to 2 ft. high, mostly about 1 ft., stout succulent hollow and sometimes as thick as the little finger, mostly glaucescent, brachiately branched. L. succulent more or less glaucescent, often dark purplish red or violet; lobes of lower and st.-l. toothed or crenate, of uppermost often entire. Fl. pale greyish lilac or dull w. distichous but unilaterally erect close-crowded on the uppermost divisions of the brachiate dichotomous densely corymbose terminal cymes, each fl. from the
axil of a persistent linear-lanceolate br. as long as or longer than itself. Spur very short, but not a mere gibbosity, originating a little above the base of the tube, but not \( \frac{1}{4} \) of the way up, and far below the throat. Stam. a little longer than cor. Lobes of cor. subequal.

The exact position of the spur seems variable. Grenier and Godron say "Cor. très brèvement gibbeuse sous la gorge." Webb says "tubo medio vel versus basim calcarato;" Desfontaines, "basi hinc gibboso," as in the Mad. pi.

2. VALERIANELLA Poll.

§ 1. LOCUSTA DC. Fr. with 2 contiguous parallel subconfluent barren cells larger than the fertile cell which is gibbous thickened and corky at the back. Dissemination of barren cells incomplete or obliterated.

1. V. OLITORIA Poll. *Saboia* or *Alface da terra*. Corn Salad or Lambs Lettuce.

Branched dichotomously from the base, mostly bushy; st. and branches more or less furry or deflexedly pubescent at the angles; l. softly ciliate at least downwards, undivided, the lower oblong-spathulate obtuse entire, the upper narrower less obtuse and slightly or irregularly repand-toothed; fl. aggregate in small subglobose heads or close congested cymes with leafy ligulate spreading serrulato-ciliate involucral br.; fr. large oblique ovately or rhomboidally roundish, compressed, transversely or circularly ribbed, crowned with one distinct tooth and 2–4 shorter indistinct teeth.—DC. iv. 625; WB. i. 195; Koch 372; Bab. 161; Gren. et Godr. ii. 58.—*Valeriana olitoria* Brot. i. 48; *Valeriana Locusta* Sm. EB. t. 811; Ait. Hort. Kew. (ed. 2) i. 76; Buch 195. no. 275. *Valeriana Locusta a. olitoria* Linn. Sp. 47; Desf. i. 30 (var. A). *Fedia olitoria* "Vahl Enum. ii. 19;" Hook. Fl. Sc. i. 15; Sm. E. Fl. i. 45.—Herb. ann. Mad. reg. 2, cc. Banks, walls and cornfields in the north general; Pico da Cruz, Rib. de Fial up to the Pao de Bastião, S. Vicente, Seixal on road to Rib. Fundo, &c. Apr.—Aug.—St. numerous branching from the root, 6–12 in. high, forming mostly a dwarf corymbose bushy tuft of a peculiar pale apple-gr. and more or less hirto-pubescent or furry downwards at the angles, upwards nearly or quite smooth. L. sometimes all entire or all feebly repand-toothed, remarkably flaccid and quickly withering, their edges and midrib ciliato-pubescent. Fl. pale blue in terminal stalked bracteated subglobose heads, not sessile singly in the angles of the st., the leafy outer br. resembling an involucre. Fr. mostly quite smooth
in Mad., rarely minutely velvety-puberulous, pale straw-colour, $\frac{1}{10}$ in. in transverse diam., often rather broader than long, gibbous, compressed, the blunt narrow edge or back longitudinally faintly grooved, the broad flattened or slightly hollow sides with two faint approximate medial ribs separated by a narrow groove, and one much stronger than the other; the whole fr. more or less strongly ribbed or wrinkled circularly. Cut across, the fertile cell with its enormously gibbous spongy back is found lying across from side to side and occupying more than half the fr.; the 2 barren cells lying parallel at right angles to it and with the wall between them imperfect or more or less obliterated. Teeth of crown very short, thickened, gr. at the tips even in the ripe fr., the larger one belonging to the fertile cell, the 2-4 (or mostly 2 only tolerably distinct) smaller teeth being the tips of the outer ribs or nerves of the 2 barren cells. Not used in Mad. for anything but fodder.

§ 2. Siphonocephalæ Willem. Fr. with two distinct or separate and non-contiguous barren cells convergent at the base and smaller than the fertile cell which is not thickened at the back. Dissepiment of barren cells complete.

2. V. Morisonii DC.

St. widely divaricate or fork-branched upwards, branches of corymbs spreading, the ultimate divisions spinulosose-scabrous fine and slender; upper l. subpinnaentifidly 2-3-toothed at the base, the rest entire; cymes small not many-fld. or congested, forming a widely forked lax corymb; br. erect linear finely serrulato-ciliate scarcely longer than the fr.; fr. smooth or hirsute small ovate-acuminate or conico-pyramidal compressed, the back convex with a fine filiform midrib and 2 stronger side-ribs, the front with two siphon-like strong ribs (barren cells) inclosing an oblong or lanceolate-oblong slightly convex nucleus-like depression divided into two equal parts by a filiform keel or midrib; crown or cal.-limb prominent narrow half the length of fr. very obliquely truncate 5-6-toothed, the middle dorsal tooth produced acuminate.—V. Morisonii DC. iv. 627; Soyer-Will. in Gren. et Godr. Fl. Fr. ii. 63. V. dentata “ (Poll. Palat. i. p. 80)” ; Koch 372 (excl. syn. Valeriana Locusta 8. dentata L.) not DC.; Coss. et Germ. Fl. Par. ii. 369; Bab. 161.—Herb. ann. Mad. reg. 2. Apr.-July.—Varr. —

a. leiocarpa; fr. smooth or naked; br. mostly indistinctly serrulate or ciliate, sometimes entire.—WB. ii. 194 (not a DC.). V. Morisonii B. leiocarpa DC. l. c. V. dentata a. leiocarpa Koch l. c. Valeriana dentata EB. t. 1370; Ait. Hort. Kew. (ed. 2) i. 76. Fedia dentata Hook. Fl. Scot. i. 15; Sm. E. Fl. i. 45. F. dentata a Hook. Brit. Fl. (ed. 5) i. 164.—S. Vicente in cornfields along the road halfway up to the Encumeada (first
found by Dr. Chas. Lemann) and on walls above Dr. Vicenzia's Quinta, rrr.

β. lasiocarpa; fr. crispate-hispid or hirsute; br. distinctly serrulate or ciliate.—V. Morisonii DC. 1. c. (excl. syn. Sow. EB. t. 1370 and var. β). V. dentata β. lasiocarpa Koch 1. c. V. dentata β. pubescens Cosson et Germ. 1. c. Fedia dentata β Hook. Brit. Fl. (ed. 5) i. 64. Valeriana mixta Linn. Sp. 48. “Fedia mixta Vahl En. 2. 21.” Valerianella semine umbilicato minore hirsuto Moris. Umbell. tab. gen. ft'. 56 et 57; Hist. iii. sect. 7. t. 16. f. 35.—S. Vicente in cornfields mixed with a on the road to the Encumeada; also on the road to the Forno de Cal, St. Moniz, rrr.

Light gr. smooth without pubescence 9-18 in. high widely branched dichotomously upwards only, the upper branches especially of the cymes fine and slender angular but not winged, scabrous with a few minute subrecurved spinules at the angles. L. narrow, the upper ligulate or linear acuminate and pectinately inciso-toothed or lacinately subpinnatifid at the base only, the rest entire and more or less acute. Corymb loose widely divaricate, the fl. loose and few together (instead of congested) in remote small cymes, with a single fl. in the forks; the branchlets and pedicels slender, simple fine not winged or thickened. Fl. “flesh-col.” Hooker l. c. Fr. (with beak or crown) 2-2½ mill. long, 1 mill. broad; coppery or reddish brown; the dorsal midrib or stria often faint or obsolete and in any case not visible in β; the hairs incurved or crispate. Crown or cal.-limb erect distinct green and foliaceous not reticulate much narrower than fr. mostly ½-toothed, the middle dorsal tooth produced acuminate 3-dentate with a short but distinct toothlet on each side, the 2 or 3 front teeth short irregular or more obscure.

The var. β is, according to Soyer-Willemet in Grenier and Godron, Valeriana mixta L. But the names mixta and dentata have been so variously applied by different authors that it is far better to set them both aside; e.g. V. mixta DC., Bertol., Guss. = V. microcarpa Loisel., and the true V. Locusta δ. dentata L. = C. auricula DO. and not at all the present pl.

3. V. PUBERULA (Bertol.).

St. branched mostly from the base and leafy; branches of corymb stiffly many-forked, the ultimate divisions short stout robust strongly alato-angular and thickened or dilated upwards smooth and even; 1. mostly repand-toothed, the upper rarely pinnatifid or 2-3-inciso-toothed at the base; cymes close compact congested many-fl.d. forming a broad stiffly many-forked...
corymb; br. erect or adpressed linear or lanceolate often dilated at the base very entire not ciliate a little longer than the fr.; fr. minute very shortly and adpressedly hispid globosely ovate scarcely or not compressed, the back convex with a keel or midrib sometimes obsolete and 2 sharp side-ribs, the front with 2 siphon-like strong blunt ribs inclosing a short or roundish oval slightly convex nucleus-like depression like an umbilicus and with a keel or midrib which is often faint or obsolete; crown very short and inconspicuous mostly entire obliquely truncate not ciliate, the dorsal tooth short and broadly ovate mostly obtuse and apiculate or mucronate, sometimes acute, the inclosed cuplike hollow area roundish oval.—DC.iv. 627; Koch (sub *V. dentata* B.) 373; Gren. et Godr. Fl. Fr. ii. 62.—Herb. ann. Mad. reg. 1-2, r. "Rib. de João Gomes, Funchal, and S. Vicente on the road to the Forno de cal," S' Moniz; between Seixal and the Rib. de João Delgada along the cliff road to the east, and very abundantly towards Rib. Fundo to the west, in cornfields intermixed with *V. olitoria* Poll.; P'ta Cruz, Terra de João Bautista, sparingly; in a sugar-cane plantation close behind the Church of Agua da Pêna between S'ta Cruz and Machico, abundant. Apr.—July.—Light gr. nearly or quite smooth. St. 6-9 in. high leafy mostly bushy and branched from the base, the branches opposite and rising as high as the main st., in weaker pl. simple and branched only upwards; st. and branches thicker stouter and stiffer than in *V. Morisoni*, smooth or with only a few minute short furfuraceous hairs or setules here and there in their grooves or hollows. Branches of corymb repeatedly dichotomous stiffly divaricate, the ultimate and penultimate divisions of the cymes abbreviate robust and thickened with the edges or angles alato-marginate; all quite smooth and even. Br. small not much longer than the fr. erect or erecto-patent narrow and acute mostly dilated and calyculate-amplexicaul at the base, with membranous w. margins, quite smooth and entire. Fl. minute in small distinct close terminal forked cymes or heads opening in rows regularly outwards, pink in bud, afterwards appearing in the mass pale lilac or bluish; a solitary fl. in the axes of the uppermost forks only of the corymb. Fr. 1-1½ millim. long, ¾ mill. broad, coppery or reddish brown, much smaller shorter and plumper than in *V. Morisoni* DC., not acuminate or beaked and with a short oval not oblong depression in front more like an umbilicus, minutely rough or adpressedly hispid with very short erect setules, rarely nearly smooth or naked and merely reticulato-granulate, and then only a few such on the same pl. with others hispid. Crown gr. erect scarcely more than ¾ of the length of the fr., much broader and shorter than in *V. Morisoni* DC., only a little narrower than the widest part of the fr. and scarcely longer than broad, the single dorsal lobe or
tooth shortly and broadly ovate with a small abrupt point, smooth not reticulate or ciliate; the other teeth mostly undeveloped except the two terminating at top the 2 very strong siphonal pale ribs (barren cells) in front.

4. V. bracteata Lowe.

St. rather tall and stout not bushy fork-branched upwards, deflexedly puberulous at the angles; corymbs small scarcely more than 2–3-forked with a pair of long ligulate spreading leafy br. at each fork as long as or longer than the slender filiform retro-puberulous branches and ciliato-connate at the base; l. spatulato or oblong-spathulate entire softly ciliate-pubescent downwards, the upper or br. sublaciniately or strongly but remotely and irregularly inciso-toothed; cymes small conspicuously bracteate, fl. bracts longer than the fr. or fl. smooth mostly not ciliate or serrulate entire linear-lanceolate leafy loosely erecto-patent; fr. exactly as in V. puberula DC. but with the crown a little more developed and acute.—Herb. ann. Mad. reg. 2, rrr. Pº da Cruz in cultivated ground about the house and Yam-beds above it at the Sitio do Barreiro, sparingly. Apr., May.—Taller and larger than the preceding sp. with robust st. 12–18 in. high simple and not usually branched from the base, fork-branched upwards only, not bushy, of a pale gr., leafy, with conspicuous numerous long erecto-patent br. connate in pairs at the forks of the corymb and cymes, turning like the fl.-br. waxy-yellowish in drying and giving the inflorescence in the dried pl. something of the look of a Euphorbia. St. subpubescent on the ribs or angles; edges and midribs of the l. beneath minutely ciliato-pubescent; br. ciliate at the base only. Branches of corymb slender subelongate as in V. Morisoni DC., the ultimate divisions not stiffly divericate short thickened and congested as in V. puberula DC. Upper l. or br. almost laciniate-toothed. Fl. w. or very pale lilac. Fl.-br. without or with very narrow membranous edges, mostly quite entire, rarely a little serrulato-ciliate towards the tips. Fr. not fully mature in spec., but differing neither in size nor any other essential point from that of V. puberula DC.

With the fr. almost exactly of V. puberula DC., this pl. has the taller habit and lax slender-branched coryms or cymes of V. Morisoni DC., differing remarkably from both in its copious long leafy br. It may very possibly prove to be merely a large luxuriant drawn-up state or early stage of V. puberula DC. But at present without further study it can neither be reduced to that nor any other sp. From V. microcarpa Lois. it differs prima facie in its shortly hispidulous fr. not "couvert de poils
arqués un peu étalés et assez longs” (Gren. et Godr. ii. 62) and by the non-ciliate crown of its fr., &c.

Order XLVI. DIPSACACEÆ.

The Teasel Family.

Fl. compound formed of many perfect subirregular florets aggregate in heads on a common recept. with a common many-leaved involucre; each fl. inclosed in a free persistent cup-shaped or turbinate foveolate or strongly ribbed special involucre or outer cal. surrounding but not adhering to the fr. and mostly with a bractlet (chaff or scale) outside at its base. Cal.-tube united partly or at top only to the ov., contracted upwards into a narrow neck and then expanding abruptly into a cup-shaped and entire or toothed or setoso-pappiform limb. Cor. inserted at top of cal.-tube tubular funnel-shaped unequally 4–5-fld, lobes unequal imbricate in bud. Stam. 4 inserted on the cor.-tube alternate with the lobes; anthers free distinct 2-locular. Style filiform; stigma nearly or quite simple. Ov. 1-celled 1-ovulate; ovule pendulous. Fr. dry indehiscent 1-celled 1-seeded crowned by the scarious often pappose (setose or plumose) cal.-limb, the whole inclosed by the persistent involucre. Seed erect with a fleshy albumen, more or less but mostly only partly adherent to the cal.-tube. Embryo axile.—Herbs (rarely suffrutescent never milky) with heteromorphous opposite or verticillate ex-stipulate l. and thistle-like heads of small w. b. p. or purple fl. Inflorescence dimorphous: viz. centripetal in each head separately, centrifugal in them collectively in their order of succession on the pl.

1. DIPSACUS. Recept. with stiff acuminate spinous bractlets (chaffs or scales) shorter than the prickly spinous involucre. Involucels 4-gonal 8-sulcate shortly 4-toothed or entire. Limb of cal. cup-shaped subquadrangular, lobed or truncate ciliate. Cor. 4–5-fld. Stigma longitudinal simple or entire.—Herb. biennial with prickly st. and spinose heads.

2. SCABIOSA. Bractlets of recept. soft (leafy or chaffy) not stiffly spinous. Involucels cylindric deeply 8-grooved 4–8-pitted without awns, limb scarious campanulate or cup-shaped. Cal.-limb stipitate 5-awned in fr., awns spreading. Cor. 4–5-fld. Stigma notched.—Herb. perennial unarmed.

1. DIPSACUS L.

Teasel.

1. D. FEROSX Loisel.

Dwarfish often nearly stemless or apparently scapigerous mostly 1–3-flld.; st. and ped. strongly and copiously prickly;
1. nearly all radical lanceolate-oblong or ligulate coarsely and unequally inciso-crenate or irregularly subpinnatifidly lobed or sinuate, submentosob-pubescent more or less prickly like the st. chiefly at the edges or on the midrib beneath; l. of involucre elongate linear-triquetrous very strong and rigid cuspidate or subulate and pungent prickly-echinate spreading longer than the short thick globose or globose ovoidal heads; bractlets of recept. subulate-spinous thickly erecto-pubescent and setose, the tips smooth straight pungent, those at the apex of the heads produced.—Loisel Fl. Gall. (ed. 1) 719, (ed. 2, 1828) i. 102. t. 3; Spr. i. 377; DC. iv. 646; Reichenb. Ic.Fl.Germ. t. 706; Gren. et Godr. ii. 68.—Herb. per. PS. reg. 2; Back of Pico do Pacho and of P. Juliana in small Ribeiras; Serra de Dentro in the bed of the Rib. do Moledo. May, June.—Root large strong fleshy. Foliage very dark gr. Whole pl. not above 12 or 15 in. high. St. short or scarcely any, rarely more than 2–3-fld. often only 1-fld. and then scape-like and quite leafless. L. confined to the base of the pl. or with only one or two upwards on the st., about 6 in. long and ½–1 in. broad, oblong and stalked or ligulate, very irregularly crenate and subpinnatifid or sinuate with few spatulate broad lobes, mostly fringed only at the edges or on the midrib beneath but sometimes sprinkled all over with strong pale straw-coloured prickles, stem-clasping and sometimes dilated at the base and all over thickly pubescent or subtomentose. Ped. long very stout and thick, strongly ribbed or angular, smoother than the rest of the pl. but still puberulous, copiously armed with numerous large pale brown or straw-col. deflexed prickles, often reduced to a radical 1-fld. scape. Fl. w. with a very pale tinge of blush; cor. thickly clothed outwardly with silky adpressed hairs, short and erect on the limb and throat, long and deflexed on the tube. Anthers bright purple or pink, linear. Stigma simple linear. Style and fil. smooth.

Reichenbach's fig. represents the seed-pappus as 4-angular or equally 4-lateral truncate and entire, instead of 4-fid or 4-partite as he figures it in his D. laciniatus L. t. 705. But my spec. are not sufficiently advanced to verify this point.

2. SCABIOSA L.

Sect. 1. Vidua Coult. Tube of involucel 8-ribbed throughout from top to bottom, limb short spongy inflexed. Cal.-tube sheathed at base, limb narrow 5-setiferous stipitate.

††1. SCABIOSA MARITIMA L. Saudades.

St. sparingly and widely branched; radical 1. oblong-spa-
thulate stalked cut or toothed, lower st.-l. lyrate, upper pectinately pinnatifid to linear or lanceolate toothed or entire segments; ped. long and slender; heads in fr. ovoidal or oblong; fl. radiant 5-fid.—WB. ii. 199; Gr. et Godr. ii. 77.—Herb. ann. Mad.; PS., reg. i, rr. Varr.:  
   a. pallidiflora; fl. pale mostly bluish pink or lilac cream-col. or w.—S. maritima L. Sp. Pl. 144; Pers. 120; DC. iv. 657. S. atropurpurea β, γ DC. l. c. S. grandiflora Desf. i. 123; Pers. 120. S. columbaria Buch 195. no. 274 (not Linn.).—Mad. Rocks on the W. side of the Rib. de João Gomes (Rochas da Pêna) half a mile above Funchal on a level with the Levada de Sª Luzia. Apr.—June.  
   St. 1–3 feet high deflexedly pubescent. L. bright gr. smooth, the lower with petiole 2–4 in. long, the large terminal lobe 1–2 in. long. Ped. ribbed 6–12 in. long. Lfts. of invol. linear-lanceolate leafy gr. ciliate-pubescent as long as the lower fl., deflexed at least ultimately. Fl. fragrant, like honey, not less variable in size than colour. Anthers in β as dark as the fl. before bursting, then w. Pappus of 5 prominent tawny-y. rough erecto-setulose awns or bristles, its stalk (i.e. tube of cal.) inclosed halfway up in a loose ribbed sheath formed from the inner coat of the involucl.  
   There are no certain characters whatever to distinguish the two varr., which are therefore only retained for the clearer arrangement of the synonyms, β seeming to be more usually the result of cultivation, and a occurring in Mad. as in Tenerife (on the N. coast between S. Juan de la Rambla and Icod) more truly wild.  


2. S. Succisa L.  
   Rhizome abruptly truncate; l. elliptic-oblong or oblong-lanceolate undivided entire or faintly serrate; heads on long ped. hemispherical or in fr. globose, lfts. of inv. in 2–3 rows, scales or bractlets ciliate, involucl silky-hirsute 4-fid the teeth erect
herbaceous, cor. all equal regular subequally 4-fid.—Linn. Sp. 142; Brot. i. 145; Hook. Fl. Sc. i. 49; EB. t. 878; Sm. E. Fl. i. 184; DC. iv. 660; Gr. et Godr. ii. 81; Bab. 163. Succisa prae­tensis Mnnch., Spr. i. 378; Koch 377.—Herb. per. Mad. reg. 3, r.

α. hirsuta (Wallr.) DC. l. c.; l. more or less hairy-pubescent. Linn. l. c. var. β.—Rib. de S. Jorge, upper part, in the bed of the ravine; Boa Ventura, peaks to the west at the Boca das Torrinhas and all down the upper wooded part of the valley; Head of Rib. de João Delgada; Rib. do Seixal, Sr Moniz. July–Sept.

β. glabra (Wallr.) DC. l. c.; l. quite smooth. Mountain-range to the east of the Portella in cleared open spots amongst thickets on or towards the tops of the higher peaks. Aug., Sept.—Rhizome dark brown or black strong præmorse or as if bitten off (whence the name Succisa or in English Devil’s bit) with long stout whitish roots or fibres. St. about 2 or 3 ft. high ascending straggling or widely and sparingly branched upwards with a pair of connate l. at each division, hard and stiff, often v. or purple downwards, deflexo-pubescent. L. 5 or 6 in. long, 1–2 broad shining dark gr. with a conspicuous pale midrib and long petioles, stiffish or subcoriaceous, in a more or less sprinkled with hairs all over or at least ciliato-pubescent at the edges which in both α and β vary from serrate to entire. Heads of fl. numerous on long slender erecto-pubescent ped., 1/4–3/4 in. in diam. Fl. scentless pale purplish bl. or lilac often nearly w. Cor. outwardly pubescent. Bractlets lanceolate gr. upwards and fringed with very distinct long cilia. Setæ or awns of pappus 5 rather short dark brown.

Order XLVII. COMPOSITÆ.

The Compound-flower or Daisy, Thistle and Dandelion Family.

Fl. compound, formed of several or many perfect or imperfect regular or irregular mostly tubular or ligulate rarely 2-labiate florets aggregate or closely crowded on a common receptacle (clinanthium Cass.) into a head (calathidium Cass., capitulum DC., anthodium Ehrh.) surrounded by a many-leaved involucre (periclinium Mirb., common cal. l.) formed of one or more rows of close erect scales (phyllaries or bracts). Cal. tube proper of each ft. united wholly to the ov.; limb superior obsolete or developed in fr. into a scaly or chaffy, setose pilose or plumose crown (pappus). Fits. often with a scale-like membranous bractlet (chaff or scale, pala) at the base. Cor. gamopetalous superior inserted at top of cal.-tube, either tubular and regularly 4–5-fid or semitubular and irregularly 4-
cleft ligulate or bilabiate, the divisions *valvate in bud*, and the 4–5 nerves of the tube corresponding with their sinuses. Stam. 5 inserted in the tube of cor.; filaments mostly free distinct jointed towards the top, rarely monadelphous; anthers linear erect combined into a tube (syngenesious) embracing the style, bursting inwards, with always an apical and mostly 2 basilary awn-like or tail-like appendages. Ov. 1-celled 1-ovulate, ovule erect. Style 1 mostly 2-fid, stigmas 2. Fr. a cypsela (*achænum DC.*) consisting of a single erect seed without albumen, coated with the dry indehiscent altogether adherent cal.-tube, crowned mostly with a distinct pappus. Embryo erect straight, the radicle inferior directed towards the hilum.

Mostly herbaceous or suffrutescent rarely arborescent erect rarely climbing pl. with bitter aromatic tonic or milky narcotic juices, found in all parts of the globe and constituting according to DC. about $\frac{1}{4}$ of its vegetation. L. without stip. never compound yet often compositisect mostly alternate sometimes opposite. Inflorescence dimorphous; general, (mostly corymbosely) cymose, centrifugal; partial i. e. of each particular head, centripetal. Fl. y. or w., more rarely red or purple, very rarely blue, seldom fragrant. Florets or fl. proper either all perfect (heads *homogamous*), or *heterogamous* the inner (of the disk) perfect and outer (of the ray or margin) imperfect (female or neuter), rarely variously *monocious* or *dioecious*: all collected on a common recept. (*clinanthium* Cass.) or flat, conical or elongate torus-like top or apex of the ped. and expanding centripetally from the margin to the centre. When all the fl. are tubular the heads are called *discoïd* or *flosculose* (e.g. *Artemisia, Carduus*); when all are strap-shaped, ligulate or semi-flosculose (e.g. *Sonchus, Taraxacum, Lactuca*). When the fl. of the disk or centre are tubular and of the ray or margin ligulate, the fl. are termed *radiate* or rayed (e.g. *Bellis, Chrysanthemum*). The recept. is either in whole or part chaffy (*paleaceous*) or scaly—i. e. furnished with chaffy scales (bractlets) in continuation inwards of those of the involucre (bracts or phyllaries) and placed one at the outer base of each fl.,—or naked i. e. devoid of such chaffs or scales (bractlets) though often *fimbrilliferous* from the margin of the pits or cells, *alveolate* or *areolate* (obsolete pentangular *alveolate*), into which the fl. or seeds are inserted being lacerato-toothed or shortly setiferous. Pappus of ripe fr. either *simple*—and then either soft (*pilose*) or stiff (*setose*) and either smooth or rough with minute denticulations of pubescence,—or feathery with long hairs (*plumose*); sometimes it is in 1–several rows, sometimes entirely wanting.

Distinguished from *Dipsacaceae* by the valvate *avestation of cor.*; coherent (syngenesious) anthers, erect exaluminous ovule or seed wholly adherent to cal.-tube, and absence of a special involucel or outer cal. to the fits.
SUBORDER I. RADIFLORÆ. (CORYMBIFERÆ Vaill., Juss. &c.)

(The Daisy, Groundsel, Everlastings, &c.)

Fl. of disk tubular mostly perfect and regular, of margin often imperfect (female or neuter) mostly ligulate. Style not jointed or swollen upwards.

Fl. either in small inconspicuous oblong or hemispherical discoidal i.e. rayless or inconspicuously rayed heads (Erigeron, Eupatorium, Gnaphalon, Artemisia, Gnaphalium, &c.), or conspicuously rayed (Daisy, Ox-eye Daisy, Sunflower, Dahlia, Marygold, Chrysanthemum, &c.), with the ray mostly w. or y., rarely b. or purple. Herbs or shr., very rarely tr., often aromatic-bitter, never milky. L. and heads scarcely ever (exc. Hoplophyllum, Iphiona) prickly-spinose.

§ 1. Anthers ecaudate or awnless at the base.

A. Receptacle (with very few exceptions and no Madeiran) naked i.e. without chaffs or scales.

††Tribe I. AGERATEÆ.

Heads discoidal homogamous; fl. all perfect tubular regular. Branches of style elongate cylindric or subclavate obtuse smooth upwards. Ach. angular. Pappus chaffy.—Herbs mostly ann. rarely per. suffrutescent. L. opposite ovate toothed or crenate. Fl. w. or bluish without ray.

††1. AGERATUM. Heads many-fld. hemispherical; scales many in 2 or 3 rows subequal imbricate linear acuminate. Fl. 5-fid. Ach. 5-angular. Pappus of 5 or 10 free uncombined distinct chaffs produced into rough awns.—Fl. w., pale b. or lilac.

††Tribe II. EUPATORIEÆ.

Heads discoidal homogamous; fl. all perfect tubular regular. Branches of style elongate cylindric or semicylindric pubescent upwards. Ach. cylindric ribbed. Pappus pilose.—Fl. w. or purple without ray.

††2. EUPATORIUM. Heads many-fld. cylindric; scales rather few subequal imbricate. Fl. 5-fid, tube funnel-shaped or gradually widening upwards from the base. Branches of style cylindric obtuse, with 2 distinct narrow stigmatic marginal welts or borders below their middle. Recept. naked. Ach. obconic-oblong angular-ribbed. Pappus finely scabrous or pubescent in a single row.—Herbs or suffr. L. mostly opposite.
Tribe III. ERIGERONTIÆ.

Heads heterogamous rarely homogamous; fl. of disk (or rarely all the fl.) perfect tubular regular, of margin ligulate or filiform and obliquely truncate. Branches of style linear compressed, rounded and pubescent but simple at the tip. Ach. compressed rarely cylindric, mostly without ribs. Pappus pilose.—L. alternate. Fl. rayed or rayless.

†3. ERIGERON. Heads heterogamous many-fld. hemispherical; scales imbricate in several rows, herbaceous. Fl. of margin female in several rows, all ligulate or with only the inner tubular-filiform; of disk perfect or male only, all tubular 5-fid. Ach. linear-oblong compressed ribless. Pappus uniform pilose, rough or sebaceous, in a single row. Recept. naked alveolate.—Mostly herbaceous. Fl. rayed (in Mad. sp. inconspicuously or minutely).

†4. CONYZA. Like Erigeron but fl. of margin not ligulate but filiform truncate or 2–3-toothed, of disk few perfect tubular 5-toothed, ach. linear attenuate at base, and recept. fimbriiferous.—Herbaceous. Fl. wholly rayless.

5. GNAPHALON*. Heads heterogamous many-fld. ovoidal or campanulate; scales imbricate in many rows scarious. Fl. of margin female (fertile or barren) in several rows, filiform, of disk perfect tubular 5-toothed. Ach. cylindric rounded at top ribless. Pappus as in Erigeron. Recept. naked flat.—Small shr. with cottony-w. st. and l. Fl. rayless.

Tribe IV. SENECIONIÆ.

Heads heterogamous mostly radiate, rarely homogamous discoidal; fl. of margin mostly female and more or less conspicuously ligulate; of disk (or rarely all) perfect tubular regular. Branches of style (in perfect fl.) linear with a pencil or tuft of hairs below the truncate or produced conoidal tip. Ach. cylindric ribbed. Pappus pilose.—Fl. mostly radiant y.

6. SENECEO. Heads cylindric or campanulate; scales in a single row equal mostly linear combined or concrete and mostly calyculate with several short accessory scales at the base. Fl. of margin mostly female and ligulate; all sometimes perfect and tubular. Stigmas of perfect fl. semi-cylindric truncate hairy only at the tip. Ach. all with softly pilose pappus in several rows.—Fl. mostly conspicuously radiant, rarely rayless. Ray mostly y., sometimes purple, rarely w.

* Misspelled by Cassini and others Phagnalon.
Heads mostly discoidal heterogamous or rarely homogamous. Fl. of margin female (fertile or sterile) in one or several rows sometimes ligulate, of disk perfect, tube in all obcompressed or 2-winged often spurred, lobed or auricled at the base; rarely all perfect. Branches of style bearded at the truncate or very rarely conoidal tip. Ach. obcompressed obovate 2-ribbed or marginate. Pappus 0.—Fl. rarely radiant.

**Tribe VI. ARTEMISIÆ.**

Heads discoidal homogamous or heterogamous with fits. of margin female, of disk perfect; all tubular. Branches of style linear with a pencil or tuft of hairs below the truncate or produced conoidal tip. Ach. cylindric or subcompressed ribbed or ribless. Pappus 0.—L. alternate pinnatisect. Fl. rayless.

**Tribe VII. HIPPIEÆ.**

Heads heterogamous monocious, fl. of margin female, of disk male; all tubular. Style of female fl. simple or shortly bifid, of male entire clavate. Ach. obcompressed 2-ribbed or 2-winged. Pappus 0. Recept. naked.—Fl. rayless.

**9. SOLIVA.** Heads globose many-fld.; scales 5–10 in a single row. Female fl. of margin numerous in many rows, without or with a very fine minute persistent filiform cor.; of disk few 3–6-toothed. Style of female fl. persistent
rigid scarcely bifid, of male simple broadly orbicular and truncate at the tip. Ach. tipped with the persistent style, winged or thickened at the 2 edges.—Small inconspicuous often prostrate herbs. Heads mostly sessile.

††Tribe VIII. BELLIDÆ.

Heads heterogamous radiate; fl. of margin female conspicuously ligulate, of disk perfect tubular regular. Branches of style linear compressed not tufted below the tip. Ach. obcompressed marginate not ribbed. Pappus 0. Fl. radiant.

†10. BELLIS. Invol. hemispherical, scales in 2 rows, leafy, equal. Fl. of margin in a single row, of disk in many rows, 4–5-toothed. Ach. obovate. Recept. conical naked.—Herbs. L. simple chiefly radical. Fl. solitary on radical scape-like or axillary ped., disk y., ray w. or rose.

Tribe IX. CHRYSANTHEMÆ.

Heads heterogamous radiate; fl. of margin female conspicuously ligulate; of disk perfect tubular regular. Branches of style (in perfect fl.) linear with a pencil or tuft of hairs below the truncate or produced conoidal tip. Recept. naked. Ach. often dimorphous cylindric or triangular ribbed. Pappus a membranous crown or 0.—Fl. radiant.

†11. PYRETHRUM. Inv. saucer-shaped cup-shaped or hemispherical, scales imbricate more or less scarious, the inner mostly obovate obtuse or spathulate. Fl. of ray fertile with a perfect forked exserted style, ligulate in a single row; of disk with the tube obcompressedly winged, 5-toothed. Ach. of one sort, short uniform obconical or turbinate truncate at top ribbed all round and all with a narrow crown or border; epigynous disk as broad as the ach. Pappus a membranous short crown. Recept. naked nearly flat or plano-convex.—Herb. per. or suffrutescent. L. of st. alternate. Ray w.—(In Leucanthemum Tourn., DC., all the ach. or at least those of the disk (Phalacrodiscus Less.) are crownless. Matricaria L. has the tube of the fl. simply cylindric, the ach. ribless at the back and the recept. in fr. conical).

††12. LEUCANTHEMUM. Like Pyrethrum but all the ach. or those at least of the disk without crown or pappus.

†13. MYCONIA. Like Pyrethrum but scales of inv. subequal, fl. of ray sterile with the style abortive undivided not exserted, and ach. of 2 sorts; of ray barren or abortive slender cylindrically subtriquetrous neither winged nor ribbed; of disk (fertile) cylindric equably 10-ribbed all round; all in-
curved smooth with a membranous tubular dimidiate or auriculate crown or pappus sheathing the fl. tube.—Herb. ann. L. alternate. Fl. wholly y.

14. CHrysanthemum. Like Myconia, but fl. of ray fertile with a perfect forked style, scales of inv. unequal imbricate, ach. of ray fertile triguetrous with the 2 side angles only winged and the back 3-ribbed, of disk turbinate-cylindric equably 10-ribbed all round; all simply truncate without any pappus, crown, or tooth.

15. Pinardia. Like Chrysanthemum, but ach. of ray triguetrous with all the 3 angles especially the inner sharply winged and the sides obsoletely 1-3-ribbed, of disk compressed the inner angle only winged the back bluntly keeled and sides 2-3-ribbed; all reticulate-rugulose or granulate and abruptly truncate with the wing or wings ending in a laterally prominent or horizontal tooth or beak at the top but without any crown or pappus.—Herb. ann. L. alternate scattered. Fl. pale straw or golden y.

16. Argyranthemum. Like Pinardia, but ach. of ray incurred or boat-shaped much as in Calendula, and all (both of ray and disk) not truncate but with a distinct dimidiate obliquely unilateral or intro-secund coriaceo-membranous 3-4-toothed crown or pappus. Recept. naked conical.—Shr. altogether smooth, peculiar to the Mad. and Can. Islands. L. somewhat fleshy alternate crowded towards the ends of the branches, bipinnatisect. Scales of inv. broadly and conspicuously scariosus. Fl. terminally corymbose: ray w. rarely rose, disk golden-y. rarely atropurpureous. Tube of fl. in Mad. sp. (Stigmatotheca Schultz in WB.) either altogether smooth or resinoso-punctate, in Can. sp. (Argyranthemum Schultz in WB.) mostly glandular-pubescent.—Easily distinguished at once from the 3 or 4 preceding genera by the shrubby habit, boat-shaped seeds and conical receptacle.

B. Recept. chaffy, wholly or partly.

Tribe X. ANTHEMIDÆ.

(Like Chrysanthemaceae except the chaffy recept.) Heads mostly heterogamous; fl. of margin mostly ligulate female (sometimes neuter sterile) in a single row, rarely 0; of disk (or rarely all) perfect tubular regular. Branches of style in perfect fl. linear with a pencil or tuft of hairs below the truncate or produced conoidal tip. Recept. chaffy mostly conoidal. Ach. variously shaped mostly ribbed. Pappus mostly 0 or obsolete, rarely a short, complete or dimidiate or 5-toothed crown. Fl. mostly radiant. (In Diotis Desf. and sometimes in Ormenus
or Marcelia Cass. the heads are homogamous and discoidal or rayless with the fl. all perfect and tubular).

17. Ormenus * . Inv. shallow concave or saucer-shaped imbricate. Fl. of margin female (sometimes neuter and sterile) ligulate in a single row, rarely wanting; of disk or rarely all perfect tubular equally 5-toothed, tube obcompressed winged or angular saccate or produced at base over and embracing (mostly with lobes spurs or auricles) the top of the ach. or ov. Ach. clavate or ovate rounded at top obcompressed 3-ribbed internally, back even or very finely striate; epigynous disk very small more or less oblique. Crown or pappus 0. Recept. in fr. elongato-conic fluffy or scaly, the upper scales caduceous.—Fl. rarely discoidal, mostly radiant, ray w. Herbs with a bitter aromatic scent and tonic properties. L. alternate finely compositisect. Chaffs of recept. sometimes embracing and inclosing the ach.

†18. Anthemis. Inv. shallow concave or saucer-shaped imbricate. Fl. of margin female (sometimes neuter and sterile) ligulate in a single row; of disk perfect tubular equally 5-toothed, tube obcompressed or winged but simple (not spurred or saccate at the base). Ach. obconic truncate at top ribbed all round; epigynous disk as broad as the ach., more or less distinctly marginate. Pappus 0 or very short and incomplete or rudimentary. Recept. in fr. elongato-conic, chaffs mostly persistent.—Herbs with alternate finely divided l. and w.-rayed fl.

††19. Achillea. Inv. ovoid or hemispherical imbricate. Fl. of margin female ligulate in a single row; of disk perfect tubular 5-toothed, tube compressed winged. Ach. oblong-ovate compressed narrowly marginate smooth and even, epigynous disk without crown or pappus. Recept. flat or convex chaffy.—Bitter subaromatic perenn. herbs with terminal corymbose cymes of mostly w.-rayed fl. and finely divided alternate l.

†Tribe XI. BIDENTEÆ.

Heads heterogamous or homogamous; fl. of margin mostly ligulate and neuter; of disk and sometimes all perfect tubular regular. Anthers notched at the base, lobes acute. Branches of style in perfect fl. linear with a pencil or tuft of hairs below the truncate or produced conoidal tip. Ach. obcompressed or 4-sided uniform. Pappus 1 or 2–5 avens.

†20. Kernkria. Inv. campanulate, scales in 2 rows, the outer herbaceous leafy spreading or reflexed mostly shorter

* Misspelled by Cassini and Gay Ormenis.
than the inner, the latter scarious erect. Fl. all perfect and tubular or a single row of the marginal neuter and ligulate. Ach. linear attenuated at each end quadrangular scarcely or not obcompressed strongly ribbed with a short oblique pale disk-like foot or podocarp at the base and 2 or 3 retrorsally spinulose awns at top. Recept. subconvex alveolate clothed with long chaffy scales.—Rank ann. scentless herbs or weeds. L. opposite. Fl. with or without ray; ray w.

††Tribe XII. ECLIPTEAE.

Heads heterogamous; fl. of margin female ligulate, of disk perfect tubular regular. Anthers ecaudate notched at the base, lobes acute. Ach. obcompressed dissimilar, of margin triquetrous, of disk 4-angular; pappus 0 or obsolete.—Herbs with opposite l.

††21. ECLIPTA. Inv. hemispherical or saucer-shaped, scales few (10–12) in two rows all ovate acute leafy erect or adpressed imbricate. Fl. of margin in one row shortly and narrowly ligulate, of disk 4-toothed. Ach. of ray triquetrous smooth and even, of disk subquadangular tuberculate or corrugate without pappus but absolutely marginulate at top. Recept. subconvex with linear-filiform chaffs. —Tropical rough or strigose subaquatic herbs with opposite simple l., used for dying black. Fl. w. inconspicuously radiant. Heads solitary on 1–3 axillary ped.

§ 2. Anthers caudate or awned at the base.

A. Recept. scaly or chaffy all over.

Tribe XIII. BUPHTHALMEÆ.

Heads heterogamous radiate. Fl. of margin female ligulate, of disk perfect tubular regular. Anthers caudate. Branches of style linear compressed rounded and pubescent at top. Ach. dimorphous, the marginal triquetrous, the rest obconic with a ventral keel, all crowned with a torn membranous pappus.—Fl. radiant y. L. alternate simple. Herbs or shr.

22. ASTERISCUS. Inv. hemispherical umbilicate; scales imbricate in many rows, the outer larger leafy spreading radiately, inner coriaceous at least at base, adpressed. Fl. of margin numerous in 1–2 rows ligulate, their tube triquetrous. Anthers with long awns at their base. Ach. of ray larger triquetrous, of disk oblong-conic keeled in-
wards, crown or pappus a torn membranous rim or border. Scales of recept. keeled.

B. Recept. naked or scaly only at the margin.

Tribe XIV. INULEÆ.

Heads mostly heterogamous radiate. Fl. of margin female *ligulate*, of disk (and more rarely all) perfect tubular regular. Anthers with long awns at their base. Branches of style linear compressed, rounded obtuse and pubescent at the tip, not tufted. Ach. cylindric rarely 4-gonal, with or without ribs. Pappus *pilose* sometimes double. Rec. *wholly naked.*—Fl. *mostly radiant.*

23. INULA. Inv. campanulate or hemispherical, scales imbricate in several rows. Fl. of margin female in a single row, of disk perfect 5-toothed. Ach. cylindric-oblong mostly ribbed, very rarely ribless, scarcely contracted at top, not beaked. Pappus a single row of shortly ciliate caducous hairs with sometimes an outer membranous coronet of scales or crenulate cup or ring. Recpt. small flat alveolate, the cells with a toothed membranous border. —Herbs, rarely suffrutescent, with alternate l. and radiant y. fl., glandular-viscous strong-scented.

Tribe XV. GNAPHALIEÆ.

Heads heterogamous rarely homogamous, discoidal very rarely radiate. Fl. either all perfect tubular 5-toothed or those of the margin female *filiform* rarely *ligulate.* Anthers with long awns at their base. Stigmas as in *Inulece.* Ach. cylindric or compressed *ribless.* Pappus pilose. Recept. naked or chaffy only at the margin.—Heads mostly small and discoidal. Fl. rarely radiant, w., purple, brown or y. Herbs or small shr. often hoary. L. alternate.

24. HELICHRYSUM. Inv. campanulate, scales scarious *coloured* imbricate in several rows *flat not radiant or radiant in fr. only.* Heads heterogamous; fl. all tubular, of margin female *few in number in only 1–2 rows,* always distinct from or not intermixed with the involucral scales, *filiform* 5-toothed; of disk perfect. Style bifid, stigmas scarcely thickened at tip. Ach. cylindric-oblong; hairs of pappus in a single row. Recpt. flat naked.—Small shr. or herbs. Fl. without ray but with the scales of inv. sometimes radiant in fr.

25. GNAPHALIUM. Inv. *rounded not angular;* scales scarious imbricate in several rows *flat always stellately radiant in fr.* Heads heterogamous; fl. all tubular, of margin
female in many rows not intermixed with the involucral scales, filiform toothed; of disk perfect. Style bifid, stigmas obtuse. Ach. cylindric-oblong all free; hairs of pappus in a single row. Recept. flat naked.—Fl. rayless small and inconspicuous.

26. **Filago.** Inv. conico-pyramidal or ovoidal 5-angular, scales keeled or concave imbricate in 3–5 rows, the inner serving as chaff of recept. Heads heterogamous; fl. of margin female in several rows from the axes of and mingled with the inner scales of the involucre, filiform scarcely toothed; of disk perfect few tubular 4–5-toothed. Stigmas obtuse. Ach. all free obovate compressed pellucido-papillose. Pappus fragile caducous, in the outer fl. 0 or dissimilar. Recept. either elongated and subfiliform or short thickened and flattened at top, chaffy at the margin, naked in the centre.—Fl. rayless small.

27. **Xerotium.** Like Filago, but scales of inv. concave in 3 opposite rows; female fl. of margin in only 2 rows from the axes of the two inner rows of involucral scales; and outer row of ach. convolutedly enwrapped or coated by the tubular-cymbiform middle row of involucral scales having their edges coherent or united downwards; the inner ach. naked free.

Tribe XVI. **CALENDULEAE.**

Heads heterogamous radiate. Fl. of margin female ligulate, of disk male tubular. Anthers shortly awned or caudate. Stigmas short thick divaricate, convex and pubescent outswards. Ach. dimorphous beaked mostly arrouate or boatshaped. Pappus 0. Recept. naked.—Herbs sometimes suffrutescent, more or less glandulose or viscid, with alternate mostly simple undivided 1. and radiant mostly or. or y. fl., disagreeably subaromatic.

28. **Calendula.** Inv. hemispherical, scales herbaceous distinct equal in two rows. Fl. of margin female ligulate fertile in 2–3 rows, of disk male or perfect with a simply capitate style. Ach. large dimorphous crescent- or boat-shaped winged or simple and cylindric, incurved, rugose or mucrinate at the back. Recept. tuberculate.—Subviscid clammy subaromatic herbs, sometimes suffrutescent, with succulent light or full green foliage and simple undivided leaves. Fl. solitary terminal conspicuous or. or y.
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47. Compositaceæ.

Suborder II. Capitifloræ. (Cynarocephalæ Vaill., Juss. &c.)

(The Thistle, Artichoke, Burdock, &c.)

Fl. all tubular, of disk perfect regular, of margin like the central or sterile and often enlarged. Style of perfect fl. jointed and swollen upwards below its branches. Stigmas often combined or concrete. Fl. in mostly large conspicuous globose heads and mostly purple blue or w., rarely y.—Large coarse herbs, rarely shr. or milky in Mad. L. and heads mostly prickly-spinous. Coat or shell of ach. mostly hard testaceous. Recept. mostly chaffy-setaceous or fibrillose.

§ 1. Anthers ecaudate or awnless at the base.

Tribe XVII. Silybeæ.

Heads many-fl. separate (not aggregate on a common general recept. as in Echinops L.). Scales of inv. imbricate spinescent. Stam. monadelphous, their filaments completely united. Hilum basilary terminal. Pappus pilose or plumose united into a ring or short annular tube at the base, deciduous.

29. Galactites. Heads heterogamous; fl. unequal, the marginal sterile larger and radiant, the central perfect and fertile. Stigmas concrete. Scales of inv. uniform exappendiculate imbricate entire acuminate-spinescent. Ach. narrow-oblong compressed or compressedly subcylindric without ribs, very finely and obsoletely 10-striolate or lineolate; margin of epigynous disk entire. Pappus plumose, its hairs in few rows long-feathered, often slightly thickened upwards; throat of ring or tube naked open. Recept. densely hairy.

†30. Silybum. Heads homogamous; fl. all equal, perfect fertile. Stigmas distinct at the tips. Outer and middle scales of inv. expanded into a foliaceous spiny-toothed appendage narrowing into a long and strong spine; the inner simple entire. Ach. obovate-oblong compressed without ribs or striae; margin of epigynous disk entire. Pappus pilose; hairs in many rows simply and very shortly or minutely denticate or scabrous, upper or inner edge of basal ring with a crown of very fine smooth short connivent hairs closing the throat. Recept. densely hairy.

Tribe XVIII. Carduineæ.

Heads many-fl. separate. Scales of inv. imbricate mostly spinescent rarely appendiculate. Fil. of stam. free. Hilum
basilary terminal. Pappus pilose or plumose annular deci­
duous.

31. Cynara. Heads homogamous; fl. all equal perfect and
fertile. Scales of inv. imbricate entire, the outer coriace­
ous mostly exappendiculate and pungently spinoso-cus­
pidate or mucronate, the inner with a membranous or cor­
neous feebly spinous or unarmod apical appendage. Termi­
nal appendage of anthers very obtuse. Stigmas distinct
at the tip. Ach. "obovate 4-angular slightly compressed.
Pappus plumose, hairs in many rows." Recept. fleshy
densely villous.—Fl. b.

†32. Notobasis. Heads heterogamous, leafy-bracteate; fl.
all equal, the marginal sterile, the central perfect and fertile.
Scales of inv. imbricate coriaceous entire feebly spinoso­
cuminate. Terminal appendage of anthers acute. Stigmas
concrete. Ach. large obliquely obovate gibbous much com­
pressed subtetragonal each side with an obsolete keel or rib.
Hilum suboblique; epigynous disk oblique immarginate. Pap­
pus plumose, hairs in two rows. Recept. densely villous.
—Fl. purple.

33. Cirsium. Heads homogamous; fl. all equal perfect and
fertile. Scales of inv. imbricate simple entire, neither ap­
pendiculate nor scarious at the edges, more or less spinescent.
Terminal appendage of anthers scarious linear-subulate.
Stigmas concrete. Ach. oblong compressed ribless; border
of epigynous disk entire. Pappus plumose, hairs in many
rows long-feathered except at the distinctly thickened tip.
Recept. setaceo-chaffy.—Fl. purple or w.

34. Carduus. Like Cirsium but scales of inv. more or less
scarious at the edges and pappus simple pilose finely toothed
or pubescent not plumose. (Carduus and Clavena DC.).—
Fl. purple or w.

Tribe XIX. CENTAURIEÆ.

Heads many-fld. heterogamous. Scales of inv. uniform all
imbricately adpressed coriaceous with an apical scarious mostly
ciliate or spinous rarely indistinct or obsolete appendage (abor­
tive floral leaf or leafy bract). Marginal florets mostly neuter
sterile often radiant. Fil. of stam. free. Ach. compressed rarely
cylindric, smooth and even, rarely ribbed; the margin of epigy­
nous disk entire. Hilum lateral. Pappus persistent rarely
deciduous stiffly pilose or setose its hairs or bristles free to the
base and often chaffy, rarely 0. Recept. chaffy-setaceous.—
Fl. mostly purple, rarely b., w. or y.
35. CENTAUREA. Heads heterogamous rarely homogamous; fl. rarely all equal perfect and fertile, the marginal mostly larger sterile radiant. Scales of inv. imbricate with a terminal scariosus or corneous more or less armed and spinoso or pectinately ciliate appendage. Ach. oblong compressed ribless and even (except in C. Massoniana); border of epigynous disk entire (except in C. Massoniana). Pappus 0 or composed of stiff denticulate chaffy hairs or bristles in several rows, mostly persistent; the inner row formed of shorter connivent hairs. Recept. chaffy-setaceous.—Fl. mostly purple, rarely b., w. or y.

†36. Microlonchus. Heads heterogamous; marginal fl. sterile more or less radiant, central perfect and fertile. Scales of inv. imbricate coriaceous or corneous nerveless unarmed subexappendiculate and only spathulate and often spinulosomucronulate at the tips. Ach. oblong compressed finely ribbed, and transversely wrinkled between the ribs; border of epigynous disk entire. Pappus persistent double, outer of stiff chaffy hairs in many rows free to the base, inner combined into a ring or crown produced on one side into a unilateral scale as long as or a little shorter than the outer rows. Recept. chaffy-setaceous.—Fl. purple or w.

Tribe XX. CARThAMÉAE.

Heads many-fld. homogamous circinately leafy-bracteate. Scales of inv. heteromorphous, the outer foliaceous, or leafy-appendiculate spreading mostly spinous, inner coriaceous imbricately pressed mostly indistinctly scarioso-appendiculate and simply acuminato-cuspidate. Florets all perfect fertile, with a long slender tube. Fil. of stam. free. Ach. tetragonal smooth but ribbed or rugose upwards with the margin of the epig. disk toothed or crenate. Hilum lateral. Pappus persistent free to the base chaffy or chaffy-setose rarely 0. Recept. chaffy-setaceous.—Fl. y. or. or b.

†37. Kentrophyllum. Heads homogamous, fl. all equal perfect fertile. Outer scales of inv. leafy or leafy-appendiculate strongly many-nerved pectinately ciliato-spinous cuspidate, inner coriaceous or corneous nerveless oblongo- or ligulato-lanceolate entire subexappendiculate but with discoloured serrulate or entire cuspidately spinous tips. Fil. free with a collar or tuft of hairs towards their top. Ach. thick obovate, irregularly but acutely tetragonal gibbous submuricately ribbed or rugose upwards; border of epigynous disk irregularly (principally 4-) toothed. Pappus in the marginal ach. 0, in the rest consisting of numerous finely serrulate very unequal erecto-patent ligulate or linear chaffs
imbricate in many rows, the inner row extremely short erecto-connivent forming a distinct short central umbilical tuft or coronet. Recept. chaffy-setaceous conical.—Fl. y.

†38. Carduncellus. Like Kentrophyllum, but inner scales of inv. parallely many-nerved and distinctly appendiculate with a dilated spatulate discoloured pectinately ciliate or lacerato-fimbriate tip. Ach. as in Kentr., but pappus in all (marginal and central) chaffy-setaceous finely ciliato-serrulate, the hairs or setae numerous unequal but not imbricate, the inner row erecto-connivent, not short (all free to the base and persistent in the only Mad. sp., in others said to be annularly connate at the base and deciduous). Recept. chaffy-setaceous "flat."—Fl. b.

††39. Carthamus. Like Kentrophyllum or Carduncellus, but inner scales of inv. parallely many-nerved wholly evappendiculate and simply acuminato-cuspidate, fil. of stam. nearly smooth without any distinct collar or tuft of hairs at top; and ach. all without pappus subobtusely tetragonal quite smooth and even or only slightly and obsolescely rugulose or wrinkled at top, with the border of the epigynous disk obtusely 4-toothed and subcrenulate. Recept. chaffy-setaceous plano-convex or depresso-conoidal.—Fl. or. or y.

§ 2. Anthers caudate or awned at the base.

Tribe XXI. CARLINEÆ.

Heads many-fld. homogamous. Scales of inv. appendiculate or simple, spinous or unarmed. Fil. of stam. free upwards, adnate downwards to cor.; awns of anthers often ciliato-plumose. Hilocum basitaury. Pappus pilose or plumose. Recept. chaffy-setaceous.

A. Outer scales of inv. foliaceo-appendiculate spinous. (Gen. Carlina, Atractylis.)

40. Carlina. Heads hemispherical leafy-bracteate, fl. all equal perfect fertile. Outer scales of inv. leafy or leafy-appendiculate spinous-toothed or ciliate, the inner simple unarmed entire scarious coloured mostly radiant. Basal awns of anthers plumose. Ach. cylindric-oblong subangular adpressedly hairy or silky-pubescent with short forked hairs forming an erect fringe or crown at top round the immarginate epigynous disk. Pappus a single row of plumose setaceous hairs combined or concrete at the base by threes or fours in sets or fascicles and all deciduous in a ring together. Recept. flat chaffy, chaff setoso-lacerate tubular at base.—Mostly herbaceous; but the only
Mad. sp. is a low straggling shr. with finely spinuloso-ciliate l. and large leafy heads of dull w. or pale straw-col. fl.

B. Scales of inv. all exappendiculate simple unarmed. (Gen. Jurinea, Stechelina, Lappa.)

41. Lappa. Heads globose homogamous; fl. all equal perfect fertile. Scales of inv. squarrosely imbricate linear-lanceolate produced into a long point hooked at the tip. Awns at base of anthers simple smooth (not bifid, lacerate, ciliate, or plumose). Stigmas concrete halfway up. Ach. oblong compressed ribbed; border of epigynous disk entire. Pappus setose short deciduous, bristles in many rows denticate free to the base. Recept. chaffy-setaceous.—Unarmed coarse large-leaved herbs with erect branched st., broad ample foliage and clustered inconspicuous bur-like heads prehensile in fr. Fl. purple.

Suborder III. Liguliflorae DC. (Cichoraceae Vaill., Juss. &c.)
(The Dandelion, Lettuce, Sowthistle &c.)

Fl. all ligulate perfect. Style not jointed or swollen upwards. Stigmas always more or less distinct.

Milky bitter-tasted herbs (rarely suifr.) with conspicuous mostly radiato-ligulate (very rarely capitifloral or cynaroccephalous) y. rarely b. p. or purple, very rarely w. fl.; the outer fits. mostly radiant. L. alternate and like the heads very rarely prickly-spinous. Properties tonic or narcotic.

†Tribe XXII. Scolymiae.

Heads capitifloral armed involucrate with spinous leafy br. Scales of inv. imbricate spinescent. Ach. not beaked obcompressed closely coated winged and crowned with the conuplicate adherent pericarp-like chaffs of the recept.—Erect spinous thistle-like herbs. Fl. y. or or. Tube of florets woolly upwards.

†42. Scolymus. Heads ovate. Scales of inv. adpressed coriaceous cuspidate with narrow membranous edges. Ach. obcompressed obcuneate enveloped entirely except the apex or epigynous disk in the winged adherent pseudopericarp. Pappus 0 or obsoletely chaffy-coroniform, with or without 2–4 inner deciduous setules. Recept. conical or hemispherical chaffy.
Tribe XXIII. HYOSERIDÆ.

Heads radiato-ligulate unarmed. Inv. double or single and bracteolate, the scales and br. herbaceous. Ach. truncate not beaked. Pappus coroniform and chaffy, or simply setose and in either case sessile, mostly dimorphous, sometimes double. Recept. naked without chaffs.

†43. CICHERIUM. Inv. double; outer of 5 short scales, inner of 8 much longer, scales in a single row herbaceous hardened and combined at the base in fr. Ach. persistent angular compressed subclavate, broad and truncate at top, crowned with 1–2 rows of numerous short obtuse chaffs. —Fl. b. rarely w. or p.

44. TOLPIS. Inv. single of numerous close linear scales in 2 or more rows squarrosely or loosely calyculate or fringed at the base with linear subsetaceous bracts passing down the ped. Ach. small subtetragonal. Pappus a single row of mostly few simple unequal pale coloured stiffish hairs or bristles intermixed with excessively minute short setules and reduced sometimes altogether in the marginal ach. to a very short or narrow fimbriated crown of the latter. —Herbs or suffr. Fl. y.

45. HEDYPOIS. Inv. single, scales in a single row or with only a few adpressed shorter scales or bractlets at their base, thick or fleshy at the back, subcylindrically conuplicate or semitubular and inclosing the outer ach. in fr. Ach. subcylindric incurved longitudinally striolate and elegantly squammulose; pappus of the outer ach. a short membranous toothed cup or crown, of the inner double, the outer row cup-shaped or of a few short chaffs, the inner of about 5 chaffy-setose acuminato-lanceolate scales produced into scabrous awns or bristles. —Low weedy herbs with bright gr. foliage and y. fl.

†Tribe XXIV. LAMPSANEÆ.

Like Hyoserideæ, but ach. naked without crown or pappus.

†46. LAMPSANA. Inv. cylindrico-campanulate calyculate with very short adpressed scales at the base, the inner scales 8–10 linear equal in a single row, all persistently erect in fr. Ach. deciduous clavato-fusiform straight or incurved. —Erect branched weedy herbs with small y. fl. of few fits.

Tribe XXV. LEONTODONTEÆ.

Like Hyoserideæ, but ach. mostly beaked and pappus plu-
mose at least in the inner ach., the hairs free not interlacing.—
Scapigerous rarely caulescent mostly hispid herbs. Fl. y.

47. **Thrinicia.** Inv. oblong single, scales in a single row erect equal conduplicate in fr., imbricately subcalyculate with shorter close-pressed scales at the base. Ach. finely muricately ribbed or striate longitudinally, all or at least the inner more or less attenuately beaked, the outer sometimes beakless enclosed in the inner scales of the inv. Pappus dimorphous; of outer ach. sessile chaffy short lacerato-corporiform, of inner stipitate plumose.—Hispid stemless herbs with only radical l. and 1-fld. scapes or ped. Fl. y.

†48. **Helminthia.** Inv. double, outer of 3–5 loose leaf-like scales or br., inner urceolate of 8–10 erect narrower scales in a single row. Ach. transversely rugose sub-abruptly beaked, beak slender filiform. Pappus uniform plumose.—Erect branched herbs with harsh stiff strigose prickly-hispid heads and foliage. Fl. y. subcyemose.

†49. **Urospermum.** Inv. single urceolate or campanulate of 8 scales in a single row, concrete at the base. Ach. strongly muricate beaked, beak long tubular dilated or inflated at the base and separated by a diaphragm from the ovule. Pappus plumose deciduous.—Erect sparingly branched few-fld. herbs with rather large pale y. solitary fl. L. mostly radical hispid or puberulous.

**Tribe XXVI. SCORZONERÆ.**

Like *Leontodontæ*, but lateral hairs of plumose pappus interlacing horizontally or cancellate. —Sparsingly branched mostly smooth herbs with ascending few-fld. st. and mostly entire grass-like l. Fl. solitary rather large y., sometimes purple.

†50. **Geropogon.** Inv. simple, scales 8 in a single row equal not reflexed in fr. Ach. fusiform striate attenuately beaked, the marginal persistent with the pappus simple setiform awn-like 3–5-rayed, the inner deciduous with the many-rayed pappus cancellato-plumose.—Smooth with linear simple entire grass-like l. and lilac-rose or purple fl.

**Tribe XXVII. HYPOCHÆRIDEÆ.**

Like *Leontodontæ*, but recept. chaffy, the chaffs deciduous. —Herbs with mostly radical l. in a rose or tuft and erect scape-like sparingly branched leafless fl.-st. Fl. y.

51. **HyPOCHÆRIS.** Inv. cylindric, scales regularly imbricate
in many rows. Ach. fusiform striate submuricate upwards, the inner or all attenuately beaked, the outer and sometimes inner erose. Pappus persistent either in 2 rows, the outer short setiform denticulate, inner longer plumose—or in a single row plumose. Chaffs of recept. linear-acuminate.—L. chiefly radical. St. scape-like numerous ascending sparingly branched few-fld. naked. Fl. terminal long-stalked sometimes solitary.

Tribe XXVIII. CHONDRILLEAE.

Inv. oblong or campanulate-oblong double or calyculate, scales in 2 or many rows, the outer one or more short forming a distinct fringe or calyce at the base of the long erect single inner row. Ach. ribbed beaked scaly-muricate or coronulate upwards or at base of the slender filiform beak or pappus-stalk. Pappus pilose capillary soft and w. Recept. naked.—Herbs with or without st. L. mostly radical. Fl. y. cymose or solitary on scape-like ped. Flts. few or many.

†52. TARAXACUM. Inv. campanulate-oblong many-fld., outer shorter scales in many rows mostly lax or spreading. Florets numerous in many rows. Ach. linear-oblong subcompressed ribbed or striate imbricato-muricate or muricato-turriculate upwards. Recept. convex.—Stemless herbs, l. all radical with a thick fleshy midrib. Ped. 1-fld. scape-like radical tubular. Fl. y.

Tribe XXIX. LACTUCEAE.

Inv. narrow-oblong or ureeolate sometimes calyculate, mostly regularly imbricate with scales in many rows. Ach. obcompressed flattened with or without beak simple at top (not coronulate or muricate). Pappus stalked or sessile pilose very soft and w. linear-capillary caducous. Recept. naked.—Branch erect very milky herbs. Fl. mostly small cymose, y., or., b. or purple.

53. LACTUCA. Inv. narrowly cylindric, in fr. a little thickened at the base, calyculate or regularly imbricate, mostly few-fld. Ach. oblong or lanceolate beaked; beak or pappus-stalk slender filiform.—Smooth mostly virgate-stemmed herbs with terminal oblong panicles of numerous small y., lilac or b. fl.

54. SONCHUS. Inv. ureeolate prominently swollen at the base many-fld., scales regularly imbricate. Ach. elliptic-oblong truncate at top not beaked. Pappus sessile silvery-w.—Herbs or shr. mostly smooth often glaucous. Fl. y. moderately large.
Tribe XXX. CREPIDEÆ.

Like Lactuceæ, but involucres always broadly oblong, achene rounded fusiform or subcylindric sometimes subangular or subcompressed (not flattened) mostly without beak, and pappus mostly sessile stiffish dirty white.—Flower mostly rather large and yellow, very rarely pink or purple.

55. CREPIS. Involution mostly double or distinctly calyculate or bracteolate at the base, the outer scales short lax, inner close erect equal in one row; all sometimes regularly imbricate. Achen rounded subcompressed subangular fusiform more or less beaked or beakless, variously ribbed or striate. Pappus stalked or sessile capillary white.—Herbs of various habit, mostly smooth or succulent. Flower mostly corymbose and yellow, very rarely pink or purple.

56. ANDRYALA. Involucres indistinctly double, the few short outer scales or bractlets often deciduous or abortive, inner of 1 row, many-fid. Achen very small cylindric 10-ribbed truncate and 10-toothed at top. Pappus sessile very deciduous dull white, capillary stiff denticulato-scabrous almost plumose at the base. Receptacle sometimes subsetose.—Erect branched greyish stellately woolly or tomentose herbs or suffrutescent. Heads cymoso-paniculate. Flower moderately large yellow.

Table of Genera.

I. RADIIFLORÆ. (CORYMBIFERÆ Vaill., Juss. &c.)

§ 1. Anthers ecaudate or awnless at the base.

A. Receptacle naked.

Tribe I. AGERATÆ.

1. Ageratum.

Tribe II. EUPATORIÆ.

2. Eupatorium.

Tribe III. ERIGERONÆ.

3. Erigeron.
5. Gnaphalon.

Tribe IV. SENECIONÆ.


Tribe V. COTULEÆ.

7. Cotula.
Tribe VI. Artemisieae.
   8. Artemisia.

Tribe VII. Hippireae.

Tribe VIII. Bellideae.

Tribe IX. Chrysanthemae.
   11. Pyrethrum.
   12. Leucanthemum.
   14. Chrysanthemum.
   15. Pinardia.

B. Receptacle chaffy.

Tribe X. Anthemideae.
(Like Chrysanthemae except the chaffy receptacle.)
   17. Ormenus.
   18. Anthemis.
   19. Achillea.

Tribe XI. Bidentae.

Tribe XII. Eclipteeae.

§ 2. Anthers caudate or awned at the base.

A. Receptacle scaly or chaffy all over.

Tribe XIII. Bupthalmeae.
   22. Asteriscus.

B. Receptacle naked or scaly only at the margin.

Tribe XIV. Inuleae.
   23. Inula.

Tribe XV. Gnaphalieae.
   24. Helichrysum.
   25. Gnaphalium.
   26. Filago.
   27. Xerotium.

Tribe XVI. Calenduleae.
   28. Calendula.
§ 1. Anthers ecuadate or awnless at the base.

A. Receptacle naked.

††Tribe I. Ageratæ Less.

††1. Ageratum L.

Sect. Euageratum DC. Chaffs of pappus 5 serrate acuminate-aristate.

††1. A. Conyzaoides L.

Ann. herb. more or less furry-pubescent; st. and branches square or ribbed and angular, rounded in age only; 1. hispidulous subglabrescent broadly ovate obtuse or subobtuse bluntly crenate scarcely half as long again as broad; scales of invol. smooth or glabrescent serrulate or ciliato-scarbrous upwards; fits. smooth, styles moderate in length; pappus erecto-patent divergently or radiately spreading, distinct at base; ach. black finely reticulato-striate, the angles erectly serrulato-ciliate.—Linn. Sp. 1175; Pers. Syn. 402; DC. v. 108 (excl. var.).

Var. albiflora; heads larger, fl. w.—A. album Willd. ex Steud.—Herb. ann. Mad. reg. 1, §. By watercourses and in moist places by roadsides or in vineyards about Funchal here and there at most seasons but chiefly Spr. or Aut.—A somewhat robust coarse-leaved rather dull gr. erect branched leafy singly-growing pl. 1–2 ft. high. St. and branches stout not woody mostly dark dull red or purple, more or less furry with short crisped subglandular hairs. L. opposite broadly subrhomboidal-ovate, cuneate or truncate rather than cordate at the base more or less obtuse crenate subrugose glabrescent or sparingly adpressedly hispid, 1½–2½ in. long, 1–1½ broad, on slender furry or hirsute petioles about half their own length. Fl. always in Mad. somewhat dull dirty w., never at all blue or lilac as in the less robust fewer and smaller-headed universal Cape-Verde-Island var. (Ag. caeruleum Desf. Cat. Hort. Par. = A. conyzaoides × caeruleum Pers. l. c. = A. obtusifolium Lam. = A. conyzaoides a DC. l. c. = A. conyzaoides Hook. Ex. Fl. t. 15; Schm. Fl. Cap. Verd. 184 excl. syn. var. Mexicanum DC. and A. Mexicanum BM. t. 2524),—in dense terminal not large or conspicuous cymes. Heads small 2 lines in diam.; scales about 15 (12–20) glabrescent light gr. their tips pink or purple, 2-ribbed flat linear-lanceolate aristato-acuminate, the edges w. membranous subserrulate or serrulato-ciliolate upwards. Fits. very small w. slender smooth, the pale gr. tube only minutely
glandular or resinoso-punctate. Branches of style w. moderately long but much shorter and less conspicuous than in *A. mexicanum* Sims and scarcely clavate. Recept. naked conico-pulvinate or mammillate. Pappus of 5 radiating lanceolate pale straw-coloured (not w.) stiff chaffy-setaceous very rough awns membranously dilated and strongly serrulate irregularly downwards, about one line long. Ach. small 1 line long black shining strongly or sharply 5-angular narrow-oblong truncate at top scarcely attenuated downwards smooth except a few remote short glittering points or erect setules with which the 5 angles are serrulate or ciliate; *basal areola* or scar oblique tumid yellowish or brownish ivory-w.

In withering or drying the fl. give out the scent of new-mown hay or Woodruff (*Asperula odorata* L.), mixed however with a strong unpleasant odour. Otherwise the pl. is wholly scentless.

The chaffs or awns of the pappus are more gradually dilated downwards and roughly or coarsely serrulate than in *A. mexicanum*; they are also distinct, not imbricated laterally, quite down to the base; the ach. are uniformly black shining and very finely and minutely but distinctly striolate both longitudinally and transversely, with the oblique callous w. ring or scar at the base larger and more tumid.

The common Cape Verde pale-b.-or lilac-fld. var. of this pl. is said by Schmidt (Fl. Cap. Verd. 184) to be the same as he had observed in Mad., which is quite at variance with my experience. Nor on the other hand did I ever meet with *A. conyzoides* var. *Mexicanum* DC. = *A. Mexicanum* BM. t. 2524 which he includes in his syn., in any of the Cape Verde islands.

††2. *A. MEXICANUM* Sims.

Perennial herbaceo-suffrutescent thickly furry-pubescent; st. and branches altogether round and even throughout, shrubby and smooth downwards; l. hispid-pubescent rhomboidally or triangularly oblong-ovate acute sharply serrate often twice as long as broad; scales of inv. hirto-pubescent entire; fits. glandular-pubescent; styles very long; pappus erect close and laterally imbricate at base; ach. quite smooth and even, sprinkled or ciliate up the angles with short erect setules.—BM. t. 2524. *A. conyzoides* γ *Mexicanum* DC. v. 108.—Herb.-suffr. per. Mad. reg. 2, r. About cottages in fences and on banks by roadsides &c., quite naturalized locally here and there; P°° da Cruz 500-1000 ft.; Rib. de Machico at the head of the Machico Valley;
Serra d’Agoa, &c. Jan.–May, but at almost all seasons.—Pl. gregarious forming large beds or patches, wholly pubescent. Roots per. creeping. St. numerous erect or ascending branched bushy leafy, suffrutescent woody and brittle downwards, round from the first throughout and only a little compressed at the joints or nodes. Foliage of a somewhat dull not hoary gr. L. opposite stalked on shortish furry petioles \( \frac{1}{4} - \frac{1}{2} \) their length oblong-ovate acute sharply and evenly serrate, entire and sub-cuneate or truncate at the base, \( 1\frac{1}{4} - 2 \) in. long \( \frac{1}{2} - 1\frac{1}{2} \) broad. Cymes numerous terminal dense many-fld. handsome from the fine lavender or lilac-blue of the long exserted styles. Heads moderately large 3–4 lines long and broad hemispherically or broadly and shortly campanulate; inv. half the length of flts.; scales 15–25 subvilloso-pubescent subequal and scarcely imbricate strongly 2-ribbed or nerv'd linear aristato-acuminate entire herbaceous, gr. below, dark reddish or purplish upwards. Flts. glandular-pubescent, tube w., teeth fine lilac-blue like the smooth upper halves or more of the very long cylindric or slightly clavate erecto-radiant, presently flaccidly deflexed, in drying tortuose, styles.—Ach. smooth or sprinkled up the angles and upwards between them with a few minute shining erect points or setules; in all my Mad. and in English garden spec. abortive and hence probably shining pale brown or light fawn-colour instead of black as described in BM. l. c., the 5 sharp ribs or angles darker, the interspaces plano-concave quite smooth and even (not striolate) narrowly oblong-pentagonal truncate at top, attenuated downwards with an oblique callous shining w. scar at the base. Pappus of 5 erect parallel lanceolate finely serrulate chaffs, all or sometimes only 2–4 produced into finely rough stiff setaceous awns \( \frac{3}{4} - 1 \) line long i. e. about as long as or a little longer than the ach., approximate and laterally overlapping downwards. Recept. wholly naked small pulvinato-conical or mamillate coarsely foveolate.

This is the pl. so commonly cultivated in garden-beds in England under the name of Blue Ageratum.

No two pl. in any genus can be more constantly distinct as sp. than the present and its immediate precursor. Except in the points included in the generic character, they differ strikingly in almost every particular.
††Tribe II. Eupatoriace Less. (Adenostyleae DC.)

††2. Eupatorium L.

††1. E. adenophorum Spr. Inca muito or Abundancia.

St. subangular erect herbaceous-suffrutescent, branches and petioles glanduloso-pubescent, l. opposite stalked triangular or rhomboidal acute wedgeshaped at base, 3-nerved, coarsely serrate, nearly smooth above, subpuberulous beneath; cymes terminal trichotomous, heads pedicellate 35-40-fld., inv. campyluate, its scales in 1-2 rows equal glandular-pubescent subciliate; ach. 4-angular smooth.—Spr. Syst. iii. 420; DC. v. 164. E. glandulosum Humb. et Kth. Nov. Gen. Am. iv. 122, t. 346; Lindl. Bot. Reg. xx. (or vii. New Ser.) t. 1723 (non Michx.).—Herb. suffr. per. Mad. reg. 1, 2, 3, ccc. By watercourses and on wet rocks and banks chiefly, but also often in dry places, everywhere about Funchal, and running far up the ravines there and in most parts of the island. March–Nov.—A tall erect branched leafy large strong-growing pl. 2–5 ft. high with somewhat shining dark-gr. rather handsome foliage and copious branched panicked cymes of rather dull w. fl. St. and branches stout stiff rounded striate dark reddish or purple, clothed like the petioles with short close-set crisped gland-tipped subviscid hairs. Petioles slender about \( \frac{1}{2} \) length of l.; the latter 2–3 or 4 in. long, 1\( \frac{1}{4} \)-2\( \frac{1}{2} \) broad, shining and smooth above except the nerves, powdery-puberulous all over beneath, becoming ultimately nearly or quite smooth on both sides; the 2 side margins coarsely toothed, the 3rd or basal below the 2 side angles entire and more or less cuneate rendering the normally triangular l. more or less rhomboidal. Fl. numerous w. with the eye or centre in bud purple, slightly fragrant like Hawthorn, in large trichotomously branched leafy panicked cymes. Heads or calathids 3 lines long and broad on slender densely glandular-pubescent viscid ped. 3 or 4 lines long which are mostly furnished also with several fine extremely narrow-linear almost capillary gr. bracts. Scales gr. 2-3 or 4-ribbed membranous at the edges and often subserulate upwards, all ciliate and clothed all over with purple-headed glands, acute or acuminate but not aristate. Pappus in a single row of few (5–10) soft pure w. hairs scarcely longer than the fits. or about twice the length of ach. erectly pubescent equally all the way up i. e. thickly clothed with short upright hairs, deciduous. Ach. very small and slender 1 line long black shining entire naked very finely and minutely reticulato-granulate fusiform or oblancoelato-oblong i. e. more attenuate at base than at top, strongly 4-angular, interspaces of angles or ribs concave plain (not striate). Recept. convex pustulate naked.
Introduced into Mad. scarcely before 1840, and first noticed on the walls of the Rib. de S\textsuperscript{a} Luzia in Funchal below the house of a former British Consul, Mr. Veitch, from whose garden, supplied with pl. and seeds occasionally by the Horticultural Society of London, it was probably thus at first a straggler; this pl. had even in 1855 already spread in vast profusion over all the neighbourhood of Funchal and elsewhere, even in the N. of the island, up to an elevation of 2000 or 3000 ft. or more; forming, in some places, hedges about cottage gardens, and in ravines (as up the Rib. de S\textsuperscript{a} Luzia almost to the foot of the great waterfall) thickly clothing the wet dripping perpendicular cliffs in many places as if perfectly indigenous. Unfortunately it seems inapplicable to any use but litter, and is entirely unfit for fodder. The Portuguese have given it a very apposite name, "\textit{Inca muito},"—equivalent to Spread-much, or literally (as applied to insects) Swarm-much. It is originally from Mexico and was first brought to England in or about 1830.

Tribe III. \textit{Erigeronteae}. (\textit{Erigerineae} Gr. and Godr.)

†3. \textit{Erigeron} L.

†1. \textit{E. canadensis} L. \textit{Avoadeira}.

St. more or less hirtose or hirsute erect straight stiff virgate either simple or with similar erect virgate shorter side branches, each, like the taller main st. terminating in an elongate-oblong pyramidal compound many-fl. leafy thyrsus of small lateral cymes; 1. linear-lanceolate attenuated at both ends, ciliato-hirtose, the lower here and there remotely toothed; heads very small and numerous subcylindrical, scales lax glabrescent, female fl. ligulate, ligules or rays erect short inconspicuous scarcely overtopping the scales; pappus pale straw or yellowish; ach. pubescent.—Sm. E. Fl. iii. 421, Spr. iii. 517; Koch 388; Bab. 171; Gren. et Godr. ii. 96; Willk. et Lange Fl. Hisp. ii. 34. \textit{E. canadense} L. Sp. 1210; Fl. Dan. t. 1274; E. B. t. 2019; DC. v. 299; RFG. xvi. t. 26. f. 1. \textit{E. canariense} (sic ! misprint for \textit{canadense}) Buch 194. no. 260. \textit{Conyza canadensis} Bocc. Ic. 85. t. 46. \textit{Virga aurea} Virginiana Barrel. Ic. p. 96, v. \textit{Conyza minor unicaulis} &c. t. 1164.—Herb. ann. Mad. reg. 1, 2, 3, cc. A universal weed in gardens, vineyards and cult. ground chiefly below 3000 ft. June–Dec.—Not found in PS. or the Desertas.—Root small pale tapering. Whole pl. dull or dark somewhat hoary-gr. St. 1\textsuperscript{4}–4 or 5 ft. high, virgate slender but stiff and hard.
very straight and upright, erectly branched mostly above the middle, somewhat copiously leafy throughout. L. 1-3 in. long, 1-3 or 4 lines broad, the upper gradually narrower, the lower and root-l. (the latter forming a rose-like tuft at first) dying off as the pl. comes into fl.; all more or less hirtose and ciliate at the edges at least downwards, but sometimes nearly smooth. Thyrse 6-9 in. long, 3-4 broad, leafy many-fl.d. Fl. pale ochre straw-colour or dirty-w., 1-2 lines long, 1½ broad. Scales linear-lanceolate with membranous edges nearly smooth. Flts. minute, of disk y. perfect 5-cleft tubular, of ray pale dirty-w. female minutely ligulate. Ach. truncate at top pale brown or straw-colour; pappus sessile pale yellowish w. or straw-colour stiff fragile and minutely rough or scabrous.—Varies much in hairiness, being sometimes nearly smooth. An altogether useless but not troublesome weed.

†4. CONYZA L.

†1. C. AMBIGUA DC.

Greyish hirtose or hirsute erect stiffly branched subproliferously, each branch terminating in a narrow scarcely compound leafy not many-fl.d. racemiform cyme rising above that of the main st. or primary main branches; l. linear lanceolate attenuated at both ends, thickly hirsuto-pubescent on both sides and subtiliato-hirtose, the lower remotely and irregularly deeply inciso-toothed; heads moderately large shortly and broadly cylin-dric not numerous, crowded and simply racemose upwards, scales closely erect hirsuto-pubescent linear-acuminate not overtop-ping the disk; pappus dull w. or rufescent; ach. pubescent.—DC. v. 381; Seub. Fl. Az. 32; Gr. et Godr. ii. 96; Willk. et Lange Fl. Hisp. ii. 34. ERIGERON LINIFOLIUM Willd. ex DC. E. LINIFOLIUS RFG. xvi. t. 22. f. ii. E. contortum "Desf.," Pers. ii. 432. no. 40. E. CANADENSE Ten. Prodr. ex DC.; Brot. i. 359 (not Linn.). E. AMBIGUUS Schultz Bip. in WB. ii. 208. —Herb. ann. Mad. reg. 1, 2, c. In gardens, vineyards and by roadsides occasionally everywhere below 2000 ft. at most seasons. Not seen in PS. or the Desertas.—In foliage and fl. much like the last, but wholly different in its low subproliferous habit or inflorescence and much larger calathids. Root rather strong and woody. Whole pl. somewhat hoary-gr., hirtosely or hirsutely pubescent, 9-18 in. high. From below the main termi-nal racemelike cyme spring 2 or more branches, each ending in a cyme considerably overtopping the 1st, and so on once or twice in succession; the whole of the side cymes ultimately rising nearly to a level in a corymbose manner. Cyme with short few-fl.d. side branches below, crowded and racemose or simple upwards, the heads 2½-3 lines long, 2-2½ broad, on slender hirtoso-pubescent pedicels. Scales hairy-pubescent mostly deep
bright purple or crimson upwards or at the tip, giving the heads a gayer appearance than in *E. canadensis*, gr. below. Flts. very small and slender filiform, female of margin mostly irregularly 2–3-toothed not "lingulate or 5-toothed" (as described in WB. l. c. 209) very numerous in a broad w. outer ring of many rows; perfect of disk few sulphur-y. Pappus sessile dull w. sometimes pale brown or fawn-colour with a warm purplish tint. Ach. pale brown or straw-colour truncate at top. Recept. strongly alveolate, the angles of the cells raised toothed or shortly setiform.

5. **GNAPHAION i. e. PHAGNALON Cass.**

1. **G. SAXATILE (L.). *Isca in Ps* St.*

Suffr. many-branched from the base, branches lax diffuse or ascending closely and adpressedly snowy-tomentose dividing at top subproliferously into several short branchlets each ending in one or sometimes two slender naked 1-fld. ped.; 1. sessile all squarrose loosely spreading or recurved narrow linear-lanceolate or linear acute naked glabrescent or thinly webbed above, densely snowy-tomentose beneath, the margins revolute and in the lower l. irregularly and remotely repand-toothed or waved; ped. solitary scattered or dispersed and axillary towards the ends of the branches rarely truly terminal or geminate, 1-fld. slender elongate; heads in bud ovate, in fl. and fr. oblongo-campanulate or cylindric ~4-th longer than broad; scales compactly imbricate very unequal quite smooth and naked yellowish gr. and herbaceous with scarious brown tips linear-lanceolate or linear, all narrow and finely acute or acuminate mostly very plain or even and entire, closely and adpressedly erect with the tips only of the outer spreading or recurved; teeth of florets acute and smooth or naked.—*Phagnalon saxatile* DC. v. 396; WB. ii. 214; Gr. et Godr. ii. 95; RFG. xvi. t. 29. f. ii.; Willk. et Lange Fl. Hisp. ii. 57. *Conyza saxatilis* Linn.! Sp. 1206; Lam. Dict. ii. 87; Cavan. in Anales de Cienc. (Madr. Jun. 1801) No. 10. p. 87. no. 133 (tom. iv.); Broth. i. 358; Pers. ii. 428; Buch 194. no. 258; Barrel. t. 425, 426.—Suffr. per. Madr. reg. 1, 2, 3, ccc; PS. reg. 1–4, c; ND. c.; GD. cc; SD. ccc. On dry sunny rocks everywhere chiefly below 2000 ft. March–Dec.—A small inconspicuous wholly scentless shr. 6–18 in. high with hard stiff woody brittle slender subelongate and spreading decumbent or ascending somewhat loose or straggling closely cottony snow-w. branches. L. 1–3 in. long, 1–3 lines broad, entirely sessile or semiamplexicaul not decurrent, thickly crowded squarrosely recurved and persistent downwards, drying on the pl., dark gr. and glabrescent above, snow-w. and densely cottony beneath. Ped. almost uniformly solitary and only sometimes geminate or forked when terminal,
rather numerous, and, though scattered or dispersed down the branches, rising subcorymbose towards their ends 2–6 in. above the 1., 2–6 in. long very slender but stiffly erect and nearly or quite straight, cottony-floccose, a little thickened close beneath the heads but not so gradually or so much as in G. calycinum (Cav.) or G. rupestre (L.). Heads 3–5 lines long, 2–3 broad; in fl. oblong a little swollen at the base, afterwards contracted upwards and oblong-ovate; female fl. of margin pale straw or lemon-y. in a broad outer ring; perfect fl. of disk pale dull ochre-y.; the teeth of all acute quite smooth and naked or beardless. Scales of inv. quite smooth and shining light gr. with dark-brown scarious tips, closely and tightly adpressed, the outer with the tips only recurved spreading or reflexed, the inner narrower paler more acuminate and altogether compactly and adpressedly erect and as long as the outer female florets; all mostly flat even and entire, but with the scarious edges upwards sometimes crisped or subundulate and sometimes here and there toothed. Pappus nearly w. a little stiff-fish simply scabrous sessile. Recept. naked papillary. Ach. hairy, frequently abortive.

Barrelier’s t. 425 exactly represents the pl. as it very frequently occurs browsed down by goats &c. with smaller shorter and broader leaves.

In drying all the scales of the inv. become somewhat lax or loosely erecto-patent; but in the live pl. they are always closely and tightly or compactly adpressed, with the brown tips only free and recurved.

Gnaphalon (Γνάφαλον) is quite distinct enough from Gnaphalium to render entirely inexcusable and intolerable Cassini’s puerile anagrammatic transformation of it into Phagnalon.

2. G. RUPESTRE (L.).

Suffr. dwarfish sparingly branched, branches stout robust and mostly short and thickly leafy, closely and adpressedly snowytomentose; 1. sessile or half-amplexicaul not decurrent, the upper erect straight and stiffish thickly tomentose linear with strongly revolute entire margins, the lower lanceolate or elongato-spathulate much attenuated downwards, glabrescent above, often remotely repand-toothed, sometimes squarrose or reflexed; ped. geminate or ternate subcorymbose and terminal or nearly so, rarely solitary, 1-fld. slender elongate; heads in bud globose or hemispherical, in fl. and fr. shortly and broadly oblong or cylindric large as broad as long; scales “adpressed,” loosely imbricate when dry, very unequal, quite smooth, wholly brown and stiffly scarious or even coriaceous, the middle and outer
broadly oblong-spathulate or obovate mostly obtuse or lacerato-truncate, sometimes acute or mucronate much crisped or undulate and lacerato-denticulate upwards at the edges, the inner scales always narrow linear acute or acuminate entire; teeth of florets acute and smooth or naked.—Conyza rupestris Linn. Mant. 113; Cavan. in Anal. Cienc. iv. No. 10. p. 87. no. 132. C. saxatilis Lam. Dict. ii. 87. C. Tenorii "Spr." Guss. Fl. Sic. ii. pars 1. p. 500.—Suffr. per.—Varr.:


β. Outer and middle scales of inv. very obtuse or rounded and broadly spathulate or ligulate; inner or upper linear acute.—Phagnalon rupestre DC. v. 896; WB. i. ii. 215; REG. xvi. t. 29. f. iii.; Lowe Pl. Mog. in Linn. Soc. Journ. v. p. 81. no. 70; Willk. et Lange Fl. Hisp. ii. 55; Bourg. Pl. Hisp. (Barcelona) and Welw. Pl. Lusit. Exsicc. in BH. Conyza rupestris Smith in Herb. Linn. C. Tenorii (Spr.) Huet du Pavillon! Pl. Exsicc. Sicil. in BH. Phagnalon Tenorii Presl Fl. Sic. i. xxix; Gren. et Godr. ii. 95.—Mad. reg. 2, rrr. Top of the Cabo Girão. April, May.—An altogether stouter more robust and dwarfish less-branched pl. than G. saxatile (L.), with fewer shorter thicker and mostly more erect less straggling branches from 3 or 4 to 8 or 10 in. long. L. 1½ in. long more densely crowded upwards and erect not squarrose, the lower more broadly lanceolate or elongato-spathulate. Ped. shorter mostly geminate and almost always terminal. Heads larger with more numerous florets and a broader disk, hemispherical 4–5 lines long and broad. Scales all scarious mostly altogether brown, but in α sometimes pale yellowish or greenish with the tips and midrib brown. In dried sp. they are somewhat lax or loosely erect, but not more so than in G. saxatile when dried, in which they are originally very closely adpressed; and I have not observed them in the living pl. By Gusson they are said to be adpressed, and by Grenier and Godron to be "toutes appliquées."

There is a true spec. of var. β in the Linn. Herb., but unnamed by Linnaeus, and with merely the numerals 36 inscribed on it in ink, which is the number on the named sheet of his true Conyza saxatilis to which it is pinned. The name rupestris has been subsequently written on this unnamed sheet in pencil by Sir J. E. Smith. Thus, although Linnaeus plainly
had confounded it originally with his *C. saxatilis*, it may fairly be presumed that it was at least partly his authority (possibly his very "H. U." spec.) for the *C. rupestris* of his subsequent Mantissa, and that he merely neglected or forgot to make the proper alteration in his Herbarium. This however, although probable, seems not quite to warrant the insertion of a ! after his name in quoting the Mantissa.

3. **G. calycinum (Cav.).**

Habit and foliage like the last with stout robust short branches and linear erect straight crowded very entire upper l. with strongly revolute margins; ped. distinctly thickened upwards, mostly geminate; heads in bud depresso-globose umbilicate, in fl. ventricosely hemispherical large as broad as long; scales all loosely imbricate erect pale brown and membranaceous scarious with plicate undulate or lacerato-serrate edges and all or about the lower half of them broadly rounded oval obturate or shortly spatulate and very obtuse or retuse, the inner ligulate or oblong and lacerato-truncate; teeth of all the florets obtuse glandular-pubescent or tipped with a tuft of glandular short hairs.

—Phagnalon calycinum DC. ! v. 397. P. Bennettii Lowe! MS. olim. *Conyza calicina* Cav. in Anal. Cienc. iv. No. 10. p. 87. no. 134. *C. rupestris* Madeira Fr. Masson 1777 in BH. !; Buch ! 194. no. 259 (not Linn.).—Suffr. per. Mad. reg. I, rrr. Dry sunny rocks at or near the south end of the ridge or crest between the Quinta do Valle or Ribeirinho and the Rib. de João Gomes a little above Funchal at an elevation of about 400 ft. Feb.—June. On this spot alone I found first in Febr. 1827 a very few pl. only, and this for several years successively, of which I sent spec. to the late Prof. De Candolle and to HB. and HK., which are still extant. But the locality has been since completely changed by cultivation; and the pl. has escaped all later researches on the spot or elsewhere in Mad. except those of Dr. Findley, from whom there is a small but excellent spec. in HK.

The following description was taken in 1832 from fresh or living spec.

Whole pl. entirely scentless and without any "odor gravis," ascribed by Linnaeus to his *Conyza rupestris*, but which I never observed in the Mad. *G. rupestre* or *G. saxatile*; larger and stouter than the latter in all its parts and less branched or bushy. Branches fragile often somewhat straggling or irregular but mostly straight short erect and stiff or rigid, white and tomentose especially while young. L. perfectly sessile or subsemiamplexicaul but in no degree hastate or decurrent,
slightly tomentose on both sides with the midrib w. but presentely becoming more naked or glabrescent than in *G. saxatile* (L.), 1½-2 in. long, ½-1½ line wide, the upper crowded stiffly erect thickish and rigid very straight and entire with strongly revolute margins; the lower broader and flatter erecto-patent not revolute or waved at the margins; on the whole all are stiffer longer and narrower than in *G. rupestre* above, in which they rarely exceed an inch in length and are of a softer thinner substance with at least the lower flaccidly or loosely spreading or recurved. Ped. slightly cottony gradually thickened upwards and distinctly swollen beneath the heads which are depressedly globose in bud, semiglobose in fl., 4-5 lines broad and high, swelling out abruptly, like that of a *Sonchus*, at the base and of a thick short squab instead of pyramidal or slender ovate-oblong more or less elongated shape; disk broad with numerous florets. Scales of inv. wholly scarious or membranous (not coriaceous or rigid) light brown or pale chestnut or fawn-colour with a darker stripe up the middle, all altogether loose but erect and not even their tips recurved or spreading; the outer of a short abrupt broadly spathulate or rounded shape, the innermost ligulate and lacerato-truncate. Female florets of the margin numerous in a broad band or ring sulphur or lemon-y. with a very long slender tube from which are exserted the 2 divericate branches of the style; perfect fl. of disk or rather their anthers golden-y.; the 5 teeth of all the fl. obtuse and either tipped with a tuft of glandular short hairs or all over glandular-pubescent. Pappus sessile nearly smooth. Ach. hairy stipitate. Recept. quite naked papillose. When the seeds are fully ripe, the scales of the inv. become altogether reflexed back upon the ped. In *G. saxatile* (L.) and *G. rupestre* (L.) they are merely horizontally spreading.

*P. Tenorii* Gren. et Godr., by the scales of the inv. "toutes arrondies au sommet," agrees somewhat better with *G. calycinum* than with *G. rupestre*: but the rest of the description rather, and the synonyms entirely, belong to the latter.

Seeing the great variableness of *G. rupestre* on the one hand, and the rare and casual occurrence of *G. calycinum* on the other, I have sometimes doubted whether the latter were more than an extreme form of var. β of the former. The difference however above noted in the teeth of the florets, if corroborated and found constant, would be quite decisive.

The following is an extract from a letter dated "Genève 15 Févr. 1834" from the late Chev. De Candolle about this pl. "Quant au no. 231" (*P. Bennettii* Lowe Mad. MS. olim)
"J'avais été conduit comme vous à le distinguer du Phagnalon le plus commun dans tout le bassin de la Méditerranée; celuici est certainement Conyza geminiflora de Tenore, Conyza Tenorii de Sprengel, Conyza tomentosa de Shaw et par conséquent Conyza rupestris de Linné: il devrait donc garder le nom de Phagn. rupestre. Le vôtre reste donc nouveau, propre à Madère et peut-être se retrouve-t-il aux env. de Mogador d'après un échantillon du voyage de Broussonet sans localité précise *. Je l'avais d'abord nommé Phagn. scariosum d'après la nature de son invol. qui contraste avec les écaillles rigides et coriaces du Phagn. rupestre. Si vous teniez au nom de Bennettii je l'adopterai, mais dans mon opinion s'il devrait recevoir un nom d'honneur je préfèrerais celui de Phagn. Lowei."

The name Bennettii had been designed for it by me in compliment to my friend J. J. Bennett Esq. who had previously (1831, 1832) assured me of its being "totally distinct from Conyza rupestris L., though " identical with a Mad. spec. from Masson "originally so named in BH."

Tribe IV. Senecioneæ Cass.

6. SENECIO Less. (Senecio and Cineraria L.)

Sect. 1. Eusenecio Gren. et Godr.—Heads cylindric calyculate. Ligules 0 or very short and revolute. L. pinnatifoliate. Fl. y. discoidal with or without ray.

†1. S. VULGARIS L. Groundsel.

Scentsent glabrescent or only partially cobwebby-hairy not viscosous; st. erect branched from the base soft or succulent; l. sinuately pinnatifoliate smooth or more or less cobwebby, lobes short broad subremote unequal flat obtuse denticulate; fl. dispersed in numerous few-fld. cymes; scales of inv. smooth, of calyce (10-20) adpressed ½-⅓ length of inv. their upper half black; fits. mostly all tubular; ach. adpresso-pubescent.—Linn. Sp. 1216; Müll. Fl. Dan. t. 513; Brof. i. 388; EB. t. 747; Sm. E. Fl. iii. 428; DC. vi. 341; WB. iii. 318; Koch 425; Bab. 181; Gren. et Godr. ii. 111; RFG. xvi. t. 68. f. 1; Willk. et Lange Fl. Hisp. ii. 123. S. viscous Buch! 194. no. 261 (partly; not Linn.).—Herb. ann. Mad. reg. 1, 2, c; PS. reg. 1, 2, 5. Not seen in the Desertas. In gardens, vineyards, fields

* The only Gnaphalon or Phagnalon found by me at Mogador during a few days' visit in 1859 was G. rupestris (L.).
and cult. ground about Funchal and most towns or villages in Mad. but everywhere sparingly. In PS. in fields beyond Camacha. Spr. chiefly.—Scentless erect branched from the base leafy often bushy 6–12 in. high altogether somewhat succulent, mostly in some degree thinly and loosely cobwebby or cottony-hairy, rarely quite bald. St. light gr. angular soft or fleshy. L. of a somewhat shining full gr. with often somewhat of a leaden hue, thickish, with flat not revolute margins, the lower attenuate downwards into a stalk, the upper broadly auriculate-amplexicaul. Heads erect or drooping 3–4 lines long, 2–2½ broad cylindric-oblong mostly entirely rayless, in small terminal and lateral cymes, short broad and thick in bud. Calyx distinct, its scales short subequal and conspicuously black-tipped. Scales of inv. linear acuminate gr. with membranous w. edges smooth slightly bearded and subdenticulate at the black or discoloured tip. Fl. y. discoidal, the outer a little irregularly 5-cleft or the outer segm. larger but scarcely ligulate, rarely with an outer single row of minutely revolute-ligulate fits. (β radiatus Koch 426, Bab., Willk. et Lange l. c.; S. denticulatus Nolte, non Müll. Fl. Dan. t. 791; S. lividus β denticulatus DC. vi. 343, excl. syn. Müll.). Recept. naked smooth pustulate or mamillate. Ach. narrowly cylindric-oblong or elliptic many-ribbed brown clothed with adpressed short silky-w. pubescence. Pappus sessile softly pilose pure w. copious 3–4 times the length of ach.

In BH. is a sheet ticketed by Solander (propria manu) “Senecio viscosus Linn. Sp. pl. 1217. Mscr. Madeira.” It is the original authority for S. viscosus of Buch’s Mad. List 194. no. 261. It contains two spec.: one in fl. about 4 in. high is unquestionably S. vulgaris L.; the other (not in fl.) 18 in. high is rather, by its scaly or furfuraceous pubescence, the shape of the young fl.-buds, and mode of grooving of the stem, S. sylvaticus L.

2. S. SYLVATICUS L.

Strong-scented furfuraceo-pubescent or furry-tomentose and cobwebby subviscid; st. erect straight virgate simple hard form and stiff branched upwards only; l. subauriculato-semi-amplexicaul deeply sinuato-pinnatilobed or pinnatifuplicate, lobes subequal regular narrowish-oblong short remote distinct and parallel, coarsely toothed, the margins revolute, the lower attenuately stalked; cymes normally ample many-fld., heads numerous crowded rather small conical imperfectly calyculate subglandular-puberulous; calyx irregular inconspicuous very short of 3–5 minute adpressed unequal linear-setaceous scales
the length of those of the inv. and like them sometimes black-tipped; fl. of margin with a very short inconspicuous revolute ligule; ach. distinctly ribbed and angular finely and shortly adpresso-pubescent.—Linn. Sp. 1217; Brot. i. 388; Pers. ii. 434; EB. t. 748; Sm. E. Fl. iii. 430; DC. vi. 342; Koch 426; Coss. et Germ. Fl. Par. ii. 418; Gren. et Godr. ii. 111; RFG. xvi. t. 69. ff. ii, iii; Willk, et Lange Fl. Hisp. ii. 123.

S. viscosus Buch! 194. no. 261 in part (not Linn.). S. viscosus var. hypoleuca Holl’s List! i. e. “Holl et Reich. in Ratisb. Fl. 1830, p. 382” (not Linn.). S. lividus DC. vi. 343 quoad pi. Mad. solum ejusque syn. Holl et Reich. (not Linn.).—Herb. ann. Mad. reg. 1, 2, 3, ccc. GD. reg. 2, 3. Sunny waste ground, banks and mountain pastures chiefly above 2000 ft. everywhere, springing up especially in woodlands and on mountain-sides freshly cleared by burning. About the Valle (Funchal), S. Martinho, Mount Camacha, mountain pastures up the Caminho do Meio, thickets of Vaccinium below the Ice-house, Rib. da Metade, Pico Ruivo up to the very top, whole plain of the Paul, Pio da Cruz &c. Febr.–Oct.—Varying wonderfully in luxuriance and stature from 1 inch, with only 1–3 or 4 heads of fl., to 1 or even 3 or 4 ft. high with ample many-fl. cymes, but otherwise in habit constant. Whole pl. rather pale or dull gr. and fetid with the strong pungent scent of Ballota nigra L., clothed with short somewhat scaly or furfuraceous cottony crisped pubescence and slightly viscid. St. simple branched only upwards into the terminal cyme, clothed all the way up with at first stalked then sessile or half amplexicaul more or less auricled 1. 1–3 in. long and 3 or 4–12 lines broad, remotely equidistantly and regularly pinnatilobate, the lobes coarsely and somewhat bluntly sinuate-toothed with revolute margins. Heads always erect 3–4½ or even 5 lines long, 1½–2 lines broad, at first narrow cylindric-oblong, then elongato-conoidal, swollen at the base, subglanduloso-puberulous, on slender thickly but shortly glandular-pubescent viscid ped. Scales of inv. and of calycine linear acuminate gr. herbaceous scarcely fleshy minutely bearded at the tip which is about as often black or purple as undiscoloured or herbaceous; nor is there any regularity of correspondence in the Mad. pl. between either of these characters and any other variations in pubescence, stature, station or luxuriance. Fl. y. apparently discoidal and like those of S. vulgaris L., but always with an inconspicuous ray of short revolute remote ligules. Ach. dark coffee-brown or black, one line long, linear or narrowly elliptic-oblong angular and many-ribbed or striate, covered with short w. erect subadpressed silky pubescence. Pappus sessile softly pilose pure w. smooth copious, scarcely more than twice the length of ach. Recept. convex naked alveolate, the angles of the cells toothed. Scales of inv. strongly reflexed at last.
This is undoubtedly the normal form (with straight stiffly erect hard wandlike st. and more finely and remotely lobed less conspicuously auricled 1.) of *S. sylvaticus* L.,—though spec. of it, sent by me in 1832 to the late Chev. De Candolle as *S. lividus* Smith, were referred by him in the Prodr. 1. c. to *S. lividus* L., a distinct sp., generally diffused on the continent of Europe though not found hitherto either in Britain or Mad., with thicker more robust and succulent soft st., larger less deeply divided more broadly lobed and auricled 1. and much larger fewer heads in somewhat lax not densely crowded corymbs.

*S. lividus* Sm. (Sow. EB. t. 2515), to which I had formerly referred such spec. of the Mad. pl. as had their involucral scales entirely gr. and not discoloured at the tips, is merely a more loosely branched and succulent luxuriant state or var. β of *S. sylvaticus* L. with more broadly lobed and largely auricled 1., and has not really occurred in Mad. Nor has *S. sylvaticus* L. in either state been found in the Canaries—which is the more remarkable from the almost universal diffusion of the normal form of it in Mad.


Quite scentless smooth and fleshy low and dwarfish, bushy, leafy; st. sharply angular short erect branched or sometimes simple succulent; 1. thick and fleshy crowded simutaneously pinnatifoliate, lobes toothed pinnatifid subacute, their margins revolute; lower 1. attenuately stalked, upper amplexicaul dentatoauriculate; heads moderately large in terminal close crowded large many-fld. cymes; ped. much thickened and fleshy upwards multibracteate; calyce indistinct irregular, scales few (6–10) very short lax with the tips black or discoloured; all the scales and bracts of ped. gibbous and fleshy at the base; ligules of ray conspicuous few (6–10) short broad and truncate or obtusely subovate or ovate, about half the breadth of disk, at first spreading, then reflexed or revolute; ach. narrow linear-cylindric elongate very slightly or not at all attenuate at the base, finely and shortly adpresso-pubescent.—Lowe Novit. 16 or 538. *S. crassifolius* β *Lowe* DC. ! vi. 344.—Herb. ann. Mad. reg. 1, r; PS. reg. 1, 2, ccc; ND. r; GD. r; SD. 3. In Mad. at the top of the Brazen Head and all about the Fossil-bed at
Canical only. In PS., everywhere about the town in all the sandy region, Rib. de Cochim, Fonte d'Arêa, &c. In hot calcareous sand everywhere except on the Brazen Head, where it flourishes equally in a strong red clay. March–June (Dec. also in PS., Sr Moniz).—A low bushy corymbosey branched thinly leafy pl. mostly 2–6 in. high, rarely 6–12, of a light shining bright gr. (never at all glaucous) and altogether smooth rigid fleshy stiff and brittle, very sharply angular or almost winged. L. 1–2 in. long, half as broad, thick stiff and brittle subbipinnatifid, lobes subremote distinct inciso-toothed, teeth mostly acute, the margins revolute. Fl. conspicuous half an inch in diameter bright full golden-y. in large many-fld. handsome cymes; ped. much thickened and fleshy upwards, granulated or tubercled with numerous scattered fleshy bracts becoming more crowded upwards, but not forming any distinct calyce; all the br. ovato-lanceolate or ovato-linear, dilated sessile or semiamplexicaul fleshy and singularly gibbous or tumid at the base, finely acuminate black or discoloured at the tips; inv. coloured i. e. pale greenish y. or lemon-y., with a dark or purplish-gr. ring at top; scales linear with pale membranous edges, gibbous and fleshy at the base, subpuberulous upwards and minutely bearded or pubescent at the tips. Heads shortly oblong or cylindric erect 2–3 lines long, 3 lines broad at top, many-fld., 7 or 8– (mostly 8-) rayed; ligules of ray 1½–2 lines long, 1 line broad, either shortly oblong or suboval, truncate or obtuse, soon reflexed and more or less revolute; disk convex squarrose. Recept. small pustulate, sometimes alveolate, with the margins of cells raised 5-toothed or -angled. Ach. very small and narrow almost filiform, scarcely 1 line long or half a millim. broad, oblong-linear straight truncate at both ends, light brown, thickly clothed in lines with short upright silky-w. hairs. Pappus sessile softly pilose silky pure w., copious, about twice the length of ach., caducous.

The very distinctive and unvarying characters of this gay and handsome little pl. are so much lost and obscured in drying, that the spec. sent by me in 1832 to the author of the Prodromus was referred by him as a var. to S. crassifolius Willd. (a common Lanzarotan sp. in vineyards and cult. ground remote from the sea), from every form of which the Mad. pl. is certainly distinct. Though not found in the Canaries, I have specimens from the Salvages obtained by the kind exertions of the Barão do Castello de Paiva.

††Sect. 3. Kleinanthus Lowe. Heads cylindric imperfectionaly calyculate few-fld. Ligules 0 or few.—Wholly
smooth. St. mostly shrubby and climbing. L. simple undivided palmately nerved mostly angularly lobed and stalked; petioles auriculato-stipulate. Fl. y. discoidal or few-rayed. Ach. smooth.—Mostly Cape species.

††4. S. MIKANIOIDES Otto.

St. frutescent much branched and thickly matted climbing; l. on long petioles fleshy angular acutely 3-7-lobed roundish-reniform deeply notched or cordate at the base, petioles mostly longer than the l., the lower auriculate with very shortly stalked or nearly sessile semiorbicicular or reniform entire leafy stip. at their base; cymes axillary and terminal many-fld. crowded on short somewhat leafy axillary stalks or side-shoots towards the ends of the branches, scarcely longer than the l., forming an irregular interrupted oblong terminal panicle; ped. sparingly and loosely subulato-bracteate upwards, the upper 2-4 br. constituting the calyc; tips of br. and scales of inv. withered or discoloured black or purple; heads discoidal 10-12-fld., florets all perfect rather large and prominent; scales of inv. 8.—Harv. and Sond. Fl. Cap. iii. 402. S. scandens DC. vi. 404 (not Don, Juss., Wall., Ham., nor Cacalia scandens Thunb.).—Suffr. per. Mad. reg. 1, perfectly naturalized, ccc. Banks and hedges, about Funchal and its neighbourhood everywhere; behind the church at Agua da Pêna, at Pâ do Pargo, Pâ Delgada, Seixal &c.; and in vast profusion, forming thick matted beds 100 yards long and 20 broad or more, at Rib. Fundo on the sides of the bed of the stream above the village. March–June, but at most seasons.—St. slender flexuose succulent but stiff hard and wiry, brown and woody downwards, climbing or spreading in thick close entangled masses either on the ground or up any support 6–10 ft. or more. Whole pl. of a light shining gr. perfectly smooth succulent or somewhat fleshy. L. 2 or 3 in. in diam. a little broader than long, in shape ivy-like with very acute triangular entire lobes. Petioles 2 or 3 (1–3) in. long, curved or flexuose, their auricles fleshy like the l., sparingly and shortly subulate. Fl. rather handsome and conspicuous though always rayless, fragrant but not agreeably, bright golden y. Inv. narrow-cylindric 2 lines long, 1 line broad pale or light bright gr., often a little darker at top and bottom. Br. of ped. and calyc e loosely erect fleshy linear-subulate, their tips incurved and withering. Scales linear herbaceous-succulent gibbous-fleshy at the base, quite smooth, the tip only distinctly barbulate. Flts. twice the length of scales or inv. exserted tubular evenly 5-cleft. Styles and anthers far-exserted long conspicuous; branches of style at first divergent then revolute, truncate and pubescent at the tips. Recept. very small alveolate; cells 5-angular with much-raised pale membranous edges. Ach. very small and narrow linear filiform subpubescent with
a few very short erect w. hairs in lines along the ribs reddish-brown (burnt sienna) truncate at each end. Pappus sessile pure w. softly pilose copious, 3–4 times the length of ach.; epig. disk dilated w. conspicuous.

The rapid diffusion in Mad. of the present pi., not introd. or at least observed in gardens at Funchal before 1845, is scarcely less remarkable than that of *Eupatorium adenophorum* Spr. above mentioned; like which pl. also it is useless for all but ornamental purposes, such as covering unsightly banks or walls &c., for which its easy rapid densely matted growth and handsome ivy-like light gr. foliage qualify it admirably. It is a native of S. Africa and comes originally from the Cape.

Sect. 4. *Pericallis* DC. Heads campanulate without calyce many-fld. Flts. ligulate, ligules not numerous flat spreading.—St. shr. or herb. not climbing. L. simple palmately nerved cordate mostly angular tomentose beneath and stalked; petioles auriculato-stipulate. Fl. conspicuously but not many-rayed mostly purple or w., rarely y. Ach. subpubescent.—Macaronesian (Can., Mad. and Açor.) species.

5. *S. auritus* (Hérit.). *Erva de Coelho.*

St. shrubby erect, branches elongate flexuose floccosely subtomentose; l. stalked cordate roundish subangular, doubly callosocrenate-toothed closely snowy-tomentose beneath, cobwebby-glabrescent above; petioles tomentose leafy auricled at the base, auricles entire semicircular or broadly lunate snowy-tomentose beneath; cymes fork-branched ample lax smooth or cobwebby-glabrescent, bracteolate; inf. mostly naked smooth, scales 12 ribbed or striate, ligules 5 broad and rather short.—*Cineraria aurita* Hér. Sert. Angl. 26. t. 31; Ait. Hort. Kew. (ed. 1) "iii. 220;" BM. t. 1786; Pers. Syn. ii. 439; Poir. Suppl. ii. 262; Spr. iii. 546 (not Andr.). *Cin. populifolia* Buch 194. no. 262 (not Hér., Lam., Vent.). *Senecio maderensis* DC. vi. 409.—Shr. per. Mad. reg. 3, cc; PS. reg. 4, rrr. On rocks almost everywhere from 3000–5000 ft., Rib. de S*ª* Luzia, R. Frio, da Metade, de S. Jorge, Curral das Freiras, &c. In PS. only on the summit of Pico Branco. May–July.—A sparingly branched shr. with long straggling flaunting or declining woody but somewhat slender and brittle flowering-branches 2–4 ft. long. L. 1–4 in. long ½–3 in. broad on petioles about half as long, somewhat thin and flaccid, elegantly and regularly double-toothed, the ultimate teeth fine and delicate. Auricles very entire, sessile, the upper rather large, 4 or 5 lines broad, 2 or 3
long, lower evanescent or 0. Cymes terminal 6–12 in. broad, branches widely forked remote straggling with an auricled-stalked 1. at each main division; ultimate cymes 4–12-fld., ped. slender erect with small linear-acuminate erect or loosely erect br. all the way up but not collectedly at the base of the inv. which is light gr. dark purple or blackish at the base. Scales strongly 3-ribbed or grooved oblong acute, the tips dark-purple, of the outer scales subcuspidate and quite smooth, of some of the inner less acute or even obtuse and distinctly barbulate-pubescent or fimbriate. Fl. about half an inch in diam., handsome but most disagreeably scented; fits. of both disk and ray rich bright purple varying a little in intensity; ligules of the ray rather paler than the convex disk, 2–3 lines long or about equal to diam. of disk, half as broad. Ach. erect-pubescent. Pappus w. silky rough. Recept. flat naked shortly setose or bristle-toothed.

Strictly peculiar and confined to Mad. and PS., where it is the sole representative of a group of several very similar Canarian sp. The Açores also produce one only, peculiar to themselves: the Cape Verdes not one.

Assuredly the name *auritus* from *Cineraria aurita* Hér. (Sert. Angl., 1788) or from even *C. aurita* Ait. (Hort. Kew. ed. 1., 1789) properly belongs to this pl., being anterior both to *C. aurita* Andr. (Bot. Rep. 1797) = *Senecio cruentus* (Hér.) and to *Sen. auritus* Willld. = *Sen. auriculatus* Desf. (not Vahl). The restoration of its old name to the Mad. pl. necessitates the imposition of a new one, *S. Fontainesii*, after its original discoverer, on *S. auriculatus* Desf. (*S. auritus* Willld.), *S. auriculatus* Vahl having a prior claim to *S. auriculatus* Desf.

*Kleinia repens* (L.) DC. vi. 337, called "Balsamo," is not an uncommon inmate of cottage-gardens, the resinous juice of its leaves being a favourite and really efficacious remedy for cuts or wounds. It is often seen hanging profusely over walls, but can scarcely be considered fairly naturalized.

**Tribe V. Cotuleæ Less.**

††1. C. CORONOPIFOLIA L.

Smooth herbaceous; st. creeping ascending or procumbent and rooting downwards; l. linear lanceolate stem-clasping and sheathing at the base irregularly laciniato-pinnatifid or pinnatisect and toothed; fl. solitary terminal subglobose
or hemispherical.—Linn. Sp. 1257; Fl. Dan. t. 341; Lam. Dict. ii. 136, Ill. t. 700. f. 1; Pers. Syn. ii. 464; Spr. Syst. iii. 497; DC. vi. 78; Koch 407; RFG. xvi. t. 107. ff. i, ii; Willk. et Lange Fl. Hisp. ii. 91.—Herb. ann. Mad. reg. 1, rrr. P do Sol, moist gutters in the Plane-tree Passeio or walk at the back of the beach, June, July 1865, S' J. M. Moniz.—St. succulent thickish procumbent and copiously rooting downwards, the ends ascending, sparingly branched 6–12 in. long. L. shining somewhat fleshy 1–2 in. long laciniato-pinnatifid upwards, sharply inciso-serrate downwards, clasping the stem with a short striated membranous complete sheath 1–2 lines long at their base. Heads 3 or 4 lines in diam. golden-y. rayless, on solitary terminal erect ped. 1–2 in. long. Inv. shallow saucer-shaped. Recept. flattened.

Tribe VI. Artemisiae Less.

Sect. Eurartemisia Gr. et Godr. Cor. inserted at top of ovary. Stigmas filiform or simply clavate. (Recept. villous or hairy; inv. hemispherical; fl. of disk perfect.)

1. A. ARGENTEA Hér. Losna.

Shr. erect silky silvery-grey or w.; l. short and broad sub-palmately 1–2-pinnatisect, the segm. linear or linear-lanceolate obtuse or subobtuse; heads stalked cernuous rather large depressedly globose or convex-hemispherical, in unilateral erect racemes forming large close crowded many-fl. pyramidal or thyrsoideal terminal leafy-bracteate panicles; scales of inv. all wholly herbaceous silky-tomentose obtuse, the outer oblong, inner spatulate or oval rounded.—Hér. Sert. Angl. 22. t. 28; DC. i vi. 120. A. arborescens Buch 194. no. 263 (not Linn.)—Shr. per. Mad. reg. 1, rr; PS. ccc formerly, now rr; ND. ccc; GD. r. Here and there in cottage gardens about Funchal &c., but scarcely in Mad. wild except on sea-cliffs towards the S.W. of the island from Rib. Brava westward, at Paul do Mar, P do Pargo, &c. In PS., formerly (1828–1832) almost covering in low bushes the dry stony limestone soil forming the surface of the flat-topped Ilheo Debaixo and I. de Cima, it is now confined to the sea-cliffs (as in the Desertas), having been all cut up for fuel by the Limestone-quarry-men. It occurs also rarely on the flanks of Pico Branco. May–Aug.—A low shr. 1 ½–3 ft. high, altogether w. or hoary-grey with a bitter aromatic scarcely pleasant scent when strongly rubbed or bruised, but not otherwise perceptible. Branches somewhat thick and brittle woody stiff subflexuose w. and leafy upwards. L. crowded spreading...
or drooping, the old dried up l. persistent in thick reflexed tufts below the fresh terminal l., short (1 1/2 - 2 in. long), nearly as broad, subtriangular in outline, deeply twice rarely thrice-pinnatifid, their segments flat with a faint midrib, 1/2 - 3/4 in. long 1 1/2 line broad. Panicles 5 or 6 in. long, half as broad, pyramidal or thyrsoform, composed of numerous erect simple or compound branched rac. of stalked secund globose or semiglobose heads, 2 lines broad and 1 1/2 line long, on curved ped. 1-3 lines long drooping on one side. Br. leafy simple linear at base of each ped. 1-0 lines long. Inv. w. and altogether tomentose; fl. dull dark golden y., smooth upwards, tube resinoso-punctate and sometimes hairy. Recept. setose or villous all over, convex and pulvinate when the hairs or setae are fallen. Branches of style short pubescent at the tips, clavate in the perfect fl., filiform in the female of the margin.

Used occasionally in fomentations by the country people. It is assuredly Bowdich’s “Composita” &c. (Exc. in Mad. p. 87) found in the I. Debaixo.

The Canarian Incienso (A. canariensis Less.) much resembles this, but, besides other distinctive characters, has a very different strong and peculiarly pungent disagreeably aromatic scent, diffusing itself automatically all about. Schultz in WB. ii. 302 considers it, I think erroneously, a mere var. of A. argentea Hér. The Cape Verde A. Gorgonum Webb also closely resembles the Mad. pl. in habit, foliage and inflorescence, but recedes still further from it than the Can. pl.

Tanacetum Balsamita L. Sp. 1148, Broth. ii. 354, Koch 407 (Balsamita vulgaris W., B. suavolens Pers. Ench. ii. 408, Pyrethrum Tanacetum DC. vi. 63) herb. per. with creeping roots or rhizomes, simple oblong-oval finely crenulate stalked pale greyish-gr. root-l. with a mint-like fragrance, and erect fl.-st. (very rarely thrown up in Mad.) with a terminal compound cyme of golden y. discoidal fl., is seen occasionally in cottage gardens. It is well figured in Gerard’s Herbal (ed. 1) p. 523, f. i. under the name of Balsamita mas or Costmarie. REG. xvi. t. 104. f. ii. represents the pl. much more luxuriant and with larger greener l. than I have ever seen it in Mad.

†Tribe VII. Hippieae Less.
†9. SOLIVA Ruiz et Pav.

†1. S. STOLONIFERA (Brot.).

Stoloniferous prostrate cespitose smooth or subpubescent; l. stalked pinnatifid 5-9-lobed somewhat succulent or fleshy,
lobes subopposite subobtuse entire or rarely 1-3-toothed; heads sessile at the crown of the several root-stocks, araneoso-tomentose or thinly woolly; ach. smooth wedge-shaped with thickened broad transversely ribbed or rugose wings.—S. Lusitanica “Less. Syn. 268;” DC. vi. 142. Hippia stolonifera Brot. i. 373; ejusd. Phytogr. Lusit. fasc. i. (1801) no. 14; ed. 2 (1816) i. 72, t. 73, ff. 2, 3; Pers. Syn. ii. 497; Willd. iii. 2383. Gymnostyles? stolonifera Juss. Ann. Mus. iv. 262. G. lusitanica Spr. iii. 500.—Herb. ann. Mad. reg. 1, r. In paved roads, streets and garden walks in and about Funchal and in the Plane-tree Passeio at Sta Cruz, running abundantly amongst the stones and often mixed with Sagina apetala L. First properly observed and identified by the Barão do Castello de Paiva in April 1860, though the little pl. found on the Mount road about the Valle in 1837 and mentioned in this work, supra p. 36, as a curious young state of Senebiera didyma β pinnatifida was most probably the present pl. Febr.—May.—A minute inconspicuous little pl. not above an inch high, the st. spreading and creeping close to the ground in small cespitose confluent patches, each 2-5 in. in diam. of a rather dark full-gr., marvellously resembling in habit and foliage Senebiera dīdyma (L.) β DC., though at once distinguishable by the want of all bitter biting taste, and by the simply pinnatilobate l. Stem slender filiform, rooting at the nodes. L. 2-5 lines long, 1-3 broad, with flattened slightly winged or margined petioles a little dilated upwards as long as or a little longer than the l. themselves. Heads large in proportion, about 2 lines in diam., much resembling those of Trifolium tomentosum L. or T. resupinatum L., dull hoary grey, mostly solitary but crowded towards the centre of the pl. Styles of the numerous female marginal flts., which occupy at least $\frac{3}{4}$ of the convex disk, distinct long and prominent simple or but slightly bifid at the tip. Scales of cup-shaped inv. distinct oblong obtuse shorter than the disk thinly herbaceous, with pale membranous tips and margins. Ach. large in proportion, $\frac{1}{2}$-$\frac{3}{4}$ line long, pale straw-col., auriculato-truncate and sinuately lobed with a tooth on each side at top, dorsally compressed with broad tumid spongy or coryck margins which are very strongly plicato-ribbed transversely on the ventral or inner face and on the outer or dorsal similarly but more partially or incompletely ribbed or corrugated on the tumid rib-like edges or borders of the depressed body of the seed itself, with the edge of the wing sharp and thin. Style persistent abruptly winged or dilated at the base, rather longer than the ripe ach.

I subjoin the following note furnished by the Barão do Castello de Paiva at the time of its discovery: “In basalticis humidiusculis urbis Funchalensis ad vias lithostratas inter lapides,
necnon in humo ad ambulacra hortorum, immixtis nunc *Poa annua* L., *Oxalide corniculata* L., *Trifolii* sp., &c., nunc *Sagina apetala* L. &c.; ubique certe *Senebiera didyma* L.  $\beta$ pinnatifida statu præsertim juniore ante evolutionem gemmarum florentium, ob calathidia araneosa globosa foliorumque formam et divisiones similima. Planta parum conspicua, quoad determinationem difficillima, obscura, facillime prætervisa v. confusa, vix vere indigena, copiose proveniens ad vicos urbis minus frequentatos hortorumque ambulacra humidiuscula hodie omnino hospitatur." I am now however strongly inclined to believe the supposed young state of *Senebiera didyma* (L.) $\beta$ here alluded to, or at least that mentioned by myself at p. 36 supra, to have been really *Soriva stolonifera* itself.

††Tribe VIII. *Bellideæ DC.*

††1. *B. perennis* L. *Daisy.*

Root per.; st. several short simple leafy prostrate or subterranean; l. crowded in a flat radical tuft or rosette 1-ribbed obovate-spathulate somewhat abruptly contracted into the petiole, obsoletely crenate-toothed; ped. radical simple 1-fld.; scales of inv. subovate.—Linn. Sp. 1248; EB. t. 424; Sm. E. Fl. iii. 447; DC. ! v. 304; Koch 387; Bab. 172; RFG. xvi. t. 27. f. vi.; Willk. et Lange Fl. Hisp. ii. 31.—Herb. per. Mad. reg. 2, 3, rr. S. Antonio da Serra, abund. in the courts and paved roads around the Church and Pilgrims' house, and extending some distance all round in the mountain turf; introd. originally with grass-seeds from England about the beginning of the present century by an English merchant, the late Mr. Willm. Casey, and thence transplanted to Camacha, and again by an English lady in 1851 or 1852 to the Fanal on the road from the Paul to Rib. da Janella, where in 1855 it was becoming naturalized in the turf. March—July.—Root-stock or rhizome blackish, furnished with numerous strong brown stringy roots or fibres, either simple or dividing into 2 or more short underground branches 1–2 in. long, forming at their ends a fresh tuft of roots and l. L. all radical or crowded at the base of the st. in a flat rose or tuft slightly stiff or fleshy, bright shining gr., pubescent, indistinctly 3-nerved, the 2 side-nerves faint and obscure, 1–2 in. long (including petioles), 5–7 lines broad. Fl.-stalks all radical slender 2–5 in. long ascending pubescent. Fl. scentless $\frac{1}{2}$–$\frac{3}{4}$ in. in diam., disk golden-y., ray w. mostly tipped with
rose, equal in length to breadth of disk. Scales of inv. dark bottle-gr. herbaceous subpubescent oblong half the length of ray. Flts. altogether smooth or without any beard at base. Ach. small elliptic flattened dorsally, subpuberulous, entirely without pappus or crest, brown with a distinct pale raised border like a pumpkin seed, and at least the outer with a strong raised dorsal midrib.

The pl. produce occasionally leafy prostrate aerial shoots sometimes rooting at the ends. But I have never met with either the true B. sylvestris Cyrill., B. annua L., or B. azorica Hochst. in Mad.

The double-fld. garden varr. with all the flts. ligulate (BM. t. 228) are very rarely seen in Mad.

Tribe IX. Chrysanthemae Less., DC.

†11. Pyrethrum Hall.


Bushy and leafy, more or less pubescent; st. numerous straight erect stiff striated; l. all stalked subpubescent punctate flat pinnatisect, segm. pinnatifid and toothed, the upper confluent; cyme terminal lax leafy; inv. hemispherical, becoming finally umbilicate, scales with a prominent strong midrib; ligules short broad oblong-obovate or oval.—Sm. E. Fl. iii. 451; DC. vi. 58; Willk. et Lange ii. 100. Matricaria Parthenium Linn. Sp. 1265; Fl. Dan. t. 674; EB. t. 1281; Brot. i. 375; Buch 195. no. 266; Bab. 177. Chrysanthemum Parthenium Pers. ii. 462; Koch 418. Leucanthemum Parthenium Gren. et Godr. ii. 145. Tanacetum (Pyrethrum) Parthenium RFG. xvi. t. 101. f. ii.—Herb.-suffr. per. Mad. reg. 1, 2, r. Along the Levada in Rib. Frio; between Fajaa d'Ovelha and P'° do Pargo; at Seixal, S. Vicente, P'° da Cruz, &c., mostly near cottages and nowhere beyond the range of cultivated ground. April–Oct.—St. numerous from the suffrutescent simple not creeping root-stock, 1–2 ft. high, forming a thick leafy mostly full-gr. but sometimes hoary or greyish gr. bush, simple hard and woody downwards, branched chiefly upwards. L. punctate on both sides but more distinctly beneath, varying from nearly or quite smooth and full bright gr. to subtomose-pubescent and hoary, 1½–2 in. long, 1¼–1½ broad at base, triangular-ovate or ovate-oblong; pinnae leafy ovate or oblong inciso-pinnatifid, ultimate segm. finely or sharply toothed. Cyme stiffly and sub remotely branched, branches erect or erectopatent; fl. moderately large ½ in. in diam. distinct or submote, each on its somewhat elongated proper ped. which is
a little swollen upwards, not crowded or very numerous; disk y.,
ray w. Ligules 2–3 lines long, ½ broad, about twice the
length of inv. or less than diam. of disk. Outer scales of inv.
linear-lanceolate acute herbaceous with the edges membranous,
inner oblong blunt and scarious at the tip; the whole slightly
cottony-pubescent. Ach. pale brown strongly ribbed suban-
gular truncate at top with a broad flat disk surrounded with a
narrow membranous crown or border. Recept. naked slightly
convex.

The whole pl. has the bitter-aromatic scent and taste of
Wormwood \((Artemisia Absinthium \text{L.})\), but in a pleasanter and
less powerful degree. It is a common rustic remedy in Mad.
as elsewhere.

††12. \textit{Leucanthemum Tournef.} (pars.).

††1. \textit{L. vulgare} \text{Lam.} \textit{Ox-eye Daisy.}

Rhizomes per. creeping; st. ann. rooting leafy and ascending at
the base, then erect virgate sparingly branched or leafy, each
branch produced into a long nearly leafless 1-fld. ped.; l. not
fleshy, the lower and those of the barren shoots or rosettes
crowded ovato-spathulate or oblong-spathulate attenuated into
long petioles, subpinatifid and crenate-toothed, the upper re-
mode ligulate or linear sessile or semiamplexicaul sharply sub-
inciso-serrate laciniately fringed or subpinatifid towards the
base; teeth remote distinct linear, the lower more elongate
crowded and fimbriate-stemclasping; fl. large handsome, invol.
shallow saucer-shaped, scales lanceolate gr., the inner oblong
obtuse with a brown broad scarious border; tube of florets per-
factly simple at the base.—\text{Lam. Fl. Fr. ii. 137; DC. vi. 46;}
\text{Gren. et Godr. ii. 140; Willk. et Lange ii. 95.} \textit{Chrysanthemum}
\textit{Leucanthemum} \text{Linn. Sp. 1251; Brot. i. 377; EB. t. 601; Sm.}
\text{E. Fl. iii. 449; Koch 416; Bah. 176.} \textit{Matricaria Leucanthe-
mum} \text{Desr. in Lam. Dict. iii. 731.} \textit{Pyrethrum Leucanthe-
num} \text{Coss. et Germ. Fl. Par. 401.} \textit{Tanacetum Leucanthemum}
\text{RFG. xvi. t. 97. f. i.—Herb. per. Mad. reg. 2, r. Only within
the last 10 or 15 years introd. accidentally at S. Ant"o da Serra,
where it occurs here and there in patches as a weed in Mr.
Blandy’s garden and adjoining fields. First noticed by Fr. M.
Norman Esq. May–July.—St. more or less dark purple 1–2 ft.
high often simple and 1-fl., or only 2–5-branched, each branch
1-flld., smooth upwards, furry-pubescent downwards, angular
stiff and rigid, erect or ascending, rooting at the base. L all
smooth shining dark gr., 1–2 or 3 in. long, reduced upwards
to mere bracts, not fleshy but somewhat stiff or rigid. Fl.
½–2 in. in diam. scentless; disk plano-convex golden-y., ray
pure w. Tube of fl. of disk not in the least produced or spurred downwards over the ovar. Ach. (in English spec.) black with 10 strong w. ribs and no trace of crown or border.

†13. MYCONIA Neck.

†1. M. CHRYSANTHEMUM Schultz in WB. Pampillo.

St. mostly erect from the base rarely diffuse or ascending, branches 1-fid.; 1. all undivided and equably and finely serrulate the lower spathulate, the upper oblong ligulate or linear subacute; fl. solitary terminal, ped. subelongate not thickened upwards; ach. of ray longer than broad with a tubular membranous crown as long as tube of cor., of disk cylindric equably 10-ribbed with a shorter crown.—Schultz in WB. ii. 247. Chrysanthemum myconis Linn. Sp. 1254; Desf. ii. 281; Broth. i. 379; Pers. Syn. ii. 463; Gr. et Godr. ii. 146. C. Myconis Buch 194. no. 264. Pyrethrum Myconis Moench, DC. vi. 61. (excl. var. γ); Seub. Fl. Az. 32. P. Myconi Spr. iii. 587. Coleostephus Myconis RFG. xvi. t. 95. f. iii.; Willk. et Lange ii. 105.—Herb. ann. Mad. reg. 1, 2, cc. Cornfields and waste ground by roadsides &c, up the Caminho do Meio; between Sª Cruz and Machico; at Pª da Cruz abundant in the Rib. da Maiata; Sª Anna in the Ilha; S. Jorge at Pª Ferrovo and all along towards the Arco; S. Vicente towards the Encumeado &c, often mixed with C. segetum L. Apr.–Sept.—Root small branched horizontally. Whole pl. smooth always or full gr. and not at all glaucous, scentless, leafy. St. mostly erect from the crown of the root, straight firm and rigid, subangular and striate, 1–2 ft. high, erectly branched upwards, rarely from the crown with diffuse ascending red or purple branches. L. not at all fleshy, all amplexicaul, with fine pectinate teeth at the base, but not auriculate; lower 1–2 in. long, ½–¾ broad, spathulate or obovate-cuneate obtus, attenuate downwards, the lowest into winged entire petioles which are still however stem-clasping, the uppermost subacute. Fl. 1–1½ in. in diam., of much the same size or even larger than in C. segetum L., but on longer more produced striated mostly reddish ped. equally slender to the top, uniform bright full golden y., each terminating a branch, not corymbose. Heads umbilicate; scales broad subequal, the outer obovate-oblong or ligulate obtuse, the inner spathulate, pale gr. herbaceous with a strong fleshy midrib, the tips brown withered scarious. Ligules longer and narrower (not shorter as said by Linn.) than in C. segetum L., 4–6 lines long, 2–3 broad, about as long as diam. of the flat or in fr. only slightly convex very crowdedly and compactly flid. disk. Ach. light brown smooth and shining 10-ribbed or striate, curved, cylindric, their tubular crown often dimidiate
or half-complete. Recept. naked, in fr. plano-convex or depressedly subhemispherical.

**†14. Chrysanthemum L.**

*(Xanthophthalmum Schultz in WB. ii. 250.)*

**†1. C. segetum L.** *Malmequer or Pampilho.*

St. subglaucescent diffusely erect or ascending sparingly and widely branched, rarely erect from the base, each ultimate branch 1-fld.; 1. thickish stiff or somewhat fleshy coarsely and irregularly inciso-toothed or gashed, the lower dilated and subtrifidly pinnatifid or pinnatifid upwards, oblong or cuneate-oblong and finely toothed irregularly downwards; fl. solitary terminal, ped. thickened upwards; ach. of ray obcompressed squarish-oblong nearly as broad as long.—Linn. Sp. 1254; Desf. ii. 282; Broth. i. 378; EB. t. 540; Pers. Syn. ii. 463; Buch. 195. no. 265; Sm. E. Fl. iii. 449; DC. vi. 64; Koch 419; Seub. Fl. Az. 32; Bab. 176; RFG. xvi. t. 95. f. i; Willk. et Lange Fl. Hisp. ii. 134.—Herb. ann. Mad. reg. 1, 2, c. PS. reg. 2, r. Cornfields and waste ground; Loo-fields, S. Antonio, S. Martinho, S. Anna, S. Vicente, &c. April-July.—Root small simple clothed with fibres, vertical. St. 6-12 or 18 in. long, more or less diffusely straggling or ascending, and only perfectly erect from the base when drawn up amongst corn &c.; the branches pale and somewhat succulent, forked and spreading diffusely at wide angles. Whole pl. somewhat succulent smooth scentless. L. glaucescent, often decidedly and strongly glaucous, especially the lower, which form, before the fl. appear, a flat close-pressed rose; all stem-clasping and subauriculate, the lower 1-2½ in. long, ½-1 in. broad at the dilated trifidly pinnatisect ends, the lobes of which are again coarsely and irregularly cut or toothed, the teeth all acute. Upper l. lanceolate and simply cut or toothed. Fl. large and handsome bright full golden-y., on rather short naked striated subclavate hollow ped. at the end of each branch, not corymbose, 1 in. in diam. Heads umbilicate. Outer scales of inv. half-ovate or ovate-oblong gr. with scarious tips and edges, inner broadly oblong-spathulate and broadly scarious at top, all obtuse concave unequal fleshy pale greenish-y. glaucescent. Ligules y. very broad, about as long as diam. of disk or 4-6 lines long and 2 or 3 broad; disk convex. Ach. small brown obtusely ribbed incurved abruptly truncate at top without any crown, teeth or border; those of the ray broader but scarcely larger than the rest, with 3 dorsal and 3 or 4 ventral ribs all equal except the middle ventral rib which is more prominent, the sides or edges narrowly and sharply winged; ach. of disk
cyllindric equably 10-ribbed. Recept. convex hemispherical alveolate smooth.

Not by any means abundant enough in Mad. to become a troublesome corn-weed, as sometimes in England. Indeed the preceding sp. rather more commonly takes its place.

A single pl. occurred once (July 8th 1839) in a cornfield a little below the Quinta de Lemos at S. Antonio near Funchal, which (according to my notes at the time), "with the fleshy amplexicaul merely inciso-toothed and jagged (not bipinnatipartite or finely divided) 1. of C. segetum L., had the ray pale sulphur, with the base only of the ligules golden-y. like the disk, exactly as in the common PS. subvar. of *Pinardia coronaria* (L.)." The spec. having since been entirely destroyed by insects, I am unable to speak positively; but I incline the rather to refer it to *C. segetum* L., though I can find no record of such variation in the fl. of that sp., because in 1839, and indeed till within the last 2 or 3 years, *Pinardia coronaria* (L.) had never otherwise occurred in Madeira.

++15. *Pinardia Less.*

(*Chrysanthemum* Schultz in *WB.* 244, 248.)


St. erect branched leafy, branches 1-3- or 4-fl.; 1. somewhat fleshy bipinnatipartite broader or dilated upwards, lobes or segm. narrow-lanceolate or linear acute mucronate; fl. solitary terminal, ped. subelongate fistulose and slightly thickened upwards after fl.; ach. ribbed, resinoso-glandular-punctate between the ribs, nearly or quite as broad as long.—Koch 419; Gren. et Godr. ii. 147; RFG. xvi. t. 95. f. ii.; Willk. et Lange ii. 104. *Chrysanthemum coronarium* Linn. Sp. 1254; Desf. ii. 283; Brot. i. 379; Pers. Syn. ii. 463; Fl. Gr. ix. t. 877 (with fl. uniform golden-y.); DC. vi. 64; Schultz in *WB.* ii. 249; Seub. Fl. Az. 32.—Herb. ann. PS. reg. 1, 2, ccc. Cornfields and roadsides everywhere, about the town, towards the S.W., Serra de Dentro, &c.; Mad. very recently naturalized only in the Port. Cemetery, Funchal. Apr.-June.—Pl. 2-4 ft. high branched altogether erect pale subglaucescent gr., somewhat fleshy, smooth and shining, erectly branched upwards, not bushy. L. finely divided, the segm. flat but narrow, each sharply sphacelate-mucronate or shortly aristate; upper l. auriculate, lower attenuated into a stem-clasping petiole. Fl. large and handsome, 1-1½ in. in diam.; ped. erect stout ribbed or striated, z 5
hollow and a little thickened upwards below the heads in fr. Heads umbilicate hemispherical in fr.; scales all adpressed unequal broad obtuse, the outer ovate or oval keeled fleshy pale glaucous pale drab-brown edges, inner very broadly oblong or spathulate broadly scarios and undulate at top. Disk of fl. golden-y.; ligules either (as more commonly in PS.) pale straw or ochre-y. deeper or golden-y. at the base, or, as in Fl. Gr. and RFG. l. c. and mostly in Mad., uniform deep full golden-y. like the disk, about 6 lines long, 2 wide, their length equaling diam. of disk. Recept. naked in all stages, convex, in fr. subhemispherical but twice as broad as high, spongy- or pithy-solid within. Ach. chestnut brown, the spaces between the ribs concave or depressed granulato-rugulose and sprinkled with shining resinous dots; of ray largest, 2-3 millim. long and broad, subequally 3-sided, the 2 dorsal angles sharp and narrowly winged, each wing ending at top in a small tooth or denticle, inner angle broadly winged, especially upwards, where it ends in a large laterally or horizontally prominent compressed tooth or angle; back plano-convex with a single smooth broad flat rib up the middle, the sides concave with mostly 2 or 3 narrow fainter ribs, the whole surface being finely reticulato-granulate and sprinkled with resinous dots. Ach. of disk smaller more distinctly granulate and copiously resinoso-punctate, mostly nearly or quite as broad as long, much compressed 2-sided with the inner angle only sharply winged and distinctly beaked or toothed at top, the back bluntly keeled with a prominent but not winged dorsal rib and the sides each very strongly 2- or 3-ribbed. A few smaller ach. also occur occasionally less compressed and irregularly 4-5-gonal. All the ach. are abruptly truncate at top without any erect tooth or denticle and with no trace of crown or border; and their form is that of the inverted frustum of a cone, 3-sided in the ray, compressed or 2-sided in the disk.

I can find in my spec. no warrant for the application of the words "apice dilatatis" DC. or "élargis vers le sommet" Gr. et Godr. to the lobes or segments of the l. But it is true of the whole l. as originally laid down by Linnaeus.

16. ARGYRANTHEMUM Webb.
(Stigmatotheca, Argyranthemum and Ismelia sect. ii., iii. Schultz in WB.)

1. A. PINNATIFIDUM (L. fil.). Malmequer or Pampilho.

L. 3-4 times as long as broad elongato-lanceolate pinnatilobate, or pinnatifid, lobes or pinnae several (6-8) subalternate subequal
AEGYPTHEMUM.

parallel approximate confluent suberect or pointing forwards, broad leafy oblong sharply inciso-serrate, the teeth pointing forwards; fl. in terminal mostly large many-flowered cymes; ped. simple slender; ligules w. suberect, disk golden-y.—Varr.:—

*A. flaccida*; branches ascending elongate spreading, leafy with acute lobes and teeth, cymes ample many-flowered.—*Chrysanthemum pinnatifidum* L. fil. "Suppl. 377;" Ait. ! Hort. Kew. (ed. 1) iii. 231; Pers. Syn. ii. 461; Spr. iii. 582; DC. ! vi. 66; Seub. Fl. Az. 32? *Ch. lacerum* Buch (Mad. List)! 194. no. 263. *Pyrethrum grandiflorum* Holl et Reich. List (not Willd.). *Stigmatotheca pinnatifida* Schultz in WB. ii. 255 (not Argyranthemum pinnatifidum) Webb in WB. t. 95, which according to Schultz in WB. ii. 276, is composed of 3 distinct sp.).—*Shr. Mad. reg. 1, 2, 3, cc. Rocks in all the principal ravines, especially near cascades or down which water trickles, above 2000 ft.; and in the north on the sea-cliffs also. Apr.—July.—A smooth straggling or loosely branched shr. 2-5 ft. high wholly inodorous whilst fresh. Branches stiff rather brittle ascending and rising corymbose or candelabra-like all to the same height, leafy upwards only, the old dried or withered leafy persistent and pendulous below the new. L. crowded 4-5 in. long (including petiole), 1-1½ in. broad, full bright gr. and shining, oblong-lanceolate subobtuse, gradually cuneato-attenuate downwards, not deeply (i. e. but little more than halfway down to the midrib) pinnatifid or lobed, the lobes equal broad leafy with their edges and the tips of their sharp teeth serrate marginspicate. Cyme terminal mostly ample and many-flowered, 6-12 in. broad but sometimes, as on sea-cliffs in the north, few (2-5)-flowered. Uppermost or floral l. spathulate-oblong nearly or quite entire. Fl. large conspicuous, the rays always pure w., disk golden-y., 1-2 in. in diam., rising just above the l. in terminal cymes, all of which unite into one large corymbose sheet of blossom covering the bush. Ped. slender striated subquadrangular, not thickened upwards. Heads in bud depressedly globose. Pericline in fl. hemispherical or shallow-cup-shaped, in fr. more flattened; scales imbricate very unequal, the outer shortly and broadly ovate or triangular-ovate subacute gr. fleshy-herbaceous with dark coffee-brown saccaryous tips and edges, the inner broadly or almost wholly membranaceous-saccaryous very obtuse or lacerato-spathulate, their broad dilated pale drab-brown tips spreading or reflexed, forming a lacerate membranous horizontal or recurved sort of frill or collar close beneath the ray. Disk at first flat then convex, in fr. hemispherically conic, ½-1 in. broad. Tube of all the florets smooth. Ligules 10-20 about ¼ in. long, 2 lines broad, elliptic-oblong or ligulate. Recept. in fr. either moderately i. e. hemispherically, or highly i. e. pyramidal conoidal, the base being
either as broad or a little broader than, or only half the height; always naked. Ach. of ray unequally triquetrous incurved and convex at the back, the angles winged, crowned with a dimidiate secund 4-toothed coriaceous border; of disk small abortive linear-oblong compressed winged at the ventral margin, crowned as in the ray, but gradually less distinctly inwards.

In drying mostly inodorous, yet sometimes in sea-cliff examples approaching $\beta$, exhaling a fine hay-like fragrance.

The union of all the separate cymes of each branch, whether many or few-fl'd., into one immense close cyme, often 3 or 4 ft. or even more in diam. and covering the whole bush, renders this pl. in fl. one of the most striking objects of the ravine or mountain flora of Mad., forming broad masses of a dazzling whiteness conspicuous from afar on rocky cliffs and precipices.

$\beta$. succulenta, dwarfish thickly bushy, branches crowded close short; l. stiff fleshy less distinctly lobed, the lobes and teeth more or less obtuse, cymes reduced to 1-2 or 3 fl. — Chr. odoratum MSS. olim.—Shr. per. Mad. reg. 1, r. $\text{P}^\text{ta}$ de São Lourenço abundant on the Ilheo dos Embapecadores and I. de Fora; sea-cliffs between S. Vicente and Seixal but less typical and approaching $\alpha$. March-June.—A mere depauperated maritime var., and, as such, stiffly and thickly fleshy or succulent in all its parts, with a densely leafy bushy dwarfish habit, and only 1-3 terminal fl. to each branch. A low shr. 12-18 in. high, covering the ground in dense bushy leafy masses. L. crowded 2-3 in. long (including petiole), $\frac{3}{4}-\frac{3}{2}$ in. broad, smaller or shorter and less deeply (not halfway down) or distinctly lobed or divided than in $\alpha$, with the lobes shorter and more evenly or finely but obtusely toothed rather than serrate, and more or less stiffly rigid thick and fleshy. In extreme states they are more properly doubly inciso-toothed than pinnatilobate. Fl. mostly solitary or 2-3 only, rather larger or at least much coarser and thicker than in $\alpha$; heads swollen hard and fleshy, on stouter stiffer ped., in fr. very turgid large and rigid with the disk hemispherical and the recept. hemispherically conoidal solid within and woody. Ligules 15-20, about 1 in. long, 3 lines broad, spreading horizontally, finally recurved or reflexed; disk $\frac{3}{4}$ in. in diam. Ach. of ray unequally triquetrous, incurved and convex at the back, the 2 side angles broadly winged, the ventral narrowly winged or simply keeled, the wings or angles produced into an auriculate or dimidiate obliquely secund irregularly toothed coriaceo-membranous crown or border: ach. of disk compressedly subquadranular and strongly ribbed, with a single broad ventral wing only, very finely reticulato-granulate or shagreened as if
frosted all over, and spotted streaked or varied more or less with dark purple, crowned chiefly on the inner side with a dimidiate obliquely unilateral or inwardly secund 3–4-toothed crest or border formed by the production of the ventral wing, 2 principal side ribs, and dorsal keel. The inner ach. of the disk, except the three or four outer rows, are barren or abortive, and the teeth of their crown bright purple.—The extreme (P²ª de S. Lourenço) state of this looks like a distinct sp., but passes by imperceptible gradations on sea-cliffs in the north into a, giving out in drying a strong Melilot or hay-like fragrance.

*Ismelia maderensis* Don in Sweet's Brit. Fl. Gard. (ser. 2) iv. t. 342, with glaucous foliage and pale straw-coloured ligules, erroneously stated to have been introduced by Mr. Webb from Mad., and referred both by DC. l. c. and Schultz in WB. l. c. to the present pl., is evidently the Lanzarotan (Can.) *Argyranthemum ochroleucum* Webb.

*Ismelia* Cass., founded on *Chrysanthemum carinatum* Schousb., and to which the name properly belongs, differs from *Argyranthemum* Webb in its herbaceous habit and flat or plano-convex receptacle.

*Ismelia* Schultz in WB. is a compound of this pl. of Schousboe with two Canarian *Argyranthema* Webb. *Ismelia* Lesson and *Ismelia* Don differ no less widely from the original type.


L. twice as long as broad ovate or broadly ovate-oblong pinna-tisect, pinnae few (4–6) opposite subequal parallel remote distinct spreading broad succulent and rigid, oblong, irregularly pinnatifid or deeply and strongly or coarsely inciso-toothed, the teeth ovate or triangular acute spreading; fl. solitary or 2–3 together terminal; ped. thickened and clavate upwards; ligules either more or less pink or rose-colour or w., disk atropurpureous.—Chr. hæmatomma Lowe in Hook. J. of Bot. viii. 206.—Shr. per. SD. reg. 1, 2, rrr. Sea-cliffs and rocks of the Bugio or S. D. only, here and there quite up to the top of the island. May–July.—A shr. 2–4 ft. high, resembling *A. pinnatifidum* (L. fil.) a, but with a less branched more straggling habit and very different foliage. Branches fewer stouter thicker and shorter, subdecumbent from the weight of the heavy fleshy foliage, or ascending, not fastigiate or corymbose, leafy only towards the ends. L. 2–3 in. long, 1–1½ broad, in outline or circumscription broadly ovate or oval, in teeth and mode of division resembling somewhat those of *Senecio incrasatus* Lowe or *S. vulgaris* L., cuneately attenuate at the base.
into the petiole with 2 or 3 large spreading or recurved teeth below the pinnae, very thick stiff and fleshy and of a rather dark full gr.; their edges and tips of the strong coarse teeth marginato-sphacelate. Fl. not corymbose but on ped. of different lengths 3 or 4 together or single at the ends of the branches covering the whole bush. Ped. stout stiff strongly ribbed distinctly thickened upwards. Heads and pericline as in *A. pinnatifidum*, thick swollen hard and fleshy; scales large broadly oval brown scarious entire. Ligules of ray broad and rather short (½ in. or half diam. of disk long) 15–20, varying from a fine madder-pink or rose to pure w. Disk in bud y., in fl. dark dull blood-purple, conico-convex becoming more so in fr. Fl. of disk entirely smooth, their teeth dark purple. Recept. naked, in fr. highly conical hollow. Ach. of ray large incurved or boat-shaped or thickly shortly broadly and subequally triquetrous, very broad and convex or almost gibbous at the back, the 2 side angles very sharp and mostly winged, sometimes simply carinate, the ventral angle always broadly (sometimes doubly) winged, all the wings rudely sinuate or toothed and produced into a dimidiate oblique inwardly declining or secund broadish irregularly sinuate-toothed or beaked crown or crest. Ach. of next 4 or 5 rows also fertile and similar, but much compressed and more and more shortly oblong, winged both dorsally and ventrally, but not at the sides, which have only a faint rib or two: the inner numerous in many rows, all smaller and abortive, but with irregular more or less rudimentary wings and crown like the outer. All the ach. are finely shagreened or frosted as in *Arg. pinnatifidum*, but brown, much larger or coarser, and wholly different in aspect.

A bush of this sp. on its native black or grey and barren crags, one mass of lovely rose-pink fl., and conspicuous from afar like a *Camellia* or *Rose* bush, is a truly splendid and surprising sight. The fl. however are very inconstant in intensity of colour; and removed from the neighbourhood of the sea, the 1. also lose their extremely rigid fleshy character.


L. broadly ovate-oblong or lanceolate 2–3 times as long as broad pectinately finely and regularly subdecomposed or 2–3-pinnatisect, the divisions all linear-ligulate or narrow-lanceolate and sharply acuminate; pinnae numerous (10–15 or 16) alternate subequal parallel remote distinct rectilinear pointing forwards, pectinately sharply and finely pinnatisect or pinnately inciso-serrate, the lower pinnules again here and there sharply gashed or serrate-toothed, the pinnules serratures or teeth all pointing
forwards finely pectinate acuminate; fl. few (2-5) together, terminal, scarcely corymbose; ped. slender simple slightly thickened upwards; ligules w. rather short, disk golden-y.—Chrysanthemum dissectum Lowe Novit. 17 or 539. Argyranth. pinnatifidum Webb Icon. in WB. ii. t. 95. ff. 2?, 4. Stigmatothea lacera Schultz in WB. ii. 267. Chrysanth. Broussonetii Pers. Syn. ii. 461 (not Balbis) fide Schultz in WB. l. c. Chrysanth. grandiflorum a aductum (excl. habit. “Ten.”, ad Chr. Broussonetii Balbis spectante) et γ subnudum (excl. habit. “Can.”) DC. vi. 66 (not Pyrethrum grandiflorum Willd., Spr.). Matricaria pinnatifida Desr. in Lam. Enc. iii. 729. Pyrethrum Broussonetii β elongatum Choisy in Buch Can. 149 (ex Sch. et DC.).—Shr. per. Mad. reg. 2, 3, r. Towards the top of high sea-cliffs and on moist rocks of the interior; top of the Cabo Giram, of Pico do Rancho, and of the cliffs at Pão do Pargo; also on banks and in hedges about cottages above the church at Pão do Pargo; nowhere below 1200 ft.; also high wet rocks on W. side of the Pico Grande. Apr.-July.—Shr. with the habit of A. pinnatifidum a, but more loosely or stragglingly branched 2-4 ft. high, wholly smooth and inodorous. L. 3-5 in. long, 1⅓-2⅔ broad, finely and pectinately 2-3-pinnatisect, with all the divisions distinct straight regular, and, though fine and narrow, flat and leafy; in outline or circumscription lanceolate or ovate, cuneato-attenuate and mostly quite entire or without teeth below the lowest pinnae, of a bright full gr. and shining. Fl. covering the whole bush, yet imperfectly corymbose on each branch, or in irregular few-fl. cymes. Ped. slender nearly all the way up, only a little thickened close below the heads, angular ribbed or striate. Heads larger and thicker than in A. pinnatifidum a; scales very broadly scarious, the inner almost wholly membranous pale (drab) brown. Ligules 15-20 (sometimes only 10 or 12), 6-8 lines long, 1⅔ broad, always pure w. Tube of fl. smooth or slightly resinoso-punctate. Disk always golden-y. convex, in fr. conical. Ach. of ray broadly or narrowly boat-shaped like those of a Calendula, incurved, convex at the back, unequally 3-winged, the ventral wing broadest and more or less distinctly 1-toothed in the middle, produced with the 2 side wings into a dimidiate stiff toothed crown or border, the sides and back even or faintly and irregularly ribbed, the whole quite smooth and not or almost imperceptibly reticulate or frosted, of a uniform pale straw-colour not dotted with purple. Ach. of disk: outer 1-3 rows only fertile much compressed keeled at the back, the ventral margin only winged, the sides strongly 2- or 3-ribbed, otherwise except in size like those of the ray; the numerous inner rows abortive small compressed or linear, ribbed or striated but all with some remains of a ventral wing and dimidiate crown or crest reduced sometimes to a mere inner
tooth or beak but by no means warranting the expression "Ach. disci . . . pappo destituta calva!" used by Schultz l.c. Recept. naked pyramidal conic.

All the ach. are considerably smaller than in either A. pin-natifidum (L. fil.) or A. haematomma (Lowe).

A very distinct and fine sp., characterized at once by its pectinate finely divided foliage. In the Canary Islands I have seen nothing at all approaching it. Webb's fig. 2 (t. 96) in foliage is much more like Arg. haematomma Lowe, from a scrap of which it possibly may have been taken; but f. 4 represents very fairly a leaf of the present pl.

B. Recept. chaffy.

Tribe X. Anthemideæ.

(Like Chrysanthemæ except the chaffy recept.)

17. Ormenus Cass.*

(Ormenis and Marcelia Cass.; Periderea Webb, Chamomilla Godr.)

†1. O. Mixtus (L.). Margaca.

Annual scentless villous-hoary proliferously branched with scanty or small foliage; l. impunctate narrow-oblong ligulate or spatulate regularly and equably or pectinately serrato-pinnatifid 4–6 times as long as broad, the rachis broad ligulate, the pinnæ short remote distinct parallel laciniate 1–2-pinnatisect, in the upper l. entire, segm. or laciniae short acute cuspidate; heads radiate solitary terminal; ligules y. at the base, presently reflexed; scales of inv. always close-pressed; tube of fl. produced downwards at their base on the inner side into a pointed dimidiate hood or calyptra-like spur half embracing the ach.; chaff lanceolate acute concave carinate or narrow-boatshaped with a prominent coloured keel, pilose towards the tip; ach. greenish finely and closely striolate lengthwise.—Ormenis mixta DC. vi. 18; WB. ii. 288; Coss. et Germ. Fl. Par. ii. 398; Willk. et Lange Fl. Hisp. ii. 89. "Ormenis bicolor Cass. Dict. 36. 365" (ex DC.). Anthemis mixta Linn. Sp. 1260; Brot. i. 393; Pers. Syn. ii. 465; RFG. xvi. t. 110. f. 1. Anth. hispanica Zucc. ex DC.; Pers. Syn. ii. 466. Anth.

* "Opuevos, a pl. of the Asparagus tribe, or the sprout or heart of a cabbage or of any other pl. (Hesych.); misprinted or misspelled Ormenis by Cassini."
coronopifolia Willd. ex DC. et Gr. et Godr.; Pers. Syn. ii. 465. Anth. maritima lanuginosa annua, foliis crassis Pyrethri sapore, semi-flosculis albis juxta discum luteis, Michel. Gen. 32, t. 30. f. i. —Herb. ann. Mad. reg. 2, r. Cornfields waste ground and roadsides only towards the W. end of Mad.; Paul do Mar, Fajã d'Ovelha about the Lombado, P'° do Pargo abundant in fields near the church; in the road from the Paul to P'° Moniz at the turn down to the Rabaçal, S° J. M. Moniz. May—Sept.—Root vertical long and simple. St. mostly dark purple, sometimes several branched from the root and ascending or diffuse, sometimes simple erect and branched only upwards; branches once or twice proliferously subdivided, widely forked or spreading, hard and stiff or rigid, villous and greyish-hoary like the L, each ending in a solitary fl. L. $\frac{1}{2}$—$\frac{3}{4}$ in. long, 2—4 lines broad, mostly rather inconspicuous or scanty, the 3 or 4 uppermost pinnae usually much longer than the rest. Heads solitary at the ends of the st. and branches, not corymbose, each rising above its predecessor and flowering later, so that there are seldom more than 2 or 3 open together on a branch or stem. Ped. slender villous-pubescent not thickened upwards. Fl. $\frac{1}{2}$—1 in. in diam., like those of Anthemis Cotula L. but with the w. rays or ligules y. at the base often styliferous and fertile and perhaps broader shorter and fewer; always at night and soon permanently strongly reflexed. Disk golden-y. Tube of fl. of disk 2—3-angular or winged, the inner angle produced downwards into a distinct pointed hood covering the top of the ach. Scales of inv. villous, never reflexed. Recept. in fr. conico-cylindric, hard and woody, chaffy all over. Chaffs at all times shorter than and concealed by the fits., pilose towards the tip, conduplicate downwards and embracing the ach., pale straw with the keel and tip bright chestnut. Ach. small 1 millim. long, not quite half as broad, pale dull greenish drab, oblong-ovate or clavate obcompressed, obliquely rounded and im-pressed at top without any crown, rim, edge or border, smooth and naked but finely and closely striolate longitudi-nally, with 3 often obscure and obsolete equal obtuse ribs (1 central, 2 marginal) on the inner side. Epigynous disk small oblique or excentric.

Godron's genus Chamomilla differs only in extent and not in characters from Ormenus Cass. which it therefore cannot su-persede.


Perennial stoloniferous suffruticulose very dwarfish cespitose strong-scented villous hoary; roots or stolons woody creeping
with short erect mostly simple 1-fld. st. from the rooting nodes; 1. crowded ligulate-oblong or spatulate 3–4 times as long as broad finely bipinnatifid partite punctate, the divisions crowded upwards subsetaceous or narrow-linear acute; heads small rayless or discoidal globose or hemispherical solitary terminal, scales of inv. always close-pressed; fl. homogamous, the tube at base completely embracing the top of the ach. and 2-aureolate or 2–3-lobed or spurred; chaffs oblong-lanceolate concave carinate obtuse, lacerato-toothed and slightly hairy upwards; ach. (abortive) chestnut-brown trigonal smooth and even.—*O. nobilisβ discoidea* Willk. et Lange ii. 89. *Anacyclus aureus* L. Mant. alt. 287; Willd. Sp. iii. 2172; Brot. i. 363; Brot. Phytogr. ii. 188, t. 163 (excl. syn. Lam.); Pers. Ench. ii. 465 (excl. var. β) not Lam. *Anthemis aurea* DC. vi. 7; Webb It. Hisp. 37; Seub. Fl. Azor. 32 (not Brot.), *Marcelia aurea* Cass. “Dict. 34. p. 107.”—Lobel. Ic. t. 771. f. 2.—Herb. per. Mad. reg. 3, r. Open dry sunny mountain pastures. Pico da Syla up the Caminho do Melio abundant; at the back of the Icehouse hill (Pico do Areiro) near the Povo do Joncales (João Carlos?); about the Pouso, &c. June–Aug.—A small inconspicuous low prostrate cespite with peculiarly fine delicate moss-like foliage of a somewhat grey or hoary dull gr., with a bitter aromatic scent and flavour, gregarious or forming beds or patches in the short mountain turf. Roots creeping; each thickened woody root-stock or rhizome sending out, besides its own strong roots or fibres, horizontal runners rooting at their nodes and forming new pl. St. sometimes several procumbent or ascending 2–4 in. long from each rooting node or rhizome, but mostly single simple unbranched erect 1–3 in. high 1-fld., rarely with short leafy or sometimes 1-fld. side-branches, all hard strong tough thickly hoary-villous, often red or purple. L. at most 6–8 lines long, 2 lines broad narrow-oblong or linear-spathulate in outline, the lower pinnae short and remote, upper longer crowded and deeply cut into 2 or 3 or more segments, all the divisions extremely fine and narrow or almost capillary but flat and linear, the ultimate segm. very acute but scarcely cuspidate; the whole villous-pubescent and finely punctate. Heads golden-y. uniformly (even in cultivation) “anacyclous” or rayless, always solitary at the end of each st. or root-branch, on slender erect villous-pubescent ped. rising ½–1½ in. above the L, homogamous 3–4 lines in diam., in fl. hemispherical, in fr. shortly and obtusely conical or conico-globose. Inv. hemispherical, scales imbricate oblong obtuse broadly lacerato-scarious, clothed with silvery-villous hairs, at first gr. with brown edges, in fr. altogether grey or brown, and in all stages closely firmly and compactly adpressed. Fl. of margin tubular equably 5-cleft and perfect like the rest, with equal ovate segm. and no trace or rudiment of ligule. Tube of cor. rugose or scrob-
culate completely embracing with its base introsusceptively the top of ach. or ov., 2-3-angled or winged, the wings or angles always produced downwards into either 2 distinct opposite auricles or 2 or 3 short lobes or spurs. Recept. in fr. narrowly and highly i. e. pyramidally or cylindrically elongato-conic, twice as high as broad, solid within, chaffy all over; chaff as long as tube of fl. concave and embracing the fl. or ach., oblong-lanceolate obtuse and irregularly toothed or sublacerato-serrate upwards, very pale opaque straw-colour with broad thin silvery-membranous hyaline colourless margins, sprinkled upwards with a few w. scattered hairs. Ach. all abortive in my numerous Mad. and Portuguese specimens, very small uniform dark chestnut-brown, altogether smooth or naked, cuneate with straight not bulging sides, subcompressed distinctly trigonal i. e. with the back flat and even and the inner face strongly 3-ribbed with the middle keel sharper or more prominent than the 2 lateral. Occasionally but rarely a 4th rib is developed on the back, making the ach. appear subtetrahedral instead of trigonal. Top of ach. completely inserted into the spurred or lobed base of the persistent cor. as into a socket. Crown or border 0. Adheres slightly to the paper chiefly by the heads in drying. 

A much smaller pl. with far more delicate moss-like hoary (not full-gr.) foliage and suffrutescent dry hard (not at all succulent) st. than the common English Chamomile or Ormenus nobilis (L.)=Anthemis nobilis L., EB. t. 980, DC. vi. 6=Chamomilla nobilis Gren. et Godr. ii. 150; differing further not only in the mostly simple short erect 1-fld. st. and smaller constantly rayless or discoidal heads of fl. and (in outline) narrow spathulate or ligulate 1. (not short ovate or ovate-oblong or less than twice as long as broad as in EB. t. 980) but also in having the tube of cor. always spurred or lobed at the base (not "non appendiculé" Gr. et G.), with the (abortive) ach. uniform dark chestnut (not "verdâtres" or "munis de 3 côtes blanches sur la face interne") and in shape simply cuneate-trigonal with straight sides (not "obovés-en-coin"). It is also clear, by careful comparison with Portuguese spec. from the Barão do Castello de Paiva and with the Lisbon "Macella" of the shops in Funchal, that botanically the Mad. pl. is precisely identical with the Portuguese or Anacyclus aureus of Brotero. The Lisbon "Macella" has however a sweet honey-like fragrance instead of the peculiar bitter aroma of the Mad. pl., which, Sr° Mauricio de Machado informs me, possesses also
in a much greater degree the peculiar bitter chamomile principle, and is more efficacious than the Lisbon sort.

De Candolle refers *Anthemis nobilis* β *flosculosa* Pers. ii. 466 to the present pl.; for which he had perhaps some special ground. Otherwise it would seem rather to belong to the rayless state (β *discoidea* Gay) of *Ormenus nobilis* (L.) to which Persoon refers it, since he otherwise must be supposed to have recorded the same pl. twice over in two successive pages—first as *Anacyclus aureus* L. and afterwards under *Anthemis nobilis* L.

In the rayless var. β *discoidea* Gay in Bourg. Pl. Hisp. Exs. 1849, no. 281 &c., of *O. nobilis* (L.), the heads vary from 4-7 lines (being never less than 4 and mostly 5 or 6) in diam. without the ray. In *O. aureus* (L.) they never exceed 4 lines in diam.

Brotero's fig. in Phyt. Lusit. t. 163 of the present pl. is extremely bad, as already remarked by Webb; but his description leaves no doubt about the pl. intended.

Of pl. allied to *O. aureus* (L.) by name or affinity, *Anthemis aurea* Brot. Fl. Lusit. i. 394 is referred by DC. doubtfully to *O. nobilis* (L.). It may prove however to be rather a radiate state of *O. aureus* (L.), as the locality and remark of Brotero "deme radium corollæ, habebis *Anacycl. aureum*" seem to suggest, though I have never met with such a state.

*Anacyclus aureus* Lam. Dict. i. 141, Ill. t. 700. f. 2 is *Cotula aurea* L., a very different pl.

†18. Anthemis L.

*(Anthemis, Chamaemelum, Maruta Cass.)*

†1. A. Cotula L. Margaça.

Scented, mostly smoothish or glabrescent, gr. not hoary, corymbose branched upwards; l. impunctate tufted or crowded down the st. feathery or finely multifid 2-3-pinnatifid, in outline ovate-oblong or oval, not more than twice as long as broad, the divisions all fine and narrow-lanceolate or linear acute equal in breadth, close or crowded and tufted; heads radiate terminal loosely subcorymbose; fl. of ray mostly neuter; recept. chaffy all over, sometimes only upwards towards the centre; chaff linear-setaceous with subulate points smooth caducous; ach. coarsely 10-ribbed tuberculate clavate subquadr-
angular upwards truncate and flat or plano-convex at top im-
marginate, the edge obtuse strongly 10-crenate but naked
without rim or border.—Linn. Sp. 1261; Broth. i. 393; Pers. ii.
466; EB. t. 1772; Sm. E. Fl. iii. 458; Buch 195. no. 267;
Koch 414; Seub. Fl. Az. 32; Bab. 174; RFG. xvi. t. 109. f. i.;
Willk. et Lange Fl. Hisp. ii. 88. Maruta Cotula Cass., DC.
vi. 13; WB. ii. 284.—Herb. ann. Mad., PS. reg. 1, 2, c. Corn-
fields, waste ground and roadsides chiefly in the N., but also on
Pia de S. Lourenço (Ilheo dos Embarcadores), at Camera de
Lobos on the Fort-hill above the church, Prazeres &c.; in the
N. at Pº Moniz, S. Vicente, S. Jorge towards the Pº do Fer-
rovo, &c.; in PS. about the town, Serra de Fora, &c. general.
Apr.-Sept.—St. either several from the crown ascending or
diffuse, or single stiffly erect straight simple and divaricately
branched only upwards, 6-12 or 18 in. long, hard ribbed or an-
gular, thickly leafy downwards. L. full gr. mostly smoothish
in Mad., in PS. more or less glandular-pubescent but never vil-
lous-hoary, 1-2 in. long, 1/2-1 in. wide, crowded or tufted on the
st., finely divided and compound like those of the true Cham-
omile, Ormenes nobilis (L.), the segm. very finely narrow-
linear, but flat cuspidate crowded spreading, with a not un-
pleasant scent like Chamomile but less strong. Fl. 3-1 in. in
diam. solitary on long slender ped. at the ends of the branches,
several or many opening together and forming a loosely irregu-
lar cyme; disk golden-y., 3-4 lines long, 1-2 wide, at night and presently altogether deflexed, always
without styles and barren in Mad.; “rarely fertile” Gr. et
Grod. Disk in fl. hemispherical, in fr. obtusely conic, bristly
upwards with the subulate or setaceous tips of the chaffs rising
and appearing above the yet unopened florets. Ped. slender
not thickened upwards pubescent with short w. cottony down
or hairs like the subequal oblong obtuse broadly scarious green-
nerved scales of the pale gr. plano-hemispherical inv. Tube of
fl. mostly 2-winged or angular and globosey dilated or bulbous at
the base, but never either embracing the top of ach. or produced
downwards into lobes or spurs. Ach. pale sandy-brown turbi-
nate or clavate, sometimes subquadrangular upwards, coarsely
10-ribbed and tuberculate, smooth and naked but with resinous
dots or glands, the top slightly convex or flat with a small
raised central epigynous disk, the edge strongly 10-crenate ob-
tuse, without trace of crown or border. Recept. in fr. conico-
cyindric nearly twice as high as broad; chaffs altogether
smooth finely narrow-linear with subulate setaceous tips nearly
or quite as long as the open florets, longer than the same in bud
and giving the centre of the disk before its fl. open a bristly ap-
pearance. Hence perhaps the chaffs have sometimes been de-
scribed as confined to the upper or central part of the recept.,
whereas in Mad. they are equally distributed over the whole.
DC. l. c. well observes of this pl. "variât erecta aut diffusa, glabra aut pubera, subsimplex aut valde ramosa, capitulis minoribus aut majoribus &c." It is an altogether useless but not troublesome weed in Mad.

The mostly neutral fl. of the ray and occasional absence of chaffs towards the base of the recept. are too variable or inconstant characters to warrant the retention of Maruta Cass. as distinct from Anthemis L.

A. arvensis L., RFG. xvi. t. 113. ff. i. ii., is mentioned by Schultz in WB. ii. 285 as having been also gathered by Webb in Mad.; but it has entirely escaped my constant search and the notice of all other botanists. It is distinguished mainly by its always fertile ray, its broader lanceolate or elliptic chaffs, and ach. not tuberculated but crowned with a sharp or tumid plicate rim or border. It is also a coarser stronger-growing more or less silky-downy greyish pl. with the segm. of l. shorter and broader, and the fl. larger.

The common European weed Matricaria Chamomilla L., RFG. xvi. t. 106. f. i., much resembling Anth. Cotula L. in habit, fl. and foliage, but at once distinguishable by its naked chaffless recept. and always styliferous fertile ray, has not occurred either in Mad. or the Canaries.

†19. Achillea L.

§ 1. Millefolium Tourn. Inv. ovoidal; ligules of ray shorter than inv.

††1. A. Millefolium L. Yarrow. Feiteirinha.

Root-stock shortly creeping stoloniferous; l. finely multifid 2–3-pinnatisect narrow-ligulate or linear-oblong in outline, rachis narrow scarcely or not winged entire, pinnae 20–25 on each side, approximate crowded squarrosely erecto-intricate above the plane of rachis, nearly equal from the base to tip of l., the lower pinnae in the middle stem-I. loosely and decussately stem-clasping but not elongated or longer than the rest, segm. all linear falcate finely cuspidate intercrossingly erect or incurved and ascending; heads rather large and numerous in a close crowded terminal cyme; fl. w. or roseate 4- or 5-rayed, the rays half the length of inv.; ach. truncate at top.—Linn. Sp. 1267; Lam. Dict. i. 29; Broth. i. 397; Pers. ii. 469: EB. t. 758; Sm. E. Fl. iii. 462; DC. vi. 24; Koch 410; Coss. et Germ. ii. 397; Gren. et Godr. ii. 162; Bab. 176; RFG. xvi.
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ACHILLEA. t. 135; Willk. et Lange Fl. Hisp. ii. 77.—Herb. per. Mad. reg. 2, rr. Chiefly in or about gardens, to which indeed, formerly (i. e. 30 or 40 years ago, at the Mount, S"a Anna, &c.) it was quite confined, but has now become perfectly naturalized by roadsides or in waste ground at S"a Anna, Camacha, Pajãa d'Ovelha, &c. May–Sept.—Rhizome strong, tough, blackish, emitting long stringy simple roots and a few slender w. or purplish subterranean stolons. Whole pl. pubescent but with dark full-gr. foliage. St. stout, hard, robust, simple, straight, erect, branched only at top into a fastigiate cyme, 1–2 ft. high (mostly 15–20 in.) angular or ribbed somewhat thinly cottony-pubescent. L. slightly hairy-pubescent, the lower stalked 4 or 5 in. long, the upper sessile 1–2 or 3 in. long, all 3–6 or 8 lines wide and dark full gr. with the rachis either simple or very narrowly margined and perfectly entire; segments of pinnae numerous finely cuspidate or linear-acuminate entire all intercrossing and falcately incurved or ascending above the plane of the rachis. Cyme single terminal 3–6 in. in diam. densely many-fld., its branches and the inv. slightly cottony-pubescent. Heads oblong-ovoidal 3 lines long, 2 broad; inv. 2 lines—⅛ in. long, scales lanceolate gr. with a darker gr. nerve and brown scarious edges, altogether but thinly cottony-hairy. Ligules half the length of the inv. as broad as long i. e. ⅛ in., always (in Mad.) w.; florets of disk prominent convex, their tube compressed 2-carinate, its base embracing introsusceptively the top of the ach.; the latter (immature or abortive in my Mad. spec., but in English) are narrowly oblong-cuneate obcompressed and marginate or slightly 2-winged, truncate and naked at top, smooth and even.

Introduced from England 40 or 50 years ago, this pl. has become now not only general in cottage gardens but seminaturalized in their vicinity and is a favourite rustic remedy in xarope (drinks or decoctions), fomentations, &c.

††2. A. GERATUM L. Macella.

Root-stock woody; st.-l. fasciculate shortly pedioed spathulate-oblong obtuse undivided finely and regularly duplicatuserrate; the lower l. inciso-serrate or pectinately subpinnatifid downwards and attenuate at base into long petioles; heads crowded in a dense terminal cyme, fl. altogether y., ray very short; ach. rounded at top.—Linn. Sp. 1264; Vill. Dauph. iii. 256; Brot. i. 397; Pers. ii. 467; Buch 195. no. 268; DC. vi. 27; Gr. et Godr. ii. 165; RFG. xvi. t. 122. f. 1; Willk. et Lange Fl. Hisp. ii. 79.—Herb. per. Mad. reg. 2, ⅓. Only in cottage gardens chiefly to the westward, Magdalena, Calheta, Pajãa d'Ovelha, &c. May–Sept.—Though recorded by Von
Buch, scarcely entitled to a place in the Mad. Flora, being merely grown in cottage gardens as a common rustic remedy for its aromatic properties, and showing no tendency, like the preceding sp., to become naturalized. St. erect hard stiff straight simple 1-2 ft. high. Whole pl. more or less very closely and shortly pubescent, strongly aromatic. L. pale dull bluish-gr. not glaucous, punctate, sharply and finely doubly-serrate, the lower more deeply incised downwards or pectinately subpinnatifid. Cyme small crowded terminal about 2 in. broad. Heads small 2 lines long, 1 broad, scales light gr. pubescent. Fl. deep golden-y., ligules small and short about 4 or 5, irregular in shape size and number, often broader than long, obtusely 2-3-lobed, coloured like the disk.

†Tribe XI. Bidentae Less.


Glabrescent; st. erect subquadrangular; 1 stalked ternately or quinately pinnatifid, lfts. distinct rhomboidally ovate or lanceolate coarsely inciso-serrate, petioles subciliate towards the base; heads stalked subcorymbose rayed or discoidal; inner scales of invol. oblong equal, outer linear-subspathulate acute; ach. 2-3-awned.—Bidens pilosa Lour. Fl. Coch. ii. 488; Schultz in WB. ii. 242; J. A. Schm. Fl. Verd. 197.—Varr.:


β. discoidea Sch., J. A. Schm. l. c.; heads discoidal or rayless, ach. naked.—Bidens pilosa Linn. Sp. 1166; Willd., Pers. ii. 394; DC. v. 597; Dill. Elth. i. t. 43.—A mere state or even only stage of α.

Herb. ann. Mad. reg. 1, 2, 3. ccc. In cult. ground, gardens, vineyards, by roadsides, &c. everywhere, a troublesome and universal weed. At all seasons.—Pl. 6-18 in. high with shining somewhat lurid dark gr. foliage branched and bushy. Branches square dull purplish subpuberulous glabrescent. Lfts. stalked glabrescent, 1-2 in. long, about half as broad, variable in shape, sometimes ovate or ovate-oblong. Fl. on solitary moderately long axillary ped. towards the ends of the branches about 4 lines in diam., as often rayed as rayless. Ray when present w. of 1-5 short broad ligules; disk convex y. Heads whilst immature after fl. oblongo-pyramidate, with the gr. leafy tips of the scales of invol. reflexo-patent, and the base obconical gr. and fleshy; the scales in the ripe fr. strongly reflexed dried up and in-
conspicuous. Ach. spreading and deflexed forming a globose stellate head when ripe, dark coffee-brown or blackish, finely shagreened and strongly ribbed, obcompressedly subquadran- gular, 4 or 5 lines long, scarcely 1 millin. broad, crowned at top with 2 opposite or often 3 short erect or spreading stiff sharp hornlike bristles barbed or beset with fine keen hyaline aciculate deflexed setules, and thus adhering strongly to and penetrating the clothes, rendering the pl. extremely trouble- some. Receptacle clothed with caducous oblong chaffs, glo- boso-pulvinate or pyramidal.

It is remarkable that this most universal and abundant Mad. weed has not occurred in either Porto Santo or the Desertas.

It is also strange that the nearly allied and very similar tro- pical common weed, K. bipinnata (L.) RFG. xvi. t. 51. f. ii., which is not less general in the Cape Verdes than K. pilosa (L.), and which has even made its appearance in the South of Germany and France (Koch 396; Gr. et Godr. ii. 169), has not yet found its way into either the Canaries or Mad.

†Tribe XII. Ecliptae.

†21. Eclipta L.

†1. E. erecta L.

St. erect or ascending sparingly branched and with the l. adpressedly strigose, the young shoots hirsute hoary; l. ellipti- lanceolate acuminate at each end, sessile repandly and irregu- larly subserrate; ped. 1–3 or 4 from the upper axils, \( \frac{\sqrt{3}}{2} \) or \( \frac{\sqrt{3}}{2} \) length of l. or 2–7 or 8 times the length of the heads.—Linn. " Mant. 286;" Lour. Fl. Coch. ii. 505; Pers. ii. 470; Spr. Syst. iii. 602; DC. v. 490. Verbesina alba Linn. Sp. 1272. Cotula alba Linn. Syst. (ed. 12) ii. 564; Pluken. ! Alm. t. 109. f. 1; ejusd. herb. in Herb. Sloane, vol. 101. fol. 188 in BII.; Dill. Elth. i. p. 138, t. 113. f. 137.—Herb. ann. Mad. reg. 1, r. In wet ditches and Levadas occasionally in and about Funchal; ditch at the back of the beach to the west of the Fortaleza, Levada de S’a Luzia, &c. Sept.–Dec.—Whole pl. adpressedly hispidulous with short w. or grey strigose hairs. St. 12–18 in. high dif- fusely erect shortly and sparingly branched, round below, squarish and subsucculent upwards, purplish-brown, grey and hirsute towards the ends while young. L. rather dull gr. op- posite sessile acuminate irregularly repand-serrulate \( \frac{\sqrt{3}}{2} \)–3 in. long, \( \frac{\sqrt{3}}{2} \)–1 in. broad, sometimes nearly entire. Ped. slender or filiform adpressedly strigoso-hirsute, 1–3 or sometimes more together, very unequal in length but mostly \( \frac{\sqrt{3}}{2} \)–1\( \frac{\sqrt{3}}{2} \) in. long. Heads

2 A
inconspicuous, without apparent ray, hemispherical, 3–4 or 5 lines in diam.; fl. dull w.; ligules short and narrow but very numerous and crowded. Scales gr. leafy broadly ovate or oval acute strigose. Ach. of disk pale sandy-brown oblong sub-clavate obcompressed subtetragonal or 4-ribbed irregularly rugulose or corrugate, black at top, smooth and naked, without crown or pappus; of ray triquetrous and even but otherwise similar. Epigynous disk rather prominent or mamillate umbilicate, surrounded with a slightly raised and waved sub-quadrangular very narrow black outer rim or border, the space between the central mamilla and outer border black and clothed with a few w. strigose hairs.

I have never consciously met with the true *E. prostrata* L. in Mad.—a pt. of altogether smaller size with much branched prostrate st., small ovate l. and very shortly stalked or nearly sessile heads (Pluk. ! Alm. t. 118. f. 5 and herb. in Herb. Sloane, vol. 94. fol. 175 in BH.; Dill. Elth. l. c. t. 113. f. 138). But a Mad. spec. sent by me to the late Chev. de Candolle as *E. erecta* L. was referred by him (Prodr. v. 490, as previously in his letters) to *E. prostrata*. Hence I have possibly in Mad. overlooked the latter pt., which, however, after all, is perhaps merely a depauperated state or var. of *E. erecta* L.

§ 2. Anthers caudate or awned at the base.

A. Recept. scaly or chaffy all over.

 Tribe XIII. *Buphthalmacee* Less.


*(Nauplius* Cass., *Odontospermum* Neck., Schultz in WB.)

1. A. *AQUATICUS* (L.).

Herb. ann.; st. proliferously 1–3-branched close beneath each fl., branches very stiff wide-spreading or divaricate; l. oblong obtuse subspathulate entire, the lower attenuately stalked, upper ligulate sessile semiamplexicaul arcuate reflexed; heads many-leaved at their base, 1. of outer involucral scales linear-lanceolate not cuspidate, inner scales oval obtuse without or rarely with a leaf at top; tube of cor. and ach. of ray not winged.

—Dü. v. 486; Koch 391; Gr. et Godr. ii. 172; RFG. xvi. t. 45. f. ii.; Willk. et Lange Fl. Hisp. ii. 47. *Buphthalmum aquaticum* Linn. Sp. 1274; Desf. ii. 290; Brot. i. 396; Pers. Syn. ii. 474; Buch 195. no. 269; Fl. Gr. ix. t. 899. *Odontospermum*
aquaticum Schultz in WB. ii. 233.—Herb. ann. PS. reg. 1, r; ND. r; GD. reg. 2, ccc. Dry sunny beds of streams or dried-up muddy places where water has collected during heavy rains; in PS. in sandy cornfields at the back of the beach sparingly; in GD. abundant all up the central valley. Apr.–June.—Whole pl. villous or pubescent bushy and leafy 2 or 3–12 in. high, of a peculiar pale apple-gr. and singular aspect from its repeatedly proliferous mode of inflorescence, viz. that to which the old botanists quaintly applied the term of "herba impia"—the younger fl. rising above the elder. Root simple perpendicular. St. erect straight simple and like the branches shaggy-villous hard stiff very tough and rigid pale or whitish straw-colour, with at first a single terminal fl. and then in luxuriant spec. 2–4 times proliferously branched. Branches short and like the main st., springing mostly dichotomously close beneath the fl., each bearing a terminal fl. and again divided or dichotomously branched close below it in a forked proliferous manner. L. shortly and closely pustuloso-pubescent, 1–2 in. long, crowded beneath the fl., irregularly waved or curled and subcunduplicate, the upper narrower, all subobtuse. Fl. rather large sessile in the forks of the branches bright lemon-y. handsome and fragrant like Heliotrope, with, however, somewhat of a rhubarb-like smell. Heads villous hemispherical quite sessile 4–8 lines in diam. very hard or woody. Outer scales of inv. oblong produced into spreading or erecto-patent gr. wavy soft-pointed not spinose-cuspidate l., their base like the inner scales oblong pale w. or whitish hard dry coriaceous or parchment-like and woolly or cottony-villous. Ligules of ray numerous short and narrow. Disk flat.

I still possess spec. of this pl. gathered in Porto S°° with my late friend Webb in May 1828, ticketed by him "Buphthalmum odorum? Schousb., fields Porto S°°," which thus demonstrate the mistake in WB. ii. 239, line 4 from the bottom, asserting B. odorum Schousb. to be a Porto-Santan pl.; for most certainly Webb gathered there no other sp. but the present.

B. Recept. naked or scaly only at the margin.

Tribe XIV. Inuleae Cass.

23. Inula L.

1. I. viscosa (L.). Alfavaca or Alfabaca.

Herbaceo-suffrutescent, woody downwards, subviscously villous upwards; l. lanceolate acute, spachelately cuspidate and

2 A 2
subdenticulate, subcordately semiamplexicaul, heads in terminal erect somewhat leafy compound thyrsiform often few-fld. rac.; scales of inv. all simple and scarious; ligules conspicuously longer than the scales.—Ait. Hort. Kew. (ed. 1) iii. 223; Deaf. ii. 274; Broel. Phyt. Lusit. ii. 190, t. 164; Pers. ii. 452; DC. v. 470; WB. ii. 220; Willk. et Lange Fl. Hisp. ii. 42.

**Erigeron viscosus** Linn. Sp. 1209; Jacq. Hort. Vindob. i. t. 165; Vill. Dauph. iii. 240; Poir. in Lam. Dict. viii. 479. **Solidago viscosa** "Lam. Fl. Fr. ii. 144;" Brot. Fl. i. 381. **Pulicaria viscosa** Koch 395. **Cupularia viscosa** Gr. et Godr. ii. 395.

RFG. xvi. t. 44. f. ii.—Suffrutesc. per. Mad. reg. 1, rrr.—Waste rough broken ground or rocky banks under the sea-cliffs between Pa do Sol and Rib. Brava along the lower or coast road, especially about the Lugar Debaixo and between it and Tabúa, abundantly. July–Nov.—A low erect sparingly branched leafy bush 1–2 ft. high, of a pale bright gr., altogether pilose, more or less viscus, and sometimes staining the fingers brown with its clammy glandular villosity of l. and st., with a strong and not unpleasant resinous-balsamic fragrance. Branches virgate erect stiff woody and glabrescent downwards, villous and almost shaggy upwards. L. rather harsh and stiff to the touch, 2–4 in. long, 1/3–1 broad, lanceolate or ligulate-lanceolate, irregularly sphericato-serrulate, very acute, slightly cordate at the base, more or less villous. Fl. in terminal long leafy pyramidal or thyrsiform erect not crowded rac. compound downwards, like those of a Michaelmas Daisy in size and habit, but bright golden-yellow. Heads viscous hemispherical moderately large 3–4 lines in diam. Ped. slender furnished with several small linear scattered bracts. Scales of inv. loosely erect-patent linear-lanceolate acute or obtuse imbricate very unequal in length, glandular-pubescent, none of them foliaceous, the outer with scarious edges, inner altogether scarious except a gr. midrib, subciliate-serrulate upwards, and, when obtuse, bearded or ciliate at top. Ligules conspicuous but short, narrow linear, 2 lines long. Ach. 1/2 mill. long, 1/4 mill. broad, oblong cylindric, obtuse at bottom, truncate and flat at top, even or ribless, but thickly clothed with short erect silky pubescence, pale straw-colour. Pappus always in Mad. and the Canaries a single row of fulvous or rufescent hairs 3 or 4 times the length of ach., minutely rough or ciliate, stiffish and very fragile or caducous as if jointed at the base, without any trace of an outer cup or ring, though the top of the ach. expands into a sort of brown collar, from the inner edge of which proceed the hairs of the pappus.

The ach. are ribless as in **Cupularia** Godr., but the pappus is truly simple in a single row, as in **Inula**, and without any outer crenulate short ring, cup or coronet of chaffy scales; which
also my friend Mr. Newbould has occasionally found to be the case in *Pulicaria dysenterica* (L.). Hence there remains no constant char. to distinguish *Cupularia* from *Inula* but the ribless or unstriated ach.

This pl. was first observed in Mad. by the late Dr. Lippold in Sept. 1838. It is quite confined to a narrow belt along the south sea-coast, of not more than 1 3/4–2 miles in length, and yet apparently is perfectly indigenous. In the Canaries, and especially in Tenerife, where it is called *Altavaca*, it is one of the commonest and most universal plants.

**Tribe XV. Gnaphalieæ Less.**

The Everlasting-flower Tribe.

**24. Helichrysum DC.**

The Everlastings.

**Sect. 1. Carpantha Lowe (Clavellata DC.).** Heads obconic or turbinate compact berry-like; scales numerous regularly imbricate erect and always compactly close-pressed never lax or radiant, yellowish-gr. or golden-brown. Pappus subcompresso-clavellate i.e. compressedly pennisitate or bearded towards the tip.—Low stiffly prolificously branched shr. with w. or grey cottony l. and branches. Fl. in dense terminal cymes.

**1. H. OBCONICUM DC. Murrão or Morrão.**

Snowy tomentose except the heads; l. shortly and broadly obovato-lanceolate or elliptic subacute or subobtuse attenuate downwards 2 1/4–2 1/2 times as long as broad (including the petiole) thickly and closely cottony or velvety-tomentose subcoriaceous obscurely 3-nerved very entire; cyme 15–25-fld. small simple dense compact crowded terminal scarcely rising above the l. hemispherical or convex; heads rather large and at least as long as broad, very shortly and stoutly stalked or sessile on the short stout divaricate snowy-tomentose branches, naked smooth and shining, at first yellowish gr. then golden-brown; ped. very short imbricate scaly upwards at the base of the heads; scales membranous at the tip and edges, very numerous, gradually larger upwards and compactly imbricate, obtuse, entire, the lower very small and running down the ped., the upper gradually larger, the inner uppermost more or less acute.—DC. i. vi. 181; Lowe Novit. p. 16 or 538. *Gnaphalium crassifolium* Buch! 194. no. 255; Lowe in Hook. J. of
Bot. i. 35 (not Linn., or Lam., or Willd.). *Gn. tomentosum* Bowd. Exc. in Mad. p. 63 (not Hoffm.). *Antennaria leuco-phylla* Reichb. in Höll’s List in Hook. J. of Bot. (2nd ser.) i. 19. —Shr. per. Mad. reg. 1. cc. Bare and rugged sea-rocks and cliffs everywhere all round the coast of Mad., but not found in either PS. or the Desertas. The Loo Rock (Ilheo) at Funchal is almost clothed with it. It prefers the hardest and blackest basalt entirely devoid of other vegetation, springing out of crevices or fissures and contrasting conspicuously by its whiteness with its native rocks. It is never found away from the immediate vicinity of the sea. At most seasons, but chiefly June—Nov.—A low thickly bushy proliferously branched shr. 1–2 ft. high, with stout erect greyish or almost snow-w. tomentose corymbose branches naked below, thickly leafy upwards, and though stiff hard and woody somewhat fragile. L. attenuately stalked crowded 1½–1¾ in. long (including the petiole), about ½ in. broad, very entire subacute or often a little obtuse, of a firm soft thickish leathery substance and covered on both sides with a close short dense snow-w. tomentum. Cyme single and simple terminal subsessile or only a little overtopping the 1., 1–2 in. in diam., the divisions and ped. very short stout w. tomentose without l. or bractlets, the whole in fl. dull-y. Fl. like the whole pl. slightly odoriferous. Heads 3–4 lines long, 2½–3 broad, shortly turbinate and slightly ventricose somewhat like the fr. of a Medinella, shining golden-brown or greenish; the lower scales continued down the ped., regularly imbricate and gradually becoming larger upwards. Florets smooth hoary or whitish in the bud, then dull y., all 5-cleft and fertile, the 2 outer rows female very slender or filiform, the rest all perfect and altogether much larger. Recept. convex. Pappus in all the fl. rather longer than the fl., smooth downwards or very shortly and minutely puberulous or rough; bearded or fringed towards the tip with longer hairs. Ach. subturbinately oblong dark chestnut-brown angular and stiroidly minutely puberulous or rough with glittering erect points.

Judging from the description and from a single head of *H. hemisphæricum* DC. (Prodr. vi. 181) most kindly communicated by Prof. Alphonse De Candolle from his father’s original spec., I strongly suspect that it will prove to be not really distinct from *H. obconicum*, in which the l. have very frequently only the middle nerve discernible (the shape also varying from subacute to subobtuse) and the heads become not unfrequently more rounded at the base or hemispherical as they advance after flowering. The original head of *H. hemisphæricum* before me is indeed rather obconical than hemispherical, and in its colour, its short
tomentose ped., in the shape, size, substance, colour and arrangement of the scales, and indeed in everything, agrees precisely with the heads of *H. obconicum* DC.

The supposed "Cape of Good Hope?" habitat of *H. hemisphericum* DC. was not at all an unusual one loosely attributed by horticulturists formerly to pl. really belonging to Mad. and sent thence originally probably by Masson.

Sect. 2. *Achyrantha* Lowe (Virgínea DC. partly). Heads hemispherical; scales erect but lax and finally spreading or subradiant brown or w. often tinged with crimson or purple. Pappus simple equally rough or pubescent throughout, not clavellate or bearded upwards.—Shr. subproliferously branched with w. or grey cottony l. and branches. Fl. in terminal cymes.


Snowy-tomentose except the heads; l. lanceolate or elongato-lanceolate acute or attenuate at both ends 4-5 times as long as broad (including the petiole) somewhat thickly and closely cottony-tomentose obscurely 3-nerved very entire; cyme rather large and somewhat lax or spreading 20-30 or 40-fld. terminal rising a little above the l. slenderly branched often compound; heads rather small hemispherical broader than long, freely and distinctly stalked on snowy tomentose ped. longer than themselves, smooth shining purplish-brown; scales membranous at the tip not numerous subequal lax finally erecto-patent ligulate or linear-oblong acute, the lower ovate obtuse, all pale drab-brown or greenish-brown edged with purple or crimson except their scarious pale tips.—Shr. per. Mad. reg. 1, rrr. Rocky sides of ravines near the sea and sea-cliffs; Rib. da Praia Formosa, W. of Funchal, above the bridge; Pico do Rancho and thence all the way to Campanario profusely; Brazen Head sparingly; first observed and distinguished by S' J. M. Moniz 1858. Nov.-Febr.—A low shr. with quite the general aspect and w. or snowy cottony foliage of *H. obconicum* DC., so that when not in fl. it has been often probably overlooked as a mere luxuriant state of it, this species is a larger more loosely less regularly proliferously branched pl. 2 or 3 ft. high, with longer looser somewhat flaunting or declining less stout and stiffly erect branches. L. very different in shape and less stiff or coriaceous in substance. Fl. scentless. Cymes larger more loosely or freely branched and compound, with the heads much smaller squarrosely or loosely scaly and of a fine warm purplish light brown, all distinctly stalked, 2 lines long and broad, the scales loosely or squarrosely erecto-patent
green at first in the middle, then chestnut-brown edged with purple, and with pale colourless membranous plicate or denti­culate tips and borders. Florets all 5-cleft fertile, the female in 2 or 3 rows. Pappus simply rough or scabrous throughout with short equal pubescence, not clavate, not longer than the fl. Recept. slightly convex papulose. Ach. chestnut-brown elliptic-oblong sprinkled with erect glittering points.


Grey-w. tomentose except the heads; l. elongato-lanceolate attenuate at both ends 3\(\frac{1}{2}\)–4 times as long as broad (including the petiole) closely but not thickly cottony-tomentose 1-nerved very entire; cyme large terminal compound many-fld. (50–100) loosely or distinctly branched but mostly subglobose or hemispherical dense compact and crowded; heads rather large hemispherical broader than long freely and distinctly stalked smooth, not shining, dead snow-w. or rarely partly purplish or crimson, the disk atropurpureous in fl., dark brown or black before and after; scales regularly imbricate lax squarrose finally subradiant, altogether and permanently opake snow-w. and scarious without pale tips or edges, the lower and middle broadly ovate mostly obtuse entire, the innermost oblong acute or undulato-plicate and sublacerately toothed.—DC. ! vi. 177; Lowe in Hook. J. of Bot. i. 35. Gnaphalium melanophthalum Lowe Prim. 29. Eichrysium melaleucum Reichb. in Höll's List in Hook. J. of Bot. i. 19. Gnaphalium rupestre Sol. ! MS. in BH.; Buch ! 194. no. 254 (not Rafin.).—Shr. per. Mad. reg. 1, 2, 3, 4, c; PS. reg. 1, 4, \(\frac{1}{2}\); GD. reg. 1, rr or \(\frac{1}{2}\). Sea cliffs, rocky sides of all the principal ravines and craggy summits everywhere in Mad. but principally in the North where it fills the whole air along the sea-cliffs with its honey-like perfume when the sun shines hot. In PS. and GD. confined to the sea cliffs and highest inland peaks. Apr.–Aug.—Habit like the last, but with much more thinly tomentose and less decidedly snow-w. foliage. A fine and handsome low shr. corymbose branched 2 or 3 ft. high. Flowering branches corymbose loosely ascending snow-w. cottony, thickly leafy downwards and clothed at the base with the withered l. of the preceding year. L. 1–2 in. long, 3–4 lines broad much attenuated into the petiole, shortly and closely but less thickly tomentose than in H. Monizii and grey rather than snow-w. Cymes large terminal lax or spreading many-fld. rising quite above the l., each composed of numerous smaller cymes, somewhat loosely branched, branches and ped. distinct snow-w. tomentose. Fl. odoriferous like honey. Heads snow-w. quite smooth not shining, globose in bud, then hemispherical, finally subradiant, 3–4 lines in diam.; the disk blackish. Florets all 5-cleft
smooth fertile atropurpureous upwards in fl., blackish or black before and afterwards, the black eyeliike disk of the heads contrasting singularly with the snow-w. opake shortly ovate mostly obtuse dry scales of inv.; female fl. in 1-2 rows. Recept. flat with a central conical papilla, strongly alveolate. Pappus in all the fl. in a single row the length of the fl., simple (not clavate) minutely rough or pubescent. Ach. minute dark chestnut oblong or oblong-turbinate 4-angular rough with glittering resinous dots.

β. rosea; heads blush-pink, the scales of inv. being rose, pink, or crimson at the base.—Mad. rrr, Portella de Pº da Cruz, Passo d'Area; PS., Sº J. M. Moniz. Cymes more dense compact and hemispherical perhaps than usual, but agreeing in all other points with the usual snow-w.-t.-d. state (nivea).

Sect. 3. Asterantha Lowe (Xerochlæna DC. in part). Heads hemispherical; scales altogether dry and scarious loose or spreading and finally stellately radiant golden or pale y., sometimes w. Pappus simple, rough or pubescent. Mostly stout erect herbaceous more or less tomentose pl. with large conspicuous heads clustered or single.

††4. H. Fœtidum (L.).

Hoary-grey or whitish clammy-tomentose; st. stout erect simple virgate leafy; lower l. oblong-lanceolate attenuate downwards, stem-l. cordate-amplexicaul acuminate erecto-patent, all w. and cottony beneath, light gr. subglabrescent or thinly furry-pustulate above; heads large stalked clustered in large compound terminal cymes; outer scales ovate, inner lanceolate longer than the florets, all acute or subacute smooth shining scarious.—DC. vi. 187; Gren. et Godr. ii. 185; Willk. et Lange ii. 60. Gnaphalium fœtidum Linn. Sp. 1197; Lam. Dict. ii. 751; Pers. Syn. ii. 418. Anaxeton fœtidum Lam. Ill. t. 692. f. 1.

β. Citreum. Less. ex DC. 1. c.; heads subpanicled, inv. and pappus bright lemon-y.—Herb. ann. Mad. reg. 2, rrr. Seminaturalized here and there in two or three fields about Mr. Blandy's house at St. Antonio da Serra, from whose garden, where it still grows, it has evidently straggled within the last 10 or 15 years; observed also by Sº J. M. Moniz going thence towards the Levada dos Lamaceiros in 1859 "remote from all cultivation;" but I have lately searched for it in vain in this locality, to which it was doubtless originally conveyed from the same garden. June-Oct.—St. mostly several from the crown, forming a close bush, simple stiffly virgate very stout hard and

2 4 5
woody downwards striate cottony 2-4 or 5 ft. high thickly clothed all the way up with short auriculato-acuminate stem-clasping l.; root-l. 5-6 in. long, 1-1½ broad, acute, all soft thin green and glabrescent above, whitish and thickly cottony beneath, the upper surface somewhat rough or minutely pubulate and furry; the whole pl. clammy and when touched or handled intolerably and nauseously fetid with a pungent most unpleasant smell like that of \textit{Ballota nigra} L. Cyme terminal corymbose branched of numerous large close-crowded or congested handsome lemon-y. fl.; the branches tomentose and sometimes sprinkled with short red or purple horizontal distinct hairs or glands. Heads 8 or 9 lines in diam. of which the large flat velvety cushion-like dusky-yellowish disk is 4-6; compactly globose in bud; scales shining satiny of a permanent fine bright lemon-y. approaching to golden, radiately spreading, the outer shortly and broadly ovate subacute, the inner lanceolate acute slightly attenuate downwards not stipitate. Florets very small numerous and crowded forming a flat even velvety disk, the female in several rows. Recept. flat finely and equably alveolate altogether naked in the spec. Pappus very deciduous y. simple minutely rough or pubescent, the length of the florets. Ach. dark brown subquadrangular 4- or 5-ribbed covered with minute raised dots or points.

\textit{Gn. fetidum} Sims. BM. t. 1987, quoted by DC., has scarcely any resemblance to the Mad. pl., representing something in an early stage of inflorescence with pale gr. involucral scales, solitary separate not congested fl. and branches of panicle very stout short and robust copiously and conspicuously sprinkled with red glands.

\textit{Helichr. orientale} (L.) DC. vi. 183, the common herbaceous "Everlasting" of garlands &c. (Immortelle Fr., Perpetua Port.) with y. or lemon-y. heads, included by Von Buch in his Mad. List p. 194. no. 256, is only now occasionally cultivated in pots or boxes about houses or in gardens.

25. \textit{Gnaphalium} L.

1. \textit{G. luteo-album} L.

Herbaceous annual \textit{thickly snowy-tomentose or greyish-w.}; st. single loosely erect with several shorter ascending side shoots from the base or crown, all straight simple or shortly branched upwards, leafy; l. 1-nerved waved entire not spinulose at the edges, the lower oblong spathulate obtuse, upper semiamplexicaul ligulate or linear-oblong and more or less acute; heads ovoidal or cylindrico-campanulate sessile agglomerate in close compact crowded balls or tufts forming a lobed conglobate leafless
**GNAPHALIUM.**

Terminal shortly branched cyme, smooth and naked, loosely cottony quite at their base only; scales adpressed subequal oblong obtuse smooth shining filmy-hyaline silvery-w. or pale straw-colour, the outer with a gr. nerve; ach. minute naked finely punctulato-granulate.—Linn. Sp. ii. 1196; Lam. Dict. ii. 750; Desf. i. 266; Broth. i. 360; Pers. ii. 420; EB. t. 1002; Sm. E. Fl. iii. 411; Buch. 194. no. 257; DC. vi. 230; Koch 400; Seub. 32; WB. ii. 312; Bab. 179; Coss. et Germ. ii. 410; Gren. et Godr. ii. 187; RFG. xvi. t. 57. f. i.; Willk. et Lange Fl. Hisp. ii. 61. —Herb. ann. Mad. reg. 1, 2, c; PS. reg. 2, rr; GD. reg. 1, rr. On moist rocks walls and in beds of ravines in Mad. everywhere below 2000 ft.; in PS. only in the Serra de Dentro; not observed in ND. or SD. At all seasons.—This well-known almost cosmopolitan pl. occurs in the Cape Verdes as well as in the Can., Mad. and Açorian archipelagos. Whole pl. more or less snow-w. and tomentose-flaccid and quickly withering. St. 6-18 in. high somewhat slender erect, at first simple or with only a few short side branches downwards, presently, or when browsed down, with several ascending side branches from the base. L. flaccid undulate 1/2-2 1/2 in. long, 2-4 lines broad, the upper more or less acute or even acuminate. Cymes silvery-straw-colour or pure-w., shortly but distinctly branched, composed of several globose tufts of densely crowded always simply ovate or ovoidal heads. Florets rather numerous all fertile varying from pale to dark y. or orange and often (especially the female) tipped with pink, blood-red or crimson. Heads 1/2-2 lines long, 1 line broad, copiously woolly quite at the base, in ft. simply ovoidal; scales finally radiant. Recept. slightly convex papulose. Pappus pure w. very fine and deciduous, rough simple. Ach. excessively minute not half a millim. long, light yellowish brown or fulvous, linear-oblong with straight sides, angular and rough with minute shining or pale points.

†† 2. G. SPATHULATUM Lam.

Herbaceous ann. thinly or loosely tomentose light-gr.; st. at first single erect mostly short with several longer stout weakly procumbent or ascending side branches from the base or crown, all mostly simple or with short side branches, leafy; 1. 1-nerved entire greenish thinly tomentose or cobwebby and almost naked or glabrescent on the upperside, oblong-spathulate or obovate, attenuated downwards into rather long or distinct petioles, the lower obtuse, the upper mostly subacute, all distinctly mucronulate; heads small lageniform, in fr. shortly cylindrico-campanulate, sessile agglomerate in dense cottony axillary tufts forming an often interrupted or irregular leafy short thickish oblong obtuse or rounded crowded simple terminal spike, each head gr. and loosely but copiously tomentose halfway up, yellowish-brown naked and shining above; scales gr. with pale yellowish or
brownish membranous tips and edges, the outer oblong subacute, the inner linear acute or acuminate and almost altogether shining naked smooth and scarious like the tips of the outer; ach. minute naked pale subpellucid straw-colour.—Lam. Dict. ii. 758 (not Burm. or Thunb.). **G. americanum** Willd. Sp. Pl. iii. 1887 (not Mill., Sw. and excl. syn. Sw., Sloane and Brown); Pers. Syn. ii. 21 (excl. syn. Sw.). **G. Pennsylvanicum** Willd. Enum. 867; DC. vi. 235; Seub. Fl. Az. 32. "**Gn. obtusifolium hortul.**" ex Lam. et DC. (not Spr. sec. DC.).—Herb. ann. Mad. reg. 1, rrr. This pl. came up first as a weed in a box of *Hoya carnosa* in my garden on the Caminho do Valle near Funchal in 1830, without any trace of its origin, soon becoming naturalized in the walks and borders. It has been lately observed in a neighbouring garden under similar circumstances by S’ J. M. Moniz. May.—Habit much like that of **G. luteo-album** L. but with the lower branches more produced at the expense of the main st. stouter, longer and more procumbent, and at once distinguished by its thinly cottony or cobwebby light-yellowish-gr. foliage. Luxuriant spec. are sometimes (as also in **G. luteo-album**) branched all the way up the main st. and 2 ft. high; but usually the main st. is from 4 to 12 in. high, and the side-shoots from its base 6–12 long. L. larger than in **G. luteo-album**, more broadly spathulate and attenuated into long distinct petioles, not amplexicaul, 1–2½ in. long, 3 or 4 to 6 or 8 lines broad; their upperside nearly naked, the underside like the st., and heads more cottony. Heads in fl. shaped like a flask or bottle with a globose gr. woolly base and naked shining pale yellowish brown or fulvous narrow neck; but in fl. or in dried ex. they become simply cylindrico-campanulate. They are not corymbos but densely aggregate in leafy cottony terminal short thick obtuse spikes or axillary tufts. Florets much fewer than in **G. luteo-album**, and paler, the outer of the palest possible straw-colour and only the 2 or 3 inner perfect fl. really y., all turning presently pale drab with a very slight tinge of red. Scales of inv. not silvery, their tips only naked and shining y.-brown. Recept. after the fr. has fallen concave or cup-shaped with the involucral scales reflexed. Pappus copious pure-w. very deciduous fine and minutely rough. Ach. excessively minute, ½ a millim. long, broader and paler than in **G. luteo-album**, shortly and thickly oblong with slightly convex sides, subobtuse at each end, like little rice-grains or ants' eggs, shining naked subpellucid very pale dull greenish straw-colour, subangular, minutely scabrous with raised points.

**G. spathulatum** Burm. (A.D. 1788–9) being a *Helichrysum* (*H. crispum* (L.) β DC.), Lamarck’s name for the present pl. (1786) takes precedence of Thunberg’s *Gn. spathulatum* (1794 or 1813) = **Leontonyx spathulatus** Less., DC., and all others.
There are two sheets of this pl. in BH. named in pencil "G. purpureum"—one, “Herb. Mill.,” in an unknown hand, the other, "Hort. Vindob. Jacq.,” by Dryander. The true G. purpureum L. (Dill. Elth. t. 109. f. 132) seems very distinct.

26. FILAGO L.

§ 1. Scales of inv. cuspidate opposite in 5 rows, not finally radiant; recept. naked filiform. (Godr.)

†1. F. MICROPODIOIDES Lange.

Loosely thickly and copiously grey-tomentose or densely woolly. St. numerous from the crown of the root decumbent or ascending, often procumbent, rarely with an erect main st., 2–3 times proliferously 2–3-fork-branched leafy; 1. linear-lanceolate or ligulate acute or subobtuse and mucronate loosely erecto-patent crowded but not imbricate or narrowing at the base, the lower only sometimes spathulate; heads small half buried in loose tomentum aggregate 10–15 together in sessile globose or hemispherical leafy involucrate very woolly tufts or glomerules in the forks or at the ends of the branches, the involucral br. or 1. numerous gr. conspicuous woolly acute or mucronate equalling or a little exceeding the tufts of heads and forming a distinct frill or coronet beneath them; scales of inv. linear-lanceolate carinately nerved and cuspidate or aristato-acuminate, woolly halfway up or more, their fine subulate or awn-like erecto-patent points naked shining pale greenish straw-colour, often partly red or crimson, finally pale brown, conspicuously prominent and produced beyond the tomentum, longer than the pappus.—Wink. et Lange Fl. Hisp. ii. 55. F. germanica Buch 195. no. 273 (not Linn.); WB. ii. 305 par- tim? (excl. syn.).—Herb. ann. Mad. reg. 2, rr; SD. reg. 2, rr; “Desertas,” S’ Moniz. Chão da Ribeira above Seixal in dry bed of the torrent; Quinta do Pico do Infante near Funchal, a weed in the garden; “Sitio do Til in Rib. Brava,” S’ Moniz. S. Desa at top. May–July.—St. numerous from the crown 4–6 in. high ascending or decumbent rarely and then only at first with an erect main st. not longer than the rest, often procumbent and forming mostly a bushy tuft branched all the way up. L crowded numerous but altogether (especially the lower) loose and scattered, those of the st. erecto-patent narrow-oblong or ligulate, the lower sometimes broader and subspathulate, all either subacute or mucronate. Heads or an- thodia about the size of those of F. canescens or F. eriocephala, Jord. Obs. t. 7. ff. A, D, suberect or indistinctly (not stellately) spreading, deeply plunged halfway up or more in tomentum, aggregate 10–15 together in hemispherical conspicuously multi-
bracteate or leafy-involucrate densely woolly glomerules, terminal or sessile in the upper 2-3-chotomies or forks of the st. upwards. Involutional br. distinct conspicuous numerous, i.e. 6-8 or 10 leafy ligulate acute or mucronate short and scarcely rising above the glomerules, but forming a distinct complete suberect or erecto-patent many-leaved coroniform ruff- or frill-like involucre to them. Scales of anthodium lax erecto-patent narrow linear-lanceolate carinate; the nerve excurrent and more or less produced into a shining naked subulate prominent awn-like point prolonged considerably above or beyond the pappus or tomentum of the heads. In the dried spec. it is impossible to discern whether the heads were originally sharply and deeply angular or otherwise.

This sp. differs strikingly from F. spathulata Presl and F. germanica L. in its much greater and looser woolliness, in its mostly bushy branchy habit and numerous ascending or decumbent st., in its smaller thickly and loosely woolly multibracteate or polyphyllous glomerules (reminding one a little of Leontopodium) with the aristate points only of the scales rising erectly out of the tomentum and surrounded with a conspicuous frill or coronet of 6-8 or 10 leafy ligulate acute woolly involucral bracts. F. germanica L. has the heads more numerous and closely packed in much larger naked spheroidal glomerules and stellately prominent all round like the spikes of a calthrop or Morgenstern and rising quite out of the tomentum at their base. In F. spathulata Presl the heads are considerably larger and more distinctly prominent than in the present pl., rising also clear out of their tomentum.

§ 2. Scales of inv. not cuspidate, all or at least the inner alternate in 3 or 4 rows, finally radiant. Recept. short dilated and flattened at top. (Godr.)

2. F. MINIMA (Sm.).

Closely adpressedly and densely snowy-tomentose; st. often dwarfish stiff slender erect or ascending single or numerous, fork-branched upwards, leafy; l. erect imbricate flat linear-lanceolate or ligulate acute; heads conoidal strongly 4-5-angular closely and adpressedly tomentose, aggregate 3-10 together in small sessile leafy-involucrate stellately radiant tufts or glomerules in the forks or at the ends of the branches, their leafy acute br. shorter than the tufts or glomerules themselves but numerous; outer scales of anthod. 5 ovate-lanceolate gr. woolly
strongly carinate, inner 5 scarious naked shining narrower linear-lanceolate acute not longer than the pappus; ach. pale oblong or elliptic frosted with glittering spherical dots or papillae.—Pers. ii. 422; "Fr. Nov. 268;" Koch 398; Gren. et Godr. ii. 193; Bab. 179; RFG. xvi. t. 55. f. i.; Willk. et Lange ii. 55. \textit{Gnaphalium minimum} Ray Syn. 181; Sm. in EB. 1157; Sm. E. Fl. iii. 417; Hook. Fl. Scot. i. 241; "Lois. Fl. Gall. ii. 226." \textit{Filago montana} DC. vi. 248; Coss. et Germ. ii. 408 (not Linn.). \textit{Gnaphalium montanum} B Lam. Enc. ii. 760. \textit{Filago arvensis} DC. vi. 248 quoad solum hab. "Madera" (not Linn.).—Herb. ann. Mad. reg. 3, cc; GD. reg. 2, rr. Mountain pastures everywhere above 3000 ft., e.g. about the Primeira Vista do Curral, up the Caminho do Meio, Pico da Silva, towards the Pico do Areeiro, &c.; highest peaks in the GD. June, July.—St. 2-6 in. high stiffly erect single or with numerous ascending side st. from the crown, each mostly fork-branched at top but often in the short mountain turf simple dwarfed and bearing only one or two confluent sessile glomerules of heads. Whole pl. adpressedly cottony greyish-w. L. numerous erect and imbricately crowded on the st. 2-3 lines long, \(\frac{1}{2}\) line broad. Heads small scarcely more than one line long conical angular pale-greenish straw-colour or brownish collected in indistinct subconfluent or (towards the ends of the branches) subspicate small glomerules, which are tomentose and surrounded by several involucral l. or leafy bracts shorter or not overtopping the glomerules themselves. Tips of the scales acute but not subulate or aristate or longer than the pappus.

Some Mad. spec. of this pl., sent by me to the late Chev. DeCandolle, wrongly ticketed "\textit{F. germanica}," and referred by him in reply \textit{in litt.} 15 Feb. 1834 to "\textit{F. montana}," were most probably his sole authority for attaching afterwards the habitat "Madera" to his \textit{F. arvensis} L. (Prodr. vi. 248)—RFG. xvi. t. 55. f. ii.; Willk. et Lange Fl. Hisp. ii. 56—a pl. not really hitherto discovered in Mad. and which is, according to Koch (ed. 2) 398 and Hartmann (Annot. Pl. Scand. Herb. Linn. pp. 140, 141), a mere form (\(\beta\ arvensis\) Hartm. = "\textit{F. montana} b.\textit{Fr. Novit. ed. 2. 267}") of \textit{F. montana} L.

No spec. of \textit{F. minima} (Sm.) exists in the Linnaean Herb., and it appears to have been quite unknown to him.

27. \textit{Xerotium} Bluff et Fing. (partim).

1. \textit{X. Gallicum} (L.).

Greyish or silvery gr. somewhat sparingly and thinly silky-tomentose; st. slender erect bushy, branched at the base and
top, branches dichotomously paniculate; linear narrow-elongate acuminate, the upper erect, lower squarrosely spreading or recurved; heads ovato-pyramidal or conoidal, prominently but obtusely 3-5-angular closely cottony nearly to the top, the tip only naked scarious and coloured, sessile in distant leafy knots of 2 or 3-5 or 6 together in all the forks or at the ends of the branches or short lateral branchlets, involucrate conspicuously with several bracteating l. much longer than themselves; outer scales of inv. 5 lanceolate gibbous at the base woolly as long as the inner which are scarious pale brown or straw-coloured, all acute or subobtuse and not longer than the pappus; inner ach, as in Filago minima (Sm.).—Bluff et Fingerh. "Fl. Germ. ii. 344. Filago gallica Linn. Sp. ii. 1312; Vill. Dauph. iii. 195; Desf. ii. 307; Broth. i. 362; Pers. ii. 422; DC. vi. 248; Koch 398; Seub. Fl. Az. 32; WB. ii. 307; Bab. 179; RFG. xvi. t. 56. f. i.; Willk. et Lange iii. 56. Gnaphalium gallicum Lam. Enc. ii. 759; EB. 2369; Seub. E. Fl. iii. 417. G. vulgare medium Moris. § 7. t. 11. f. 14.—Herb. ann. Mad. reg. 2, r. Fields and roadsides; east of the Mount Church on the brink of the Curral dos Romeiros; road to Canico above the Brazen Head; Praca behind the beach at S°a Cruz; 3 or 4 miles up the Machico valley; cornfields, S°a Anna towards Pico Ruivo; S. Vicente towards the Forno de Cal, &c. July—Sept.—At once distinguished by its long very narrow more or less squarrose l. and heads in leafy knots rather than glomerules, giving it much the habit of a Scleranthus. St. 4-6 or 8 in. high mostly repeatedly fork-branched and bushy upwards with numerous ascending side branches at the base or crown, all very slender loosely and thinly silvery-tomentose. L. about 4 or 5 lines long, scarcely half a line broad, flat, finely pointed, somewhat greener or more thinly cottony than in Filago minima. Heads inconspicuous yet rather larger (1½-1¾ line long) more swollen at the base and drawn out at the top than in that pl., with merely the tip naked and pale brown or straw-coloured and sometimes tinged with red, the rest below w. and woolly, collected in distinct subremote inconspicuous leafy knots of from 2 or 3 to rarely 7 or 8 together; the several (rarely 1 or 2) involucrating br. or l. rising conspicuously above them. Scales of inv. in 3 rows. Ach. ribless, the inner free and sprinkled with glittering dots, the outer row enclosed each in one of the middle row of involucral scales cohering round it into a hard thickened tube or pseudopericarp, without dots or pappus.

I must here earnestly invoke all botanists to unite in utterly repudiating and putting down such scandalously childish, bald and witless trickery with names as the anagrammatic formations by Cassini of Logfia, Gifola, Oglifa, Ifhoga, &c. from Fi-
Tribe XVI. *Calenduleae* Less.

The Marigold Tribe.

28. **CALENDULA** *L.*

Marigolds.

+++1. *C. officinalis* *L.* **Cuidados.** Marigold.

Herb. ann. somewhat glandular and viscous; st. stout erect stiffly and compactly bushy, thickly and closely leafy; l. crowded furry-pubescent full gr. broadly ligulate- or lanceolate-oblong acute amplexicaul mostly entire; fl. 40-50-rayed; ach. all incurved unarmed muriculato-rugose at the back, the outer shortly and broadly boat-shaped winged with smooth dilated involute borders, the inner longer linear-hornshaped subtriquetrous falcate or annular with or without beaks.—Linn. Sp. 1304; Brot. i. 399; Lam. Enc. vii. 275; Pers. ii. 492; BM. 3204; DC. vi. 451; Koch 451 (sub *C. arvensi* *L.*) ; Seub. Fl. Az. 32; Coss. et Germ. ii. 405; RFG. xv. ff. i., ii., iii.; Willk. et Lange Fl. Hisp. ii. 126. *Caltha vulgaris* Moris. iii. 13. § 6. t. 4. f. 1. —Herb. ann. Mad. reg. 1, 2, c; PS. reg. 1, c. In gardens
cult. everywhere, and naturalized here and there, especially at Seixal.—Forms a low thickly leafy compact stiffly upright bush 8-12 in. high, with short stout thickish branches and copious full-gr. slightly aromatic clammy foliage. L. 2 or 3 in. long and \( \frac{3}{4} \) in. broad, somewhat succulent and minutely pustulato-punctulate, broader and much less attenuated downwards than in the two following sp. or broadly amplexicaul, rarely with here and there a tooth. Fl. 1¼-2 in. in diam. scented, mostly bright full orange. Scales of inv. viscous linear, the inner row alternate with and narrower than the outer. Heads in fr. forming a flat level-topped disk. Ach. numerous crowded compact, of uniform regular height, the inner brown or blackish, the outer pale or straw-coloured. Varr.:

- a 1. Disk and ray uniform orange, ccc.
- a 2. Disk and ray uniform pale y., rr.
- b. Disk dark purple, ray orange, r.
- a varying also with entirely ligulate or double orange fl.

2. C. ARVENSI S L. Vaqueira.

Herb. ann.; st. somewhat slender and diffusely branched; l. scattered subremote furry-puberulous light-gr. ligulate or oblong-lanceolate remotely subdenticulate semiamplexicaul acute; fl. 20-30-rayed; ach. all incurved, the outer 5 or 6 elongate linear-falcate suberect armed or cristato-echinate with long uncinate dorsal spines and a strong inwardly projecting spine-like tooth or spur at their inner base, the next inner row of 5 or 6 unbeaked shortly and broadly boatshaped or winged with involute dilated margins and armed or unarmed at the back, the rest narrow-hornshaped or annularly falcate unbeaked and unarméd but cancellately and muricate ribbed transversely at the back in regular rows.—Ger. p. 603. f. 10; Linn. Sp. 1303; Brotn. i. 400; Lam. Enc. vii. 275; Pers. ii. 492; Buch 195. no. 271; DC. vi. 452; WB. ii. 341; Koch 451; Coss. et Germ. ii. 405; Gr. et Godr. ii. 107; RFG. xv. t. 159. f. iv.; Willk. et Lange Fl. Hisp. ii. 125. Caltha arvensis Moris. ii. 14. § 6. t. 4. f. 6. Calendula amplexifolia Reichb. in Höll's List? Hook. J. of Bot. i. 19. Herb. ann. Mad. reg. 1, 2, ccc; PS. reg. 2, 3, cc. Vineyards, cornfields, roadsides, &c. everywhere, a universal most abundant weed in and about cult. ground. Throughout the year, but chiefly March-June. —At once distinguished from C. officinalis L. by its smaller paler fewer-rayed fl. paler foliage and weaker diffusely branched habit. St. very variable in size and luxuriance, often simple and only 2 or 3 in. high yet 1- or 2-fld., scarcely ever more than 8 or 10 in. long and loosely branched, subremotely leafy. Fl. \( \frac{3}{4} \) in. in diam. pale tawny-y. The 4 or 5 outer seeds are
5 or 6 lines long including their long smooth often irregularly 2-3-forked beaks, at first strongly incurved, but opening and becoming erect as they ripen. Sometimes 2 or 3 others of the same row are shortly boatshaped and as broad as long with dilated shining parchment-like pale transparent margins, giving them a bladdery appearance. Some of those of the disk have similar but narrower and less conspicuous margins; others are simple and perfectly annular. The outer hornlike seeds are pale slaty brown or ash-colour and their dorsal spines often with bifid points.

Below 1000 ft. this pl. in spring carpets almost every piece of waste or fallow ground with its bright orange-y. fl.

3. C. maderensis DC. Vaqueira or Vacão.
Herb, subper. suffrutescent downwards, viscus; st. numerous slender elongate diffusely spreading stragglingly procumbent or decumbent; l. crowded downwards, subremote or scattered upwards, furry-puberulous, the lower oblong-spathulate much attenuated downwards obtuse, the upper ligulate or lanceolate sessile or semiamplexicaul acute, all mostly quite entire; fl. 10-20-rayed; ach. straight or slightly incurved hispid and muricate at the back, the outer partly and chiefly broadly triangular short unbeaked or shortly beaked triquetrously crest-winged (the 2 dorsal wings lacerately toothed or crest-like) and partly occasionally straight linear simple horn-like with a long sword-like beak; the inner irregular mixedly beaked or unbeaked falcate or incurved with inflexed margins but not winged, subcyclindric ribbed inside, muricate or spinoso-echinulate at the back.—DC. ! vi. 454; Novit. 539 or 17. C. maritima Lowe in Hook. J. of Bot. i. 36 (not Guss.). C. amplexifolia Reichb. in Höll's List in Ratisb. Fl. (1830) p. 382 and Hook. J. of Bot. i. 19?—Herbaceo-suffrut. subper. or at least bien. Mad. reg. 1, £•; ND. ccc; GD. reg. 1, cc; SD. reg. 1, c. Banks and cliffs along the sea-shore, Pæô de São Lourenço from the Piedade outwards. N. coast at Sta Anna, the Entrosa, S. Vicente, Pó Moniz, &c. Not seen in PS. At most seasons but chiefly from Dec. to June.—A much larger stouter pl. than C. arvensis L. with widely straggling branches spreading all round from the crown 1-2 or 3 ft. long, prostrate at first, then ascending, more and more remotely leafy upwards, hoary and tomentose whilst young with long w. clammy hairs, angular, woody and suffrutescent downwards. L. 2-3 in. long, ½-1 in. broad, densely tufted or crowded at the base of the st., pale gr., but except while young not hoary, entire or only remotely and obscurely repand-toothed. Fl. about halfway in size and colour between those of C. officinalis and C. arvensis, ¾-1 in. in diam. with fewer narrower longer and
remoter rays than either. Outer row of seeds large, all mostly triquetrously winged, the 2 dorsal angles being expanded into broad thin subfoliaceous irregularly jagged or coarsely pinnatifid-toothed flat broad crests or wings with the intermediate dorsal space shortly muricate; the 3rd inner angle or midrib inside also winged but more or less entire. The inner seeds simple subulate or slightly winged, rugoso-muricate at the back, and like the rest viscoso-glandular till ripe.

The principal crop of fl. and fr. is from Jan. to May. But these, with their branches, having died away, another set is put forth in the following autumn from the lower part of the former st.

*C. amplexifolia* Reichb., "ach. . . . externis triangularribus dorso dentatis," might possibly have been this sp., but that it is said to have been found by Mr. Höll "near the city" (Funchal), where *C. arvensis* L., otherwise omitted by him, abounds, and *C. maderensis* does not occur. In any case, however, the definition is too imperfect to warrant its quotation otherwise than as a synonym.
II. CAPITIFLORÆ. (CYNAROCEPHALÆ Vaill., Juss. &c.)

§ 1. Anthers ecaudate or awnless at the base.

Tribe XVII. SILYBEÆ.
29. Galactites.
30. Silybum.

Tribe XVIII. CARDUINEÆ.
31. Cynara.
32. Notobasis.
33. Cirsium.
34. Carduus.

Tribe XIX. CENTAURIEÆ.
35. Centaurea.
36. Microlonchus.

Tribe XX. CARTHAMEÆ.
37. Kentrophyllum.
38. Carduncellus.

§ 2. Anthers caudate or awned at the base.

Tribe XXI. CARLINEÆ.
40. Carlina.
41. Lappa.
§ 1. Anthers ecaudate or awnless at the base.

Tribe XVII. Sillybeæ Less.

29. Galactites Mchh.


The only sp.—Pers. ii. 488; DC. vi. 616; Seub. Fl. Az. 32; WB. ii. 381; Gren. et Godr. ii. 202; RFG. xv. t. 88, f. i.; Willk. et Lange Fl. Hisp. ii. 200.  Centaurœa galactites Linn. Sp. 1300; Lam. Enc. i. 677; Cav. Ic. iii. 16, t. 231; Desf. ii. 308; Brot. i. 372.  Cardoœa galactites Buch i. 194. no. 246.—Herb., ann. Mad. reg. 1, 2, 8, ccc; PS. reg. 1-4, ccc. GD. reg. 2, ccc. Cornfields, waste and cult, ground, banks, roadsides, beds of ravines and mountain pastures everywhere, a universal and abundant weed, forming a great part of the fodder collected for cattle. Apr.–June, but also partially from Febr. to Nov.—Habit entirely of a Thistle (Cardus or Cnicus).  St. ½-2 ft. high but usually 9–18 in., strongly ribbed and angular, hollow cottony erect branched upwards.  L. narrow-oblong or ligu­late cottony-w. beneath, dark gr. (especially when growing more luxuriantly in moist or rich soil), above glabrescent or cobwebby with milky veins, pinnatipartite or runcinato-pinnati­sect, the divisions toothed and finely acuminato-spinous, tri­angular-lanceolate, the st.-l. subauriculately amplexicaul and the upper more or less decurrent; the spines y. not strongly pungent.  Heads terminal solitary or 2 or 3 together, about ½-1 in. in diam. the scales subcoriaceous ovato-lanceolate pro­duced into finely acuminato-subulate or linear-cuspidate sharply pungent erecto-patent spines transversely or interlacingly cobwebby or cottony at the base. Fl. conspicuous loosely sub­radiant light purple or lilac rarely w. sweet-scented and often in the mountains perfuming the air like Lilac-fl.  Ach. small pale testaceous or light yellowish drab, with 10 darker longi­tudinal fine lines or striole, very smooth and shining as if ena­melled, 2 lines long, ¼ ñ line broad; epigynous disk with an entire raised tumid ring, crown or border enclosing an oval hollow with a central permanent large erect truncate promi­nent mamilla.

β. crinita; upper l. simple undivided nearly or quite un­armed and entire linear-elongate flagelliform produced into long narrow finely acuminate curled or recurved points.—A very singular state or var. with long linear upper and floral l. tortuously curled or dishevelledly entangled and only about
a line broad, found in cornfields about the Pia de São Lourenço (where I have also noticed it) in May 1865 by Sr Moniz.

30. Silybum Vaill.

1. S. Marianum (L.). Cardo de Sta Maria. Our Lady's, Holy, or Milk Thistle.

The only sp.—DC. i. vi. 616; Koch 458; WB. ii. 383; Coss. et Germ. ii. 388; Gren. et Godr. ii. 204; Bb. 190; RFG. xv. t. 151; Willk. et Lange Fl. Hisp. ii. 201. Cardus Marianus Linn. Sp. 1153; Desf. ii. 240; Brot. i. 341; Pers. ii. 386; EB. 976; Hook. Fl. Sc. i. 236; Sm. E. Fl. iii. 386. Carthamus maculatus Lam. Enc. i. 638, 639. Cardus Mariae Ger. 989. C. albis maculis notatus CBP. Moris. iii. 155. § 7. t. 30. f. 1. —Herb. ann. Mad. reg. 1, r; PS. reg. 3, r; GD. reg. 2, cc; SD. reg. 2, §. Roadsides and borders of fields or waste ground. Along the road from Funchal to Caniço at S. Gonçalo; Pia de S. Lourenço near the Piedade; "Pia do Pargo at the Pico das Favas," S' Moniz. PS., Pico do Concelho; GD. and SD. at top. May–June.—A smooth stout robust erect sparingly branched pl. not above 2 or 3 ft. high with very large few solitary terminal heads and handsome large broad smooth shining conspicuously milky-veined or marbled foliage. St. striate slightly cottony upwards. L. 6–12 in. long, 3–4 or 5 broad, those of the st. cordato-amplexicaul, all widely sinuato-pinnatifid waved and toothed, the teeth produced into fine short subulate stiff pungent spines. Heads light gr. globose or globosely ovate at the insertion of the ped., very large hard andformidably spinose 13–2 in. in diam. exclusive of the excessively strong and pungent spreading or recurved spines, which are about an inch long, canaliculate above, and fringed or ciliate with short spinules at the base. Scales smooth coriaceous close-pressed, the outer expanded at top into a stiff leafy triangular or ovate appendage fringed with short fine spinules and produced into the long stiff gr. spines above described. Flts. purple. Ach. large broadly and short ob-ovate-oblong, sometimes a little gibbous, 3 lines long, half as broad, abruptly dark brown or black below the ring or collar at top and streaked or lineolated upwards longitudinally with pale testaceous brown or fulvous, smooth and shining but minutely and very obsolesely rugulose transversely; the raised tumid entire ring or border of the epigynous disk with its very large central permanent conoidal obliquely incurved prominent mamilla cream-colour or pale ochraceous. Hairs of pappus shortly rough or pubescent; of recept. smooth long and copious chaffy-setaceous or flat and linear.

The poetic religious imagination of old legends, which found
saw in the milk-stained leaves of this fine thistle a memento of the Virgin Mary's Flight with the infant Saviour into Egypt.

Tribe XVIII. Carduinae Less.

31. Cynara L.

1. C. Cardunculus L. Cardo da gente.

St. normally branched with several fl., often dwarfed 1-fld.; l. sessile or semiamplexicaul not decurrent spinous pinnatifid, snowy crustaceo-tomentose beneath, smooth or glabrescent and hoary-gr. above, the lobes or segm. decurrent narrow linear-lanceolate elongate-acuminate (in the upper l. caudate or flagelliform) spinoso-pinnatifid, or toothed; outer scales of inv. coriaceous ovate or ovate-lanceolate cuspidate or acuminatospinose.—Linn. Sp. 1159; Desf. ii. 248; Broth. i. 339; Pers. ii. 384; DC. vi. 620; Koch 458; Coss. et Germ. ii. 383; Gren. et Godr. ii. 206; RFG. xv. t. 152; Willk. et Lange Fl. Hisp. ii. 180. C. sylvestris Lam. Enc. i. 277; Ger. p. 992.

3. ferocissima; densely spinose especially towards the bases of the l. and their segm.; spines long slender subulate very sharp and rigid pale brown or y. mostly 2-3-nate or fasciculate and connately combined and crowded at the base of the l. or their segm., segm. of upper l. elongate finely caudate or flagelliform; outer scales of inv. acuminato-spinous sharply punctate; st. often dwarfed and 1-3-fld.—C. hortulana Ait. ! Pers. ii. 384; Buch. 194. no. 248; Fl. Gr. t. 834; DC. vi. 620; Lowe Novit. 19 or 541; WB. ii. 384, t. 114 (descr. locupletissinia opt.).—Herb. per. Mad. reg. 1, r; PS. reg. 3, ¼. Open grassy slopes and mountain pastures, in Mad. only between Machico and Canical and onwards towards the Piedade on Pta de S. Lourenço; in PS. on most of the mountains, growing singly or sometimes gregariously in the short turf. July—Oct.—L. forming a large thick conspicuous spreading hoary grey or whitish flat thick tuft or rose, 6-12 in. long, 3-6 broad, formidably and thickly armed especially towards their base with excessively sharp fine subulate straight slender rigid woody spines often an in. long of a pale brown or y. col. From the centre rises the single often simple and 1-flld. short stout erect straight hard stiff evenly striated st. ½-1½ ft. high, hoary-tomentose, occasionally in luxuriant ex. branched and 8 or 9-flld. Heads large 2-3 in. in diam. smooth like those of the common garden Artichoke (C. Scolymus L.) but with the scales produced
into long strong cuspidate sharp spines. Fl. deep lavender or indigo-blue turning purple in drying, rarely w., with a strong fragrance like honey or the fl. of *Scabiosa atropurpurea* L. Stigmas very long (6-8 lines) exserted slender filiform distinctly separate or bifid at the tip. Ripe ach. not seen.

The main rib of the l. and even the still more bitter large strong thick and blackish roots are eaten raw by the poor half-starved shepherd boys of Caniçal and P° S°.

Nothing can be more different in aspect than the present pl. and its presumed derivative by cult., the garden-Cardoon or broad-leaved unarmed var. à DC. (BM. t. 2862, and I may add BM. t. 3241), which has the broad segm. of the l. merely feebly and inconspicuously mucronulate and the involucral scales shortly and obtusely pointed but not elongately spinose. The common garden-Artichoke (*C. Scolymus* L.) is also probably merely another cult. form of the same pl. It is occasionally cultivated in Mad.

†32. **Notobasis** Cass.

†1. **N. syriaca** (L.).

The only sp.—DC. vi. 660; WB. ii. 379; Gren. et Godr. ii. 207; Willk. et Lange Fl. Hisp. ii. 182. *Cardus syriacus* Linn. ! Sp. 1153; Lam. Enc. i. 702; Desf. ii. 245; Pers. ii. 389. *Cnicus syriacus* Brot. i. 342; Fl. Gr. t. 831. *Cirsium syriacum* Gärtn., Spr. iii. 877. *Cardus lacteus syriacus* Cam. Moris. iii. 155. § 7, t. 30. f. 5. *Acarna minor* §c. CBP. Moris. iii. 161. § 7, t. 34. f. 5. —Herb. ann. Mad. reg. 1, r. P°a de São Lourenço about the Piedade amongst cornfields in waste ground and on sunny barren slopes, as also halfway between Funchal and Canico above the Brazen Head; P°a do Pargo at the extreme point on Pico das Favas. May, June.—A fine but formidably and ferociously prickly pl. St. single 1-3 or 4 ft. high straight erect virgate simple or with only short side fl.-branches above the middle, ribbed or striated and slightly cottony or cobwebby. L. lanceolate-oblone stiff waved and sinuato-pinnatifid strongly and copiously spinous, smooth or glabrescent and shining above, bright gr. with w. milky veins and furry-cobwebby beneath; st.-l. auriculate sessile or semiamplexicaul not decurrent, the upper pinnatipartite or reduced almost to their nerves and spines, the latter very strong and pungent pale brown 2-3-nate and forked or divaricate. Heads ⅓-1 in. in diam. agglomerate 2 or 3 together at the ends of the short side branches, 3 or 4 or more crowded at top of the main st., each on its own short
ped. and furnished at the base with 2–5 spinous leafy br. longer than the tufts of heads and similar to the upper st.-l. Fl. purple rather large and handsome. Scales of the ventricose an­thod. gr. slightly cobwebby narrowly ovato-acuminate or li­near-lanceolate cuspidate with sharp but not strongly pungent spreading subrecurved points. Recept. densely villous, the hairs nearly an inch long. Pappus elegantly plumose very ca­ducous, hairs 8 or 9 lines long, dilated golden-y. and crumpled at the base. Ach. quite smooth and even, uniform plain dull dark brown not shining, obliquely obovate and gibbous at the back, compressed, 3 lines long, 2 broad, simple and obtusely rounded at top; hilum minute oblique; epigynous disk small oblique without any crown, border, or central mamilla.

The fl. are said to be sometimes w. but have not occurred so in Mad.

33. CIRSIUM Tournef., DC.

Sect. Onotrophe Cass., DC. Involucral scales of the globose or globosely ovate heads all unarmed or feebly spinulose. L. with short feeble marginal spinules.


Unarmed corymbose branched upwards; 1. sessile auricu­lato-amplexicaul all undivided broadly elliptic-oblong obtuse snowy-floccose-tomentose beneath, glabrescent and shining above, spinulos-o-ciliatae, the lower doubly serrato-crenate, the upper entire; heads erect ebracteate solitary terminal remote on long leafy floccose ped. or branches forming a wide lax remotely or somewhat few-fl. cyme, globose or hemispherical hard compact nearly naked or glabrescent; scales coloured unarmed acute shortly and feebly mucronulate woolly-ciliate only at the edges adpressed, the outer ovate or ovate-oblong, inner linear or ligulate.—Prim. p. 28. no. 48; DC. ! vi. 653. Carditus lati­folius Sol. in BH. !—Herb. per. Mad. reg. 3, cc. On moist steep banks and perpendicular rocks in the principal ravines abundantly; Rib. de São Luzia at the Waterfall, R. de Metade, de Fayal, de S. Jorge, da Bôa Ventura, Serra d’Agua under Pico Grande, &c. June–Aug.—Very distinct from its near ally C. heterophyllum (L.). Root subfasciculate, the divisions fleshy tap-shaped whitish like young parsnips several as thick as the fore finger, sweetish and not unpleasant to the taste, and when boiled firmer but resembling in taste the tubers of Jerusalem Arti­chokes (Helianthus tuberosus L.). St. single corymbose branched upwards only, 2–3 ft. high, erect round firm fistulose striated, about as thick as the little finger, hard and very tough, cottony upwards, leafy throughout, dividing upwards into mostly 3 or
4–6 or 7 simple leafy 1-fld. branches rising candelabra-like to nearly the same level. L. large ample dark or full shining gr. above, snowy cottony and powdery beneath, the lower 12 or 15 in. long and 5 or 6 broad attenuated downwards into a fleshy winged broad flattened petiole, those of the st. broadly cordato-auriculate and half amplexicaul but not decurrent, the lower with regularly and equably doubly sinuato-crenate margins fringed with soft forward-pointing short spiny setules, the upper entire. Fl. pale bright purple not unlike those of Centaurea Scabiosa L., the heads 1–1 ½ in. in diam. depressedly globose in bud, very hard and shining or naked with compactly imbricate more or less dark v. or purple obsolescently 1-nerved scales with entire floccosely woolly edges and a minute apical soft mucro. Fl. all perfect not radiant. Anthers linear with very narrow acuminate basal teeth, filam. glanduloso-pubescent. Tube of flts. long and slender swollen upwards; limb in 5 deep narrow linear stellate segm. about half the length of the upper swollen part of the tube. Style exserted long simple slender cylindric smooth, lilac upwards. Recept. not fleshy densely chaffy-setose with long silky w. soft flattened hairs. Pappus silky w. plumose in all the seeds. Ach. large compressed smooth even.

The roots of this pl. might possibly become by cultivation useful as an esculent, and would prove serviceable even in the wild pl. in times of scarcity. But they are wholly unnoticed and neglected by the country-people.

It is remarkable that, although two fair Mad. spec. from Masson (1777) of this fine and abundant pl. have long existed in the BIL, it is entirely omitted in Von Buch’s and all other lists of Mad. sp. It does not occur in either the Canaries or Açores.

34. CARDUUS L.

†1. C. TENUIFLORUS Curt.

Feebly but copiously armed or spinellous, st. and branches broadly and spinellously sinuate-winged throughout; l. decurrent broadly sinuato-pinnatifid, spinellously toothed, pubescent, dull hoary or greyish gr., cobwebby-whitish beneath, sometimes milky-veined above; heads caducous cylindric-oblong small few-fld. sessile aggregate several or mostly more than 2 or 3 together in small close terminal tufts or cymes at the ends of the branches intermixed with spinellous leafy br. shorter than themselves; scales loosely imbricate erecto-patent nearly smooth pale gr. or v.-purple with very narrow scariou edges, gradually acuminate into a finely subulate weak not

2 b 2
pungent erecto-patent spine, the inner finely acuminate not
spinous as long as or longer than the flts.; coloured limb of cor.
as long as the tube; hairs of pappus equal or simple not clavate.—Curt. Fl. Lond. vi. t. 55; EB. 412; Pers. ii. 385; Hook.
Fl. Sc. i. 290; Sm. E. Fl. iii. 385; Spr. Syst. iii. 385; DC. vi.
626 (var. α); Koch 459; Seub. Fl. Az. 33; Coss. et Germ. ii.
386; Bab. 188; Gren. et Godr. ii. 226; RFG. xv. t. 134. f. i.;
Willk. et Lange Fl. Hisp. ii. 195. C. pycnocephalus Buch!
194. no. 247; WB. ii. 377 (excl. plerisque syn.); Benth. Handb.
i. 463, f. 553 (not Linn.).—Herb. ann. Mad. and PS. reg. 1, 2,
3, ccc; not seen in any of the Desertas. Roadsides, borders of
cornfields and waste ground everywhere especially below 2000
ft., yet also very near the highest summit of Pico Grande above
5000 ft. mostly growing gregariously in beds. March—Aug.—
A low branched leafy but neither conspicuous nor strongly
armed thistle, with small cylindric fl.-heads. Foliage dull
leaden greyish rather large and copious especially at the base
of the st. which is rarely more than 1 or 2 ft. high branched
and broadly spinous-winged quite up to the top. L. broad in
proportion to their length, the lower about 6 in. long, 3 in. broad,
the lobes as broad as deep spinellously toothed, spines all fine
slender weak and feebly pungent. Heads about ½ in. long and
¾ in. broad, smooth or very slightly cobwebby, their scales spi
niform but not pungent. Flts. 10—20 varying from pale pink
or rose to purple rarely w. Scales of inv. slightly cobwebby
at the base but without any golden glands or dots. Ach. ob
long compressed 3⅓—4 mill. long, 1⅓—2⅔ broad, smooth shining
viscous, pale yellowish-drab or fulvous, finely lineolate lon
gitudinally with dusky lines, not ribbed or striate. Margin
of epig. disk prominent entire. Pappus 3 times the length of
ach.

2. C. squarrosus (DC.).

Unarmed, shortly and feebly spinellous; st. and branches
narrowly spinellously subsinuately winged throughout and cob
webby; l. decurrent undivided narrow-oblong shallowly duplic
ato-serrate and thinly and shortly ciliato-spinellous, hoary
tomentose beneath, above furfuraceo-pustulate or flocculoso
glabrescent; heads sessile agglomerate in terminal 1—2-brac
tete tufts or masses, campanulate or semiovate, smooth or
naked; scales unarmed, the outer squarrosely recurved broadly
scarios ovate or ovate-oblong strongly ribbed acute and mu
cronate or acuminate, the inner erect straight ligulate or linear
with scarios acute tips, longer than the flts., the limb of which
is equal to the tube; hairs of pappus partly clavulate.—Novit.
540 or 18. Clavena squarrosa DC. vi. 633.—Herb. ann. Mad.
reg. 3 (occasionally 1), rr. Moist rocks or shady banks in
ravines, e. g. Rib. de Sª Luzia, Rib. da Metade, Serra d'Agua,
under Pico Grande, Rib. do Inferno below the Lombo dos Pecégueiros, sea-cliff road between Seixal and S. Vicente, at the Passo d'Area, &c., everywhere sparingly. May—Aug.—A fine pl. of its tribe, rising when luxuriant to the height of 3 or 4 ft., erectly paniculately branched upwards and bearing at top a profusion of sessile fl.-heads agglomerate in large w. masses; but occasionally dwindling down from this size to a height of 6 in., with a single terminal tuft of 2 or 3 heads. L. dark full gr. above, hoary or white like the st. beneath, the lower 6–12 in. long, 2 or 3 broad, with shallow regular or equal serratures and sparingly and inconspicuously spinuloso-ciliate edges. Heads perfectly sessile in terminal tufts 1½–2 in. in diam., each ½–3 in. long and 4–6 lines broad, shining pale gr. or greenish straw-colour, the scales strongly squarrosely reflexed, quite smooth, gr. with broad pale ochraceous scarious tips and margins. Flts. pure w., shorter than the inner involucral scales, their limb as long as or a little shorter than the tube. Pappus very deciduous and copious covering the whole pl. and combining the heads into dense snowy masses; some of its hairs clavate. Ach. obovate, truncate at top, compressed obsoletely subquadrangular, 3 millim. long, 1½–1⅔ broad; smooth and shining but through the lens very obsoletely subrugulosely striolate or punctate longitudinally, pale brown or cinereous mottled or speckled with darker brown or black.

The unarmed undivided merely ciliato-serrate l., and always pure-w. fl. immediately distinguish this from the closely allied Canarian C. clavulatus Link WB. ii. 375, t. 113 (Clavena canariensis DC. vi. 633), and from C. bceocephalus Webb WB. ii. 373, t. 112. It is further distinguished from the former by the squarrosely reflexed involucral scales, and from the latter by the much larger heads and altogether greater size and stature. The specimens described by DC. l. c. "ex horto Barclayano" originated from seeds collected by me in Mad. and sent in 1828 to the Rev. M. J. Berkeley.

Tribe XIX. Centaurieae DC.

35. CENTAURRA L.

§ 1. Cheirolophus Cass. Heads ovato-globose unarmed; scales membranacea-marginate entire, apical appendage unarmed membranous not decurrent, semiorbicular or lunate and pectinately lacerate or fimbriately ciliato-palmate. Pappus setose cadaceous. Hilum naked not bearded.—

2 & 3
Shr. with entire or pinnatifid leaf, erect branches and solitary terminal purple florets.

1. C. Massoniana Lowe.

Proliferously branched erect bushy, branches woody and naked below, thickly leafy and snowy-tomentose at their ends; leaf all simple lanceolate acuminate at both ends, attenuated into and decurrent all down the petiole, very entire minutely furrow-puberulous or shortly and finely subtomentose or velvety, the upper subglabrescent; heads large on long stout naked terminal ribbed ped. thickened upwards; scales smooth horny purpurascenent with the edge or border brown and the 3–10-palmately fringed apical appendage pale brown or whitish, the cilia or laciniae flat soft flexuose erect or adpressed subequal and more than half the breadth of the scale long; florets prominently radiant purple.—Hook. Journ. of Bot. viii. 297; Seem. J. of Bot. iii. 352. C. salicifolia Sol. in BH.; Buch! 194. no. 250 (not Bieb.).—Shr. per. Mad. reg. 4, m. Perpendicular sea face of the high cliffs between Pico do Rancho and Cabo Girão; and “on high ledges and steeps above the path leading from the Allegria above S. Roque to the W. brink of the Rib. de S’ta Luzia,” F. M. Norman, Esq., R.N.; “Pico do Concelho in P.S.,” Barão do Castello de Paiva (but this last locality needs substantiation). May, June.

—A low bushy shr. 1–2 ft. high with rather light gr. foliage confined to the ends of the straight stiff woody thickly knobbed or prominently scarred and longitudinally ribbed or striate naked branches; the young leafy shoots only w. and tomentose. Leaf minutely pustulate and velvety, crowded at the ends of the branches, 2–3 in. long, 3–6 lines broad, attenuated downwards quite to the base of the petiole which is dilated into a prominent shoulder-like scar or pulvinus. Florets exserted beyond the involucre 9 or 10 lines, pink- or rose-purple, the segments linear-acuminate as long as the swollen upper part of the tube or of the whole length. Ach. 5–6½ millim. long, 2 or scarcely 2 broad, compressed narrow-oblong, a little attenuated downwards and ending in a short dimidiate laterally incurved tail or cornucopiform point, truncate at top with a short prominent chimney-like cylindrical orange-col. little tube rising in the middle of the naked epigenous disk above the incurved subcontracted margin which is
irregularly bluntly toothed or crenate by the protuberant ends of the ribs, strongly but irregularly and unequally ribbed and striated longitudinally, perfectly smooth and free from all pubescence, shining, cinereous or pale brown, minutely speckled with black. Hilum quite lateral deep and abrupt, not bearded. Pappus setiform fragile of a few brown or mostly purple very deciduous rough short unequal bristles, sometimes dimidiate, sometimes reduced to 2 or 3 or 0. Recept. densely villous or hirsute with long smooth shining flattened bristly hairs.

First found by Masson in 1776, this fine pl. escaped all researches till 1865, when it was rediscovered by a Portuguese gardener, through my directions, in the very spot indicated by its first observer (See Seeman's J. of Bot. iii. 352). It has since been found by Capt. Norman R.N. in one more locality, remote from the sea and at a higher elevation (2500–3000 ft.) above it. The Pte Sth habitat requires confirmation, resting only on the report of anonymous collectors employed by the Barão do Castello de Paiva.

Though agreeing with *Ptosimopappus* Boiss. in the caducous setiform pappus, this pl. differs from it, no less than from *Centaurea* proper, in the ribbed ach. and incurved irregularly crenate margin of the epigynous disk. Except, however, in the radiant fl. much exceeding the disk (cf. *Plectocephalus* Don), it agrees so perfectly in habit with the other *Centaurea* of the section *Cheirolophus* that it would be highly undesirable to separate it generically; and it seems rather to supply cogent arguments for the non-separation of *Ptosimopappus* also.

§ 2. *Seridia* DC. Heads ovate-oblong ovate or subglobose armed spinulosus; apical appendage of scales not decurrent, pungently palmato-spinulosus. Pappus setose persistent. Hilum naked not bearded.—*Herb. per.* Fl. purple.

†2. *Sonchifolia* L.

Subglandular-pubescent scabrous dull gr. or hoary, roots creeping; st. dwarfish diffusely 2–3-fork-branched upwards, branches divaricately spreading longer than the main st., stiff angular and partially winged; l. dull gr. shortly furry-pubescent, the lower stalked mostly irregularly or partially lyrate, those of the st. and branches auriculate amplexicaul and semidecurrent, the upper of nearly equal size narrow lanceolate-oblong sessile repandly and subequally spinelloso-denticulate; heads solitary terminal 2–3-leafy-bracteate moderately large
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47. COMPOSITACEA.

globosely ovate or ovato-conoidal; involucral apical appendages finely but pungently palmato-spinulous, spinules 5–7 subequal palmately divergent subrecurved or spreading pale yellowish or fulvous, each about the length of its own scale; disk of fl. pale or whitish.—Linn. ! Sp. 1294; Lam. Enc. i. 672; Pers. ii. 485; DC. vi. 590; Gr. et Godr. ii. 258; RFG. xv. t. 68. f. i.; Willk. et Lange Fl. Hisp. ii. 141. C. romana var. Buch ! 194. no. 249 (not C. romana L. or Desf.); Barr. Ic. t. 236?—Herb. per. Mad. reg. 2, nn. Completely naturalized amongst cornfields in one spot only of small extent along the Caniço road 3 miles out of Funchal, about the first bridge after passing the Chapel of N. S. das Neves at the bottom of the hollow immediately before arriving at the large tank above the road. May–July.—Roots per. long, scarcely as thick as a goosequill, fleshy w. simple or rarely branched, creeping or running extensively in the light arable soil much like those of the common English Thistle, Cirsium arvense (L.). St. 6–12 in. long, somewhat fragile, hard stiff angular, sparingly branched divaricately, diffusely spreading, often procumbent; branches mostly longer than the short erect main st. Whole pl. dull gr., scarcely hoary, subglandular-pubescent, harsh and substri-gose, the pubescence short but coarse or furry. Root-l. lyrate, the terminal lobe large oblong, oval or half-oval; middle st.-l. sometimes undivided, more frequently irregularly or partially subsinuately toothed, decurrent halfway down the internodes a little more on one side than the other; the upper always undivided simple equal; the edges of all waved and remotely or repandly mucranato-denticulate or sparingly beset with minute short weak (not pungent) spinules. Fl. dark dull purple, pale or whitish in the middle, from half to about an inch in diam. Heads globose or ovate-oblong, always abruptly rounded at the base, nearly smooth or only a little cottony downwards, shortly and finely but somewhat thickly spinulous, each scale being palmately tipped with 5–7 pale yellowish or fawn-col. rarely purplish spreading pungent subulate spinules of nearly equal length (3–6 millims.) and size, the middle one being scarcely longer or stronger than the rest. Ach. linear-oblong, 5 mill. long, 2 broad, subcompressed and even (not or only obsoletely ribbed or striate) but all over very finely softly and minutely hairy-puberulous, shining pale yellowish grey mottled or streaked longitudinally with olive-brown, crowned at top outside the pappus with a finely toothed rim or border, slightly attenuated downwards and bluntly hooked or dimi- diately incurved at the base below the very large conspicuous deeply incised oblique sublateral hilum. Pappus (to all the seeds) a thick tuft or pencil of very short (1–2 mill. long) unequal rough shining or glittering erect w. bristles in many rows. Recept. densely chaffy-villous; chaffs w. shining flattened-setiform.
Spec. of this now supremely rare and local Mad. pl., collected by Masson in 1777, are marked in BH. "Centavrea roman? var. 39," with "potius var. C. sonchifolia 37," written above,—the latter certainly, the former probably (as Mr. Bennett thinks) in Solander’s handwriting.

§ 3. Calcitrapa Koch (Calcitrapeae DC.). Heads ovate or ovate-oblong armed radiato-spinous; apical appendage of scales not decurrent, pungently pinnato-spinous or produced into a single pungent spine shortly 2–4 pectinato-pinnately spinulous on each side at the base. Ach. with or without pappus; hilum naked not bearded.—Herb. ann. or bien.

(a) L. not decurrent; fl. purple. (Calcitrapa Cass., DC.)

§3. C. CALCITRAPA L. Cardo de Christo.

More or less furry or cobwebby-pubescent; st. diffusely and repeatedly fork-branched low bushy straggling pale straw-colour; L. light gr. soft and flaccid, the lower pinnatipartite, middle irregularly sinuate-pinnatifidobate, uppermost linear laciniate or undivided, the divisions in all irregularly mucronulato-serrulate; heads leafy-bracteate solitary terminal or lateral and subsesile in or a little above the forks of the st. quite smooth ovoidal strongly armed with rigid very pungent stellately spreading spines; scales stiffly coriaceous dry pale nerveless, contracted at the base of the apical appendage, which is produced into a single large strong spreading or recurved pale spine longer than the heads, channelled above downwards and with 2–4 feeble slender short lateral spines on each side at the base; florets—all equal; pappus 0.—Linn. Sp. 1297; Lam. Enc. i. 673; EB. t. 125; Broth. i. 371; Pers. ii. 486; Buch 194. no. 251; Sm. E. Fl. iii. 408; DC. vi. 597; WB. ii. 361; Koch 475; Coss. et Germ. ii. 300; Bab. 187; Gren. et Godr. ii. 261; RFG. xv. t. 67. f. i.; Willk. et Lange Fl. Hisp. ii. 144.—Herb. ann. or bien. Mad. reg. 1, r. Roadside between Funchal and Caniço in several places, especially a little beyond N. S. das Neves; Sta Cruz on the beach. May, June.—A low bushy widely spreading horizontally much branched pl. growing usually in large flat masses 6–12 in. high, remarkable for its light gr. foliage, pale straw-colour or yellowish-w. divaricately forked branches, and the large fiercely pungent pale straw- or fawn-coloured spines of the fl.-heads. Roof-l. stalked, 6–8 in. long, 2–2½ broad; laciniae of upper l. long linear. Fl. rather small ¼–1 in. in diam. rose-purple. Heads about 6 lines long and 4 broad, their spines 8–12 lines long. "Ach. small obovate smooth shining pale or whitish spotted with brown."
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47. COMPOSITACEE.

(b) L. decurrent; fl. y. (Mesocentron DC.)

4. C. melitensis L.  Beija mão.

Harshly furry or cobwebby-pubescent subtrigose canescent; st. erect or diffuse straight elongate narrow-winged suberectly fork-branched; l. wavy strigosesely hoary-pubescent, the radical lyrato-pinnatifid, the st.-l. linear-oblong or linear, irregularly repand-toothed or entire sessile decurrent or partly decurrent, all except the uppermost obtuse; heads rather small leafy-bracteate or naked terminal or lateral solitary or aggregate at the ends of the branches, globose or ovato-globose, naked or slightly cobwebby; scales with a fine sharp slender spreading or recurved terminal spine channelled inside at its base and pectinately pinnate on each side with 2 or 3 lateral remote shorter spinules; fl. equal glandulous; pappus setose dirty w. or fawn-colour.—C. melitensis WB. ii. 358; Gren. et Godr. ii. 262; Willk. et Lange ii. 145; J. A. Schm. Fl. Verd. 201. C. apula Desf. ii. 300. Varr. or forms:—

a. conferta WB. i. c. 360; Webb Spic. Gorg. 143; J. A. Schm. i. c. Heads geminate or clustered and crowded. C. melitensis Linn. ! Sp. 1297; Lam. Dict. i. 674. no. 62 (excl. var. β); Pers. ii. 486. no. 86; Spr. Syst. iii. 406; Seub. Fl. Az. 32; Coss. et Germ. ii. 391; RFG. xv. t. 65. f. 1. Jacca melitensis, &c., Bocc. Sic. 65, t. 35; Moris. Hist. iii. 145. § 7, t. 28. f. 28 (very bad, copied from Boccone). C. apula Desf. i. c.; DC. vi. 593. no. 151 (not Lam., Pers.).

β. vulgaris WB. i. c. 360; heads solitary and remote or distinct. C. apula Lam. Dict. i. 674. no. 61; Pers. ii. 486. no. 85; Spr. Syst. iii. 407. C. melitensis Smith! in Linn. Trans. ii. 238; Fl. Gr. t. 909; DC. vi. 593. no. 150 (not Linn.). C. lyrata Pers. ii. 486. no. 94 (ob capitula "solitaria" dicta, incaute a cl. DC. ad C. apulam suam citata). C. solstitialis Buch! 194. no. 252 (not Linn.). Merely a more developed form or advanced stage of a.—Herb. ann. Mad. reg. 1, 2, cc; PS. reg. 2, 3, cc; GD. reg. 2, r or ½; SD. reg. 2, ½. Cornfields, waste rocky ground, sunny banks and walls about Funchal and on the S. coast generally, as in PS. everywhere in chiefly maritime or hot dry situations, and sometimes troublesome from its fine sharp involucral spines. Less common in the north of Mad. March-Sept.—The two forms above indicated run too much together to be properly distinguishable, and are here only recognized for the more clear arrangement of the syn. Still, in Mad., β is by far the commonest. Root mostly simple vertical. St. 1-3 ft. high, stragglingly branched from the base, stiff hard slender like the spreading branches. Whole pl. hoary or greyish gr. scabrous glandular-pubescent or subviscoso-furry and here and there cottony or cobwebby. L. flaccid waved, the
radical lyrate, lobes of all but the uppermost obtuse. Heads 3—4 lines in diam. 5 or 6 lines long, scales light gr., their spines brown or dark purple (atropurpureous) and 2—3 lines long, very slender but pungent. Fl. deep lemon-y., protruded in a small pencil-like tuft from the contracted tips of the heads, often abortive. Ach. compressed 1/5 in. long, shining grey, absolutely multistriolate and softly hairy-puberulous, dimidiate contracted and incurved into a cornucopiform pale crook at the base to form the large deeply incised hilum, the pale narrow rim or border at top outside the pappus entire. Pappus about 1/ length of ach. in several rows, outer rows very short ovate or ligulate, inner setiform but flattened.

I received some time ago from my ever active friend the Barão do Castello de Paiva spec. of 
Centaurea maculosa Lam. Dict. i. 669; DC. vi. 583; Koch 474; Jord. Obs. v. 61, t. 4. f. d; Gren. et Godr. ii. 254; RFG. xv. t. 48. ff. i., ii.; C. paniculata Jacq. Austr. iv. 10, t. 320 (not Linn.), a common S. of Europe sp. with black-tipped pectinato-ciliate unarmed invol. scales (§ Acrolophus Cass.), which he supposed he had once met with on landing "somewhere between Sª Cruz and Machico his way to Caniçal in June or July 1858 or 1859." This now seems however to have been a mistake, arising from some accidental mixture or confusion of spec.

†36. Micronlonchus DC.

†1. M. Salmanticus (L.).

St. erect widely and remotely divergently fork-branched, branches stiff slender elongate naked ultimately 1-fld.; I. chiefly radical runcinato-pinnatifid in a flat rose or star, withering before inflorescence, upper linear toothed or entire, reduced upwards to mere br., all mucronately toothed or acuminate aristate; heads terminal solitary globoselly ovate or conico-lageniform, very hard and compact, quite smooth and naked, unarmed; scales very even smooth punctate finely ciliate, mostly tipped with a minute very short caducous spreading or reflexed setule or spinule.—DC. vi. 563; Webb It. Hisp. 33; Gren. et Godr. ii. 264; RFG. xv. t. 19. M. Clusii Spach, Willk. et Lange Fl. Hisp. ii. 168. Centaurea salmantica Linn. Sp. 1299; Jacq. Hort. Vindob. t. 64; Lam. Dict. i. 676; Desf. ii. 303; Broth. i. 372; Pers. ii. 488. Jacea major &c. Moris. Hist. iii. § 7, t. 26. f. 14.—Herb. per. Mad. reg. 1, r (PS. ?, on rocky summit of Pico d’Anna Ferreira, not in fl.). Roadside and dry barren sunny banks in a red clay soil all the way from about a mile on the Funchal side of Caniço nearly to Machico, especially above Caniço and on the Carreira de Sª Catarina
beyond Sª Cruz. (The PS. pl. is not quite certain, having been found in May with root-leaves only.) June—Aug.—
Pl. 2–4 ft. high growing dispersedly or solitary; sparingly and stragglingly branched with a tall erect main stem and long slender angular stiffly divergent erecto-patent mostly undivided 1-fld. side branches, inconspicuously leafy, naked and quite smooth upwards. Root not creeping simple fleshy large strong long and thick black or blackish. Root-l. lyrate or runcinate (rarely toothed only or entire) 3 or 4 in. long and 1 in. broad, hoary dull gr., subviscid furry-pubescent; the upper smooth, gradually reduced upwards to inconspicuous linear toothed or entire br. St. smooth erect, soon branching into several very long slender straight divergent spreading or straggling smooth 1-fl. ped. clothed with short linear br. a good way up. Fl. buds depresso-spheroidal. Fl. rather handsome and conspicuous on long naked terminal ped., bright gay purple or rose-lilac, about an inch in diam. Scales very closely compressed bright gr. tipped and edged with dark purple and with or without a pale brown very short inconspicuous caducous not pungent spinule at the tip; forming singularly hard neat-looking compact or solid heads about 6–8 lines long and 5 or 6 in diam. Ach. oblong compressed smooth elegantly ribbed longitudinally and punctato-rugulose between the ribs or striae, dark brown streaked or mottled with pale drab; hilum with a prominent callous ivory-like timid rim or border. Outer pappus of many short rough simple unequal pale brownish seta?; inner concrete into a ring with one side produced into an erect narrow-acuminate scale as long as or longer than the outer pappus. Recept. densely shaggy with smooth pale brownish w. hairs.

†Tribe XX. *Carthameae DC.*

†37. *Kentrophillum* Neck.

†1. *K. lanatum* (L.).

Ann. strongly and sharply spinous glandular-pubescent cobwebby and viscid; st. erect stiff simple virgate subimbricately leafy corymbose and proliferously branched at top; 1. spinoso-pinnatifid, the radical lyrato-pinnatipartite, the st.-l. approximate strongly nerved rigid subcordato-lanceolate amplexicaul acuminate spinoso-cuspidate and pectinately spinous-gashed or toothed; heads rather large solitary terminal proliferously corymbose radiately leafy-spinous; scales cobwebby pale gr. or whitish nerveless coriaceous, the outer with a long gr. leaf-like spreading ensiform pungently acuminato-cuspidate and pectinately ciliato-spinous rigid apical appendage which is reduced in the oblong-lanceolate inner scales to a short cuspidate
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discoloured tip; fl. lemon‐y.; inner (erecto‐connivent) row of pappus only $\frac{1}{4}$ or $\frac{1}{3}$ the length of the outer (spreading) rows.—DC. vi. 610; Koch 408; Coss. et Germ. ii. 393; Gren. et Godr. ii. 205; Willk. et Lange ii. 134. Carthamus lanatus Linn. Sp. 1163; Vill. Dauph. iii. 36; Lam. Dict. i. 637; Pers. ii. 380; Buch! 194. no. 242; BM. t. 2142; Fl. Gr. t. 841. Carduus lanatus Brot. ii. 342. Centaurea lanata Spr. Syst. iii. 408. Carduncellus lanatus RFG. xv. t. 15. f. ii. Carduus lanatus &c. Moris. Hist. iii. 160. § 7, t. 34. f. 2.—Herb. ann. Mad. reg. 1, 2, cc; PS. reg. 2, rr. Roadsides, borders of cornfields and barren sunny places general in the S. of Mad., less frequent in the N. In PS. only in the Serra de Dentro. Not found in the Desertas. May–Aug.—A thistle‐like sharply spinous dull‐greyish or hoary‐gr. more or less cobwebby and clammy rarely subglabrescent pl., giving out whilst young when gently brushed or drawn through the hand a fragrance like that of Fraxinella (Dictamnus Fraxinella Pers.). St. 1–2 ft. high pale straw‐colour or whitish copiously longitudinally cobwebby from leaf to leaf, shortly proliferously branched at top only, hard stiff straight closely and regularly leafy throughout. Root‐l. radiant 4–6 in. long, 1–2 broad, soon disappearing; st‐l. 1 $\frac{1}{4}$–2 in. long, very regular in size, shape and distance, very hard and stiff erecto‐patent semiamplexicaul and subcaudate but not auricled or decurrent at the base. Heads $\frac{1}{2}$–1 in. in diam. ovato‐globose pale gr. with a dark brown collar at the much contracted tip beneath the florets, densely cobwebby, formidably armed with the erecto‐patent acuminate‐cuspidate and spinoso‐pectinate stiff leafy gr. apical appendages of the outer scales, which are an inch long, resembling the upper st‐l. into which they gradually blend or pass; inner scales with gradually shorter and simpler similar appendages, and the innermost with merely a brown or atropurpureous tip forming a dark ring or collar at the base of the tuft of florets. Fl. bright lemon‐y., but rather small and inconspicuous with few radiant florets contracted into a small tuft or pencil, their tube marked with 5 dark or black prominent fine hair‐like lines or veins forked at top and alternate with the segments. Filam. with a tuft of hairs a little below their top. Stigmas concrete, Ach. turbinately tetragonal large short thick subgibbous 2–3 lines long, 1$\frac{1}{4}$–2 broad, truncate at top strongly 4‐angular and coarsely rugose, the angles prominent and produced at top into 4 or 3 tooth‐like shoulders or wings which are pale or whitish, the rest being all deep shining greyish brown or black. The outer or dorsal tooth or shoulder is often obsolete or wanting. Hilum shallow pale whitish round sublateral. Pappus 0 in ach. of outer row; in the rest very large copious and conspicuous of a shining pale drab‐brown or fawn‐colour with a peculiar silky lustre, 3–4 or 4$\frac{1}{2}$ lines long, very unequal, the outer
rows imbricately shorter truncate, the inner longer acuminate, all erecto-patent flat ligulate or linear with the edges very minutely ciliato-serrulate; innermost row very short pale or whitish 2 millim. or \( \frac{3}{4} \) line long erect and connivent into a little central cone one line high. Recept. conic densely hirsute with shining pale or whitish linear acuminate flat chaffy hairs a little longer than the ach. which differ much from M.M. Grenier and Godron's description of them in their pl.

**†38. Carduncellus Adans.**

†1. *C. caeruleus* (L.).

Unarmed or feebly spinellous slightly cobwebby and more or less furry-pubescent; st. erect or ascending mostly simple 1-fld. leafy; l. shining full gr. often glabrescent stiff and coriaceous strongly nervèd mostly undivided sharply and unequally spinuloso-subpinnatifid or inciso-serrate, the lower oblong-oval or elliptic stalked, the upper oblong-lanceolate sessile amplexicaul; heads large solitary globosely ovate or ovoidal bracteate by the stiff gr. foliaceous erecto-patent sharply mucronatopungent and spinuloso-serrate reticulately nervèd apical appendages of the lowest one or two rows of the invol. scales resembling the upper st.-l.; the inner scales pale brown or straw-col. oblong or ligulate hard coriaceous parallelly many-nerved with a rounded-spathulate or lunate dark brown scarios pectinately fringed or lacerately toothed or ciliate apical appendage; fl. blue; erecto-connivent inner row of pappus not less than half the length of the outer rows.—DC. vi. 615; Willk. et Lange ii. 135. *Cardhamus caeruleus* Linn. Sp. (ed. 1) 830; Lam. Dict. i. 638; WB. ii. 368. *Carduus caeruleus* Brot. i. 342. *Onobroma caeruleum* Spr. Syst. iii. 392. *Kentrophyllum caeruleum* Gren. et Godr. ii. 204. —Forms or varr.:—

a. *dentatus* DC. l. c.; l. undivided inciso-serrate. *Cardhamus caeruleus* Linn. Sp. (ed. 2) 1163; Desf. ii. 256; Pers. ii. 381. no. 18; BM. t. 2293; Buch 1. 194. no. 244; WB. ! l. c.; Fl. Gr. t. 843. *Carduus Cnici facie* &c. Moris. Hist. iii. § 7, t. 33. f. 18 and t. 34. f. 19.


Herb. per. Mad. reg. 1, 2, r; PS. reg. 2, 3. Waste rocky places amongst cornfields and by roadsides at S. Martinho, in the Loo fields near Funchal, Carreira de S"a Catarina between S"a Cruz and Machico &c. in strong red clay soil; Pto S"a in cornfields towards the Fonte d'Arêa, &c. more general. May-
July.—The two varr. are merely transient forms or states, running into each other, and not worth distinguishing except to make clear the synonymy.—Root or rhizome stout strong hard and woody dark brown or blackish divided into several heads at the crown. St. 1 or several mostly simple straight about 1 ft. high striate or angular hard stiff tough and leafy all the way up, bearing a single handsome middle-sized lavender-b. terminal fl. L. rather stiff and rigid especially the upper, their serratures all tipped with a weak or scarcely pungent spine or mucro, the lower 4 or 5 in. long, 1½ broad, the st.-l. gradually smaller and broadly amplexicaul, not decurrent. Heads ½—1½ in. in diam. mostly furry-pubescent; their lowest one or two rows of scales almost entirely transformed into 10 or 12 bract-like l. resembling the upper st.-l. stiff pungent and anastomosely nerves or veined; the inner parallelly many-nerved with a dark purplish brown or chestnut flexible fimbriate apical appendage. Fl. with a tuft of hairs quite at top, not below it as in Kentroph. lanatum. Tube of florets with 5 black hair-like lines, forking at top. Recept. villous.

†††39. CARTHAMUS L.

†††1. C. Tinctorius L. Bastard Saffron. Açafraão or Açafraão.

Nearly or quite smooth; l. ovate-lanceolate, the upper and especially the floral spinelloso-ciliate or serrulate, the spinules very short and feeble; heads large corymbose terminal solitary multibracteate with the gr. leaf-like spreading apical appendages of the outer 4–6 rows of scales; ach. large w. irregularly tetragonal.—Linn. Sp. 1162; Lam. Dict. i. 637, Ill. t. 661. f. 3; Brot. i. 345; Pers. ii. 380; Buch 194. no. 241; DC. vi. 612; WB. ii. 304; Koch 467; RFG. xv. t. 15. f. 1.—Herb. ann. Mad. reg. 1, 2, r; PS. reg. 2, ½. In or about cottage gardens in Mad. cult., or subspontaneously in waste ground in vineyards about Funchal; in PS. more generally cult. and sometimes semi-naturalized in cornfields, as beyond Calheta &c. April–June.

—St. 2–4 ft. high erect straight virgate branched corymbose upwards only, hard stiff rounded pale straw-col. or whitish. L. dark full gr. shining, nearly or quite smooth like the whole pl., 2–4 in. long, 1½ broad, finely and irregularly but feebly and not pungently spinelloso-serrate. Heads 1–1½ in. in diam. depressed-globose copiously leafy-bracteate and like cabbage-heads or cabbage-roses, the leafy appendages to the outer scales of the inv. being as large as and perfectly resembling the upper st.-l. into which they blend. Fl. handsome 1 in. in diam. bright more or less deep orange-col., the tube of the florets with 5 black hair-like lines forking at top. Ach. 4 lines long, 2–2½ broad, smooth shining subgibbous with the dorsal angle c 2

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The dried florets are used for colouring or flavouring soups and other dishes. The seeds or achenes are said to be a favourite food of Parrots or Parakeets.

§ 2. Anthers caudate or awned at the base.

Tribe XXI. Carlineae Cass. (partly).

40. Carlina Tournef.


1. C. salicifolia (L. fil.).

Shr.; l. linear-lanceolate or lanceolate coriaceous flat with partially or narrowly and faintly revolute edges, densely and closely snowy-tomentose beneath, glabrescent smooth and shining above, finely and more or less regularly setaceo-ciliate or spinelloso-serrulate especially downwards and at their junction with the st., rarely unarmed and entire; br. or apical appendages of outer invol. scales leafy spreading ciliato-spinellous, mostly longer than the shortly radiant recurved scariosus dark-col. inner; fl. terminal solitary subcorymbosely or scattered.—WB. ii. 344. Carthamus integrifolius So1. ! in BH.; Buch! 194. no. 243.—Varr. or forms:

a. spinellosa; l. and fl. bracts or appendages more or less copiously and conspicuously setaceo-ciliate or spinelloso-serrulate linear-lanceolate acuminato-cuspidate.—Carlina salicifolia DC. vi. 548; WB. i. c. t. 115. Carlouzia salicifolia "Mchn. Meth. 225;" DC. (Recueil de Mém. 1818) Diss. v. Obs. sur les Compos. ii. 52, t. 11; Jacq. fil. Eclog. i. 12, t. 5; Spr. Syst. iii. 379. Carthamus salicifolius Pers. ii. 381. Carthamus integrifolius β and γ So1. ! in BH.

Subv. 1. Heads corymbose numerous.—Carlina salicifolia β corymbosa DC. i. c.

Subv. 2. Heads few scattered. WB. i. c. t. 115.

Shr. per. Mad. reg. 3 and upper part of 2, cc. In all the principal ravines on high perpendicular rocks or cliffs everywhere. June–Aug.—A straggling shr. 2–4 ft. high subproliferously or corymbosely branched with long spreading ascending or subpendent stiff woody somewhat brittle flaunting straggling crooked or subtortuous branches, naked below, leafy and snowy tomentose towards the ends. L. snowy-w. beneath, dark shining gr. above, crowded or tufted towards the ends of
the branches, the old ones long-persistent in decay beneath
the new, 2–3 or 4 in. long and \( \frac{4}{3} \)–\( \frac{5}{3} \) broad but extremely vari-
able in breadth and in regularity of the ciliate serratures, at-
tenuate at both ends, sessile or amplexicaul and copiously
setoso-ciliate or fringed at their junction with the st. Heads
discoidal or inconspicuously radiant hemispherical, 1 in. in diam.,
but when corymbose often smaller (\( \frac{2}{3} \) in.), sometimes scat-
tered singly or dispersed and few, sometimes corymbosely
grouped together. Fl. dull yellowish w. or straw-col. Outer
leafy br. or apical appendages resembling the upper l. and very
variable in size and proportionate length, but mostly quite
overtopping the heads and finely acuminate. Inner scales of
inv. linear-ligulate radiant recurved dark discoloured steelly-
blackish coffee-brown or atropurpureous upwards, more or less
produced into finely acuminate paler points. Ach. small brown
oblong obconic, 3 millims. long, 1 broad, thickly and erecto-
adpressedly shining-hirsute. Pappus pale brown. Setaceous
chaffs of recept. pale brown nearly as long as the florets per-
sistent and forming a flat dense cushion-like disk, linear-ob-
long, deep-cleft into many parallel linear straight segments
which are often tipped with red.

The two subvarr. pass into each other by innumerable in-
termediate forms.

\( \beta. \text{ inermis} \); like \( \alpha \), but with the l. and fl. br. or appendages
quite entire and without or nearly without marginal setaceous
cilia except a few sometimes quite at the base.—Carthamus
salicifolius Linn. fil. "Suppl. 350;" Lam. Dict. i. 640. C. in-
tegrifolius \( \alpha \), Sol. ! in BH.—Mad. reg. 2, rrr. Only on the Pico
do llancho beyond Camera de Lobos. June.—L. 2–3 in. long,
\( \frac{4}{3} \)–\( \frac{5}{3} \) in. broad. Scarcely worth distinguishing except for the
clear adjustment of the synonyms.

\( \gamma. \text{ latifolia} \); l. and fl. br. quite entire and without setaceous
cilia except a few on each side at the base, shortly lanceolate
or subspathately oblongo-lanceolate simply acute and cuspi-
date or subobtuse and mucronate.—PS. reg. 1, rr; SD. reg.
2, rr. In PS. near the edge of the sea-cliff above the Fonte
d'Aréa, at Pao dos Frades, and on rocks at the mouth of the
Serra de Dentro; in SD. at the top of the island: in the two
former cases in or near fossiliferous sand-deposits. May–July.
—A lower stouter more dwarfish bushy and upright shr.
than \( \alpha \), with Phillyrea-like l. 1–2 in. long, \( \frac{4}{3} \)–\( \frac{5}{3} \) in. broad, dark
bright shining gr. above and snowy-tomentose beneath. The
heads are smaller and their br. or apical appendages not finely
acuminate but broader shorter more conspicuous and numer-
ous than in \( \alpha \), though not perhaps more so than in \( \beta \), giving
the heads somewhat of a rose-like appearance. From these
2 c 3
striking differences of aspect and habit, I have been often tempted to consider it distinct specifically; but never having seen it with the fl. quite developed, and considering especially the extreme variability of $a$ and $\beta$ in almost every character of foliage and inflorescence, I cannot find sufficient warrant for distinguishing it more than varietally.

41. Lappa Tournef.

(Arctium Linn., Vill., Willld.)

Burdock.

1. L. MINOR (Schk.) DC. Teijeira, Tinjeira, Bardana or Murruca.

Light gr. slightly viscoso-pubescent; l. stalked broadly oval or oblong softly repando-mucronulato-denticulate obtuse, the lower suborbicular cordate, upper cuneate at the base; heads stalked in terminal and axillary oblong rac., scarcely cobwebby; scales of inv. all erecto-patent linear-acuminata, triquetro-subulate hooked and purple at the tip, sub serrulate or slightly glanduloso-ciliate only at the base, the inner as long as and otherwise resembling the outer, not radiant, all shorter than the fl.; ach. slightly rugulose transversely at the base, border of epigynous disk even.—Arctium minus "Schk. Handb. 3. t. 227;" Bab. 171. Lappa minor DC. vi. 661; Koch 463; Gren. et Godr. ii. 280; RFG. xv. t. 80. f. i.; Willk. et Lange ii. 176. Lappa glabra a Lam. Dict. i. 377. Lappa communis var. a minor Coss. et Germ. ii. 389. Arctium Lappa Curt. Fl. Lond. iv. t. 238; EB. t. 1228 (excl. section of head at lower left-hand corner); Buch 194. no. 245 (not Linn.).—Herb. bien. Mad., reg. 3 and upper part of 2, §. Dry wooded ravines or shady places; Rib. Frio, da Metade, de S. Jorge, de S. Vicente, da Janella, da Seixal, da Serra d'Agua, de Machico, at S. Antô da Serra about the church, above Pô da Cruz &c. July—Sept.—A large tall pl. with ample foliage, but altogether smaller and less coarse or cumbrous than the common English Burdock (L. major (Schk.) = Arctium Lappa a Linn.) and with comparatively conspicuous gay bright purple fl. St. erect not widely branched strong hard stiff and tough ribbed or striate mostly purplish 2—4 ft. high. L. 4—10 or 12 in. long or broad, smooth and light or fresh gr. above, paler and subpubescent but scarcely cottony beneath, the lower 3-ribbed and cordate or cut away on each side to the 2 side ribs as in Scrophularia Scorodonia L. Heads $\frac{1}{4}$—$\frac{3}{8}$ in. in diam. stalked subremote as it were in leafy oblong rac. dull purple about the size of hazel-nuts very slightly and sparingly arachnoidal, slightly viscous, not excessively prehensile. Florets conspicuous bright rose-purple, the
stigmas and anthers exserted beyond the subulate hooked scales, w. or tinged with very pale bluish purple and contrasting brightly with the florets. Scales of inv. flattened and gr. below, triquetro-subulate and dull purple towards the hooked brown tip, all equally erecto-patent (not radiant) and the innermost hooked or prehensile like the outer. Ach. 5–6 mill. long, 2–3 broad, oblong or cuneate-oblong dark brown speckled with black, much compressed many-ribbed, a little rugose at the base. Pappus pale brown or tawny short bristly rough not half the length of ach.

The whole pl. is somewhat viscous but scentless and only slightly bitter. A decoction of it is used for cutaneous complaints in lieu of Sarsaparilla.
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**Suborder III. Liguliflorae DC. (Cichoraceae Vaill., Juss. &c.)**

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<td>Crepideae</td>
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†Tribe XXII. Scolyneeæ Less.

†42. Scolymus L.

†1. S. maculatus L. Tiarro, Pºo Sº.

Ann. nearly or quite smooth rigidly and strongly spinous; st. erect straight shortly and almost horizontally branched at top, broadly 3–5-spinous-winged throughout; the wings triangularly spinous-toothed; l. oblong deltoidally or triangularly sinuate-lobed or pinnatifid strongly and copiously spinous-toothed and serrate with a thickened cartilaginous pale border and strong cartilaginous w. nerves and spines, very stiff and coriaceous, milky-veined and mottled, the st.-l. broadly decurrent; heads small terminal aggregate in twos or threes or solitary at the ends of the branches, nearly or quite sessile and closely involucrate with mostly 5 large leafy coriaceo-rigid pectinately spinous erecto-connivent br. with a thickened cartilaginous pale border like the l.; scales of inv. all membranous simple lanceolate feebly cuspidate unarmed entire; fl. deep golden or orange-y., tube of the florets clothed with fine black woolly hairs, anthers purplish-brown; ach. broadly winged and dimidiately crowned at top by their close-adhering membranous or chaffy coat; pappus 0.—Linn. Sp. 1143; Desf. ii. 242; Prot. i. 335; Lam. Dict. vii. 12, ill. t. 659. f. 2; Pers. ii. 380; DC. vii. 75; WB. ii. 387; Koch 477; Fl. Gr. t. 824; Gren. et Godr. ii. 390; RFG. xix. t. 2. f. i.; Willk. et Lange ii. 203. S. hispanicus Buchl. no. 240; DC. ! l. c. 76 and Willk. et Lange i. c. 204 quoad pl. Mad. (not Linn.).—Herb. ann. Mad. reg. 1, 5; PS. reg. 2, rr. Loo fields and towards the Praia abundant as elsewhere here and there along the S. coast, on Pºa de S. Lourenço, &c.; in PS. in cornfields and sunny barren places more rare, and small or dwarfish; N. ascent of Pico De-baixo, Serra or Rib. de Fora, &c. May–July.—A striking somewhat handsome thistle-like pl. with its milky-veined or marbled rigid harshly prickly foliage and leafy-bracteate but not conspicuous y. fl. St. hard stiffly erect w. or pale straw-col. broadly and equably spinous-winged uninterruptedly from top to bottom, mostly subpubescent downwards, 1–3 ft. high, rarely branched except at top, the branches short and spreading. Stripped of its wings the st. is peculiarly round and even. L. 4 or 5 in. long, 1 or 2 broad, remarkably rigid and stiffly and strongly spinous, the lobes or divisions deltoidal; light or yellowish gr. varied with milky nerves and sometimes diffuse spots or blotches, with their decurrent wings the same. Heads $\frac{1}{4}$ in. in diam. globosely ovate sessile and embosomed in their
leaf-like br. Scales of inv. membranous feebly spinescent or cuspidate gr. with pale or whitish margins. Fl. not conspicuous with few small florets contracted into a tuft or pencil, all narrowly and shortly ligulate with their tube clothed upwards for the greater part of its length with dark brown or black fine short woolly hairs. Ach. with its coat small obcompressed or flattened, scale-like or resembling a pod or silicle of Lepidium or Thlaspi, oblong or obovate-oblong rounded or subtruncate at top, 5 millim. long, 3–3½ broad, close-packed in a compact shortly conoidal mass, the inner only deciduous, the outer persistent and concretes on the alveolate shortly pyramidal obtuse recept. by their chaffy coat or pseudo-pericarp; stripped of this they are pale grey, smooth and even, narrow-pear-shaped obcompressedly flattened subtriquetrous dorsally convex, their ventral face broad and flat, coated and broadly winged all round and at top with the closely adhering w. or pale straw-col. pericarp-like chaff completely enclosing it except a small V-like opening on the shining inner face at top, in which appears its scar-like apex or epigynous disk. Pappus 0 except a minute entire rim or border round the exposed knob-like epig. disk.

Brotero’s description of this pl. is most full and accurate, especially as to the ach. or fr.

Sc. hispanicus L. is common in Tenerife, especially between Sta. Cruz and Laguna, but it has not occurred in Mad., though by some mistake DC. has referred on my authority to it instead of to S. maculatus, the only Mad. Scolymus ever found in Mad. (See Proc. Linn. Soc. v. no. 17, p. 40.) It is at once distinguished by its much less strongly or hard-spined and nerved l., larger orange or darker y. fl. sessile or on short axillary side branchlets all the way up the often very tall (3–6 ft.) mostly simple virgate not corymbosely branched st., shortly membranaceo-coroniform 2-setose pappus, &c.

Scolymus is certainly allied by its pseudopericarpiate ach. to Xanthium, but not more than Lappa is by habit, and, indeed, allied by its ach. but a degree or two more than Xerotium, Micropus &c., or even Hedynnois, Hyoseris, Rhoagadiolus, Thrincia &c. The former relation however explains perhaps its being placed by Grenier and Godron at the end of Compositaceae immediately before Xanthium. But Lappa has equal and perhaps better claims to be so placed. And certainly in point of habit Scolymus ought not to be far separated from Carlina, C. thunianus &c., and comes in very badly between Crepideae (Crepis, Hieracium, Andryla &c.) and Ambrosiaceae (Xanthium, Ambrosia).
Tribe XXIII. Hyoserideae Gren.

†43. CICHORIUM L.


t. C. divaricatum Schousb. Almeirão, Almeirante or Al-


mirante, PS.

Furry-glabrescent subaphyllous; st. mostly slanting often
flexuous very widely divaricately branched from the base,
branches horizontally straggling or deflexed stiff naked even or
very obsoletely striate; root-l. runcinate or lyrato-runcinate
and finely sinuato-denticulate, stem-l. inconspicuous small bract-
like shortly cordate-acuminate sessile or semiamplexicaul en-
tire or toothed only at the base; fl. axillary partly sessile partly
staked on long wide-spreading straight or decurvato-ascending
branch-like fistulose subclavate stalks or ped., often gemi-
nate, one sessile, one stalked; scales of outer inv. broadly ob-
long or oval obtuse mucronate, of inner linear-ligulate sub-
obtuse, all simply setoso- or piloso-ciliate not glanduliferous;
“pappus-crown of numerous distinct chaffs \( \frac{3}{4} \) the length of
the plain or even (not transversely lineolate) ach.”—“Schousb.
Maroc. 197; Willd. iii. 1609; Guss. Sic. ii. 427;” Poir. Suppl.
i. 229; Pers. ii. 379; Gren. et Godr. ii. 237; Willk. et Lange
ii. 205; RFG. xix. t. 6. f. iii. C. Intybus Buch! 194. no.
239 (not Linn.). C. Intybus \( \beta \) divaricatum DC. vii. 84. C.


Endivia \( \beta \) divaricata WB. ii. 391.—Herb. ann. Mad. reg. 1,
2, c; PS. reg. 1, 2, ccc; not seen in the Desertas. Borders of
cornfields and vineyards, waste ground, and roadsides general,
about Funchal both E. and W., at the Mount, &c.; on Pia
de S. Lourenço about the Piedade, &c., and everywhere in
PS. March–Sept.—Whole pl. varying from smooth to more or
less hairy but mostly smooth and shining, dark or full gr.
Root long simple tap-shaped tapering pale or whitish. St.
6–18 in. long, rising often obliquely from the crown, rarely
erect often flexuous, excessively rigid hard and stiffly strag-
glingly-branched, mostly purplish and smooth but sometimes
somewhat hairy, always round and even, appearing much more
branched than it really is from the long branch-like ped. of
many of the fl., and leafless from the small size of the l. which
are reduced upwards to mere cordate-acuminate amplexicaul
or sheathing purpuraceous bracts with a w. or pale brown mark
or scar at their base. Root-l. in a small loose evanescent tuft,
3–6 in. long, \( \frac{3}{4}–1\frac{1}{2} \) in. broad, mostly smooth or furry-pubescent
beneath only on the nerves and midrib, shining full gr. flaccid
soon withering and quickly disappearing altogether as the fl.
advance. Fl. handsome, bright pale lavender-blue about an
inch in diam., clustered in the axils of the forks and st.-l., ag-
glomerate or crowded in very short abbreviated suppressed or condensed racemose or spicate cymes or clusters of 2-6 fl. (mostly 2 or 3), the upper 1-5 axillary sessile, the lower 1-5 terminal on long thick round straight or curved branch-like stiff ped. or 1-fld. branchlets 2-4 in. long fistulose and swollen upwards, often in twos or threes only, one or two sessile and one or two stalked, but normally with more both stalked and sessile. The thick fistulose stalks or ped. look like abortive 1-fld. branches, but are really for the most part the lateral fl.-stalks of a condensed abbreviated proliferously flowering corymbose cyme, of which the primary or central fl. are nearly or quite sessile, overtopped by but opening before the secondary long-stalked lower lateral fl.,—much as in Tolpis. Their terminal fl. is uniformly ebracteate—this, in conjunction with their being fistulose and swollen upwards, proving them to be mostly rather ped. than as they have been termed "branches." Scales of outer mv. purpurascents smooth fringed or ciliate distinctly and sometimes hirsute with w. simple not glandular-tipped hairs, with a pale scar-like thickened, indurated spatulate or oblong middle portion at their base half the length of the scale itself and appearing like a close-pressed outer scale or br. Scales of inner inv. gr. herbaceous, less distinctly or regularly ciliate with short simple hairs or setules. The ripe ach. I have not been able to examine; but they are described and figured by Reichenbach in RFG. 1. c. as differing from those of C. Intybus L. in not being transversely lineolate but plain and even ("non exsculpta"), and in having a much longer coronule of chaffs about \( \frac{3}{4} \) the length of the ach. instead of \( \frac{1}{4} \) or \( \frac{3}{4} \), i.e. more than twice as long. In C. Endivia L. the chaffs, according to the same author, are of much the same proportionate length as in C. divaricatum; but in both C. Endivia and C. Intybus they are said to be sometimes united downwards, not distinct to the base.

C. pumilum Jacq. Obs. iv. 3. t. 80, and Fl. Gr. t. 822, is an erect furry pl. with a different habit and inflorescence, and apparently nearer to C. Intybus L. than to the present sp.

44. Tolpis Gärtn.

§ 1. Eutolpis. St. herbaceous ann.; root ann. or per.

1. T. umbellata Bertol.

Ann. light gr. hoary-glaucescent furry-puberulous and thinly subtomentose or mealy; st. few-fld. almost leafless slender erect, sparingly or remotely 2-4 times proliferously 2-3-fork-branched, furry or mealy-puberulous; 1. chiefly radical lanceolate-oblong pale dull hoary gr. furry-pubescent sharply and repandly si-
nuate-toothed or subpinnatifid, the upper linear entire; fl. small remote on long proliferously dichotomous or rarely umbellate ped., the central ped. in each dichotomy short fistulose thickened upwards; br. of ped. few and thinly scattered at their top, those of base of inv. more numerous and crowded, all linear-subulate setaceous mealy loosely spreading or ascending, the upper of the calycle equalling the expanded fl. or scarcely longer than the inner close-pressed scales; fl. sulphur or pale lemon-y. with the eye or disk fuller lemon or more golden-y.; pappus of disk with mostly 4 bristles longer than the ach., of the margin all or nearly all reduced to an excessively minute short fringe or crown.—Pers. ii. 377; Spr. Syst. iii. 670; DC. vii. 86. no. 2; Willk. et Lange ii. 206. T. quatriaristata Biv. Monogr. Tolp. p. iv, t. 1. T. crinita Lowe Prim. 24, t. 2; DC. l. c. no. 3; Seub. Fl. Az. 33. T. barbata "forma 1 crinita primaria" WB. ii. 401 (not Linn.). Crepis crinita and Lapsana stellata Sol. ! MSS. and Crepis incrassata Forster ! in BH. C. crenata (misprint for crinita) Buch! 194. no. 223.—Herb. ann. Mad. reg. 2, 3, ccc ; PS. reg. 4, rr. Mountain pastures and sunny dry rocky banks and ledges everywhere; above the Mount, up the Cam. do Meio, at Camacha, St. Ant° da Serra, P° da Cruz, S° Anna, S. Vicente, &c.; in PS. only on the rocky summits of P. do Facho and P. Branco. May-Oct. —Root nearly simple or tap-shaped w. or whitish strong hard or woody but merely ann. St. one or several from the crown, 6 in.—2 ft. long, straight, slender, sometimes numerous, but sparingly branched and few-fl.d., with a single sessile l. here and there only at the forks, furry-pubescent downwards like the l. and snowy-tomentose at the base, very variable in height and luxuriance, often dwarfed to a single 2–6 fl.d. st. 2–6 in. high. Root-l. in a small loose tuft, 2–4 in. long, ½–1 in. broad, attenuated downwards. Upper st.-l. inconspicuous linear entire. Ped. of central fl. short and thick, of the lateral elongated slender; all smooth and naked but mealy, thinly and loosely fringed only at top closely below the fl. with a few long linear-setaceous loosely erecto-patent bracts. Fl. 6–8 lines in diam., the outer broader ligules pale dusky-olive outside and sulphur or primrose-colour inside, the inner or disk-flts. dusky or purplish before expansion, but when open only fuller lemon or more golden-y. than the outer, never dark purplish brown. Ach. minute 1 millim. long, dark brown or black, linear-oblong, truncate at top, a little pointed at base, subquadrangular finely ribbed or striated, and very minutely rough or granulate. Pappus of outer row of ach. a single row of excessively short and minute setules; of the rest with from 1 or 2–5 (mostly 4 or 3) of these setules produced into pale straw-coloured rough bristly hairs about twice as long as the ach. and a little
broader but not dilated at the base. The outer ach. are closely
embraced dimidiately by the inner scales of inv.

This pl. differs in Mad. constantly from *T. barbata* (L.)
in its scanty meagre pale glaucous mealy far less copious
foliage, less robust smaller size and habit, more obovate-ob-
long or broader and shorter subpinna-tifid lower 1., shorter and
less copious br. of ped., and smaller plain- or one-col. not dark
purplish brown-eyed fl. At Mogador up the river, I found
the two sorts growing abundantly together, but always, even
in the most starved or dwarfish 1-fld. unbranched spec. only 2
in. high, perfectly distinguishable. All the Can. spec. I have
seen, whether collected by myself or others (Webb, Bourgeau
&c. in HB. and HH.) appear to be the Mad. pl. and not the
true *T. barbata* (L.)


Per. dark or full shining gr. perfectly smooth; rhizome thick
fleshy; st. ann. gr. hard solid slender rigid straight and stiff dif-
cussely erect simple slenderly and shortly corymbosely-branched
at top only, thickly leafy throughout; 1. fleshy stiff subcoria-
ceous undivided sharply but subremotely and often obsoletely
serrulate or serrate lanceolate, the upper petiolate, all attenuate or cu-
neate and quite entire at the base; cyme leafy loosely or widely
but stiffly corymbose, mostly few-fld., its branches and ped.
slower widely divaricate and subremote mealy, with a few
thinly scattered remote erecto-patent linear-setaceous br. up-
wards; fl. small (½ in. in diam.) with short and narrow lig-
gules; inv. mealy-puberulous, with several loosely erecto-pa-
tient linear-setaceous br. at its base; ach. all setiferous pale
brown, pappus about 30-setose tawny.—DC. vii. 87 (not Wats.
in Hook. J. of Bot. ii. 130 and iii. 19 or Seub. Fl. Az. 33. no.
221). *Crepis macrorhiza* Sol. ! MSS. in BH.; Buch! 194.
o. 227; Hook. ! in BM. t. 2988; Lowe Prim. 25. *Schmidtia
quercifolia* Reichb. in Holl’s List in Fl. Bot. Zeit. 1890, i. 131,
382 (name only, without fig., diagn., or descr.). *Tolpis querci-
folia* Schultz in WB. ii. 399.—Herb. per. Mad. reg. 3, cc.
Steep shady banks and rocks in all the principal ravines; Rib.
de Sªa Luzia, da Metade, Rib. Frio, Serra d’Agua, Levada da
Rocha furada above Pº da Cruz, &c. Quite peculiar to Mad.
and not found in either Pºo Sºo the Desertas, the Salvages,
the Açores or the Canaries. July–Sept.—Root-stock or rhiz-
osome per. subaerial large thick fleshy, penetrating deep into
the clefts or crevices of rocks, mostly divided at top into several short often in old pl. agglomerate branches thickly clothed with dried up l. or their remains, very milky like the whole pl., brown or blackish, rugged scarred or wrinkled, throwing up annually a thick leafy tuft or bush of one or more simple straight erect but mostly somewhat declining or diffuse st. 6-18 in. high and not often thicker than a crowquill, rather pale gr., thin and slender but remarkably hard and stiff, strongly ribbed or angular solid and copiously leafy throughout, sparingly and shortly corymbosely branched at top or upwards, with a sessile l. at each fork or division. L. very smooth and shining, thickish stiff and succulent, rather dark but bright full gr. turning always blackish or dark brown in drying, 2-4 in. long, ½-1 in. broad in the middle, acute at each end, repandly and always simply serrulate or serrate, the teeth always simple and entire, straight, pointing forwards, with sphacelate tips, mostly short and subremote; upper l. sessile or subpetiolate not at all dilated or amplicicaul at the base, the lower or lowest only attenuated into long petioles; all cuneate and entire at the base. Fl. few, rarely numerous, small 6-8 lines in diam. bright golden-y. remote or distinct in a wide-branched leafy panicle, closing quickly after being gathered; their ped. slender and divaricately spreading often horizontally, their br. linear-setaceous few and scattered, those at the base of the inv. more numerous but inconspicuous and much shorter than the inner invol. scales. Anthod. 3-4 lines long, a little swollen at the base in fr. and hoary or mealy especially between the scales like the ped. and br. Ach. pale brown oblong angular faintly ribbed or striated sessile not stipitate. Pappus in all setiform sessile of 20-40 or more yellowish or pale-brown rough bristles. Recept. naked alveolate, edges of its cells membranous jagged or toothed.

A fine and well-marked sp., with small Prenanthes- or Lactuca-like fl. but handsome succulent bright gr. foliage and a peculiar habit. It is strictly confined to Mad.; for the Açorian pl. referred by Watson and by Seubert to T. macrorhiza DC. prove on reexamination to be (as Schultz indeed had long before affirmed in WB. ii. 399) varieties or forms with simply toothed or serrate l. of T. nobilis Hochst. in Seub. Fl. Az. 33. no. 222, t. xi. = Crepis Dentax (sic) Sol. ! MS. in BH.

§ 2. Tolpidodendron. Shrubby per.


Branches slender virgate flaunting or declining woody brittle; 1. chiefly in tufts at the base of the fl.-branches more or less succulent sometimes firm or stiff but mostly loose or flac-
cid, variable polymorphous i.e. oblong-lanceolate or ligulate, acute or acuminate, either undivided and remotely toothed, or finely pinnatisect with narrow long linear remote laciniae, or ligulato-coronopiform and pinnatifidly toothed, the number of laciniae or teeth in all cases mostly 5 or 6 (3-6) on each side; very rarely all simple linear-elongate entire; upper l. of floral branches few and inconspicuous, simple linear nearly or quite entire; cyme remotely few-fld. divaricately forked proliferous, ped. more or less thickened upwards and with their br. and the scales of anthod. mealy-puberulous; br. at top of ped. and base of inv. rather few short erect lax, the latter not above 1/2 the length of the inner close-pressed scales; fl. rather large uniform bright golden-y.; pappus of all the ach. of 10 or 12 (10-15) bristly hairs 2-3 times the length of the ach.—

*Crepis succulenta*, *C. tenuiolia* and *C. filiformis* Sol. MSS. in BH; Ait. Hort. Kew. (ed. 1) iii. 128. *Crepis tenui­folia*, *C. succulenta*, and *C. filiformis* Buch! 194. nos. 229, 230, 231; *Tolpis fruticosa*, *T. pectinata*, and *T. filiformis* DC. i vii. 87; *T. filiformis* and *T. fruticosa* Schultz in WB. ii. 399.—Shr. per. Mad. reg. 1, 2, 3, ccc; PS. reg. 1, 4, r; ND. r, or r 5; GD. c; SD. reg. 1, r. Sea-cliffs, rocks and rocky banks everywhere below 3000 ft. in Mad. Apr.-Sept.—A loose straggling or flauntingly and sparingly branched shr. 2 or 3 ft. high, quite smooth except the young branches, ped., br. and anthod. which are slightly mealy-puberulous, or tomentulose. From the short irregular shrubby woody stock or stem spring annually several weak slender diffuse fl.-branches 1-3 ft. long woody chestnut-brown or red or purple downwards, gr. upwards hard round ribbed or striate. L. aggregate in tufts or roses at the base of the fl.-branches, bright shining gr. quite smooth 2-4 in. long, mostly acute, attenuated downwards into a more or less distinct petiole, very variable in form and division; but with mostly very uniformly 5 or 6 remote equidistant teeth or lobes on each side; the upper or floral br. always linear, mostly entire, few and solitary at the forks of the cyme; the latter sparingly and irregularly proliferously fork-branched, compound, almost or quite leafless, not many-fld. Ped. all rather short, especially the primary, bracteate and mealy-tomentulose at top. Heads oblong mealy-tomentose distinctly grey or hoary. Scales or br. of ped. and calycle not numerous, short ovate or linear-lanceolate finely acuminate, linear-subulate in the dried pl., at first close-pressed, afterwards loosely erect at least on the ped. Fl. 2/4-1 1/2 or 1 3/4 in. in diam., full golden-y., the outer ligules pale olive dusky at the back; anthers and styles exerted above tube of florets, the stigmas united into a long single dark or dusky olive filament quite up to the bifid top. Recept. con­vex alveolate naked. Ach. dark chestnut brown or blackish rather larger and smoother than in *T. umbellata*, 1 3/4 millim.
long, distinctly tetragonal ribbed or striate scarcely rough or granulate, oblong, truncate at top, a little pointed at base, all equally setiferous. Pappus in all the ach. of more numerous (10–15) and rather longer pale brown bristly hairs than in T. umbellata, the longer hairs being 2–3 times the length of the ach. and intermixed with vastly shorter minute and inconspicuous intermediate setules in the same row at their base.

The protean variations of this pi. in foliage almost defy any definite division, and are often different at different seasons on the selfsame pi. They will be found however to fall tolerably under one or other of the 4 following heads:

a. *multifida*; 1. flaccid finely laciniato-pinnatipartite or pinna­tisect, laciniae linear-elongate remote entire. — Crepis succulenta a Sol. ! MSS. C. succulenta Buch ! l. c. no. 230. C. tenuifolia Sol. ! MSS. and BH.; Buch ! l. c. no. 229 (not Willd., Pers.). Schmidtia anethifolia Rchb. in Holl’s List l. c. (without diagnosis). Crepis pectinata Lowe ! Prim. 24. Tolpis pectinata DC. ! l. c. no. 9. Tolpis filiformis b. Schultz in WB. ii. 399. no. 8 (not DC.). Hieracium fruticosum foliis tenuissime coronopii modo divisit, Sloane Catal. 123 ; Hist. Jam. 19, t. 5. ff. 1, 2.—Whole district of Funchal, from the sea-cliffs up to the Arríbentao above the Mount, on Pico Grande and elsewhere up to 4000 ft. all along the S. coast from P São de S. Lourenço to Pia do Pargo, and occasionally also in the N., at Fayal, &c.

Crepis tenuifolia Sol. ! and Buch ! is merely a finer-leaved autumnal state of Solander’s C. succulenta a MSS. (not BH.), exactly answering to my C. pectinata Prim. l. c.

β. *ligulata*; 1. flaccid pinnatifid or pinnatifidly toothed, laciniæ short tooth-like not linear-elongate, mostly few remote irregular. — Crepis succulenta β Sol! MSS. C. succulenta a ejusd! scheda in BH. (not MSS.). Crepis crithmifolia Link ex Schultz in WB. l. c. (not Tolpis crithmifolia DC. l. c. no. 11). Tolpis filiformis a. Schultz in WB. l. c. no. 8 (not DC.).—Camacha, Pia da Cruz at and all about the Serrado, Rib. de Fayal on the road to S Anna, &c., common in the N. up the ravines or remote from the sea from 500 to 3000 ft. In P São on rocky summit of Pico do Facho and on the promontory on the N. coast called “P de Guillerme” or “a Malhada.”

Solander well distinguishing in his MSS. two varr. of his C. succulenta, viz. “a. fol. pinnatifidis laciniiis linearibus distantibus,” and “β. fol. linearibus remotis dentatis,” has wrongly inscribed “C. succulenta a. MSS.” on a Mad. spec., “Fr. Masson 1777,” clearly belonging to his β. In all such cases the MS. or printed
authority must be preferred to that of Herb. spec. of sp., so often (as notably in the Linn. Herb.) hastily or carelessly misnamed by their own authors.

\[ \gamma. \] linearifolia; l. all simple undivided linear-elongate nearly or quite entire.—Crepis filiformis Sol. ! MSS. and BH.; Ait. ! Hort. Kew. (ed. 1) iii. 128; Buch ! l. c. no. 231. Tolpis filiformis DC. l. c. no. 12 (not Schultz in WB.).—Summit of Pico d'Anna Ferreira, PS. One BH. spec. is inscribed “Mad. Fr. Masson 1776;” the other “Hort. Kew.” The first of these BH. spec. is a stout robustly shrubby pl. with crowded or fascicled stiffly erect perfectly entire linear l. 2–2½ lines long, 1 mill. broad subobtuse or acute, the lower l. wanting; the second differs only as a garden cult. sp. in being much more slender or attenuate. The PS. spec. have some of the lower l. remotely and sparingly pinnatifid-toothed, and might be perhaps more correctly considered to be fine-leaved forms of \( \beta \). They are in fact transitional between \( \beta \) and \( \gamma \).

\[ \beta. \] oblongifolia; l. all simple undivided lanceolate or oblong-oval, regularly repand-toothed, often very thick and fleshy.—Schmidtia fruticosa Mchn. Suppl. 218; Rehb. in Höll’s List l. c. Hieracium fruticosum Willd. Sp. iii. 1591; Pers. ii. 375; Poir. Suppl. ii. 564. Tolpis fruticosa “Schrank. pl. rar. h. monac. i. t. 46” (DC.); DC. l. c. no. 8; Schultz in WB. l. c. no. 9.—Sea-cliffs and rocks chiefly; Vista da Rocha do Navio at Sª Anna, at Pªa Delgada, &c.; top of N. Deserta near the landing place. Very different at first sight in foliage but assuredly a mere maritime form of the sp., nearly confined to the immediate neighbourhood of the sea and passing through \( \beta \) into \( \alpha \) by numberless gradations. L. varying from 1–1½ in. long by ½–¾ in. wide and very thick and fleshy to 2 or 3 in. long and ½ in. wide.

The milky juice often forms on the roots of this pl. elastic balls underground, from the size of a pea to that of a walnut, which answer the common cleansing purpose of a piece of india rubber and are sometimes so employed at Pªa Delgada and elsewhere in the north. Hence the name “Visgo.”

The Can. T. coronopifolia (Desf.) is a very distinct ann. sp. with much smaller heads or fl. and widely divaricate ped., not found in Mad. T. crithmifolia DC. seems to be some mixture of it with T. succulenta \( \alpha \) or \( \beta \). As to Crepis crithmifolia Link, I have followed Schultz in WB. ii. 399 in referring it to his T. filiformis a, my T. succulenta \( \beta \); though at p. 404 he says that Webb found it at Berlin to be identical with T. pectinata, DC., my T. succulenta \( \alpha \).
45. *Hedypnois Tourn.*, Willd.

1. *H. rhtagadioloides* (L.) Spr.

St. several from the crown, mostly diffuse branched and leafy or reduced to 1-fld. leafless scapes; l. chiefly or wholly in a radical tuft lanceolate-oblong, simuate-toothed or pinnatifid mostly more or less hispidly pubescent, sometimes smooth; heads drooping in bud, subglobose swollen hard and tubulose in fr. with thickened fleshy semicylindric hornlike smooth echinate or hispid-setose scales; ped. more or less swollen upwards; ach. large 2-3 lines long incurved cylindric slender truncate.—Spr. Syst. iii. 670; Schultz in WB. ii. 396. *H. cretica* Koch 479. *H. polymorpha* Gren. et Godr. ii. 288. *H. monspeliensis*, *mauritanica*, *rhtagadioloides*, *cretica* and *pendula* Willd. iii. 1616-1618. *H. cretica*, *coronopifolia*, *polymorpha* and *pendula* DC. vii. 81, 82. *H. coronopifolia* and *tubeformis* Ten. *H. tubeformis* and *cretica* RFG. xix. 6, 7, tt. 10, 11. *H. tubeformis*, *cretica* and *polymorpha* Willk. et Lange ii. 207. *Hyoseris Hedypnois*, *Rhtagadioloides* and *cretica* Linn. Sp. (ed. 2) 1138, 1139. *Hyoseris hedypnois* and *rhtagadioloides* Vill. Dauph. iii. 165. *Hyoseris hedypnois* and *cretica* Lam. Dict. iii. 160; Brot. i. 322. *H. cretica* Desf. ii. 232. *Hyoseris monspeliensis*, *mauritanica*, *rhtagadioloides*, *cretica* and *pendula* Pers. ii. 369. *Hyoseris mauritanica* and *pendula* Poir. Suppl. iii. 82.—Herb. ann. Mad. reg. 1, cc; PS. reg. 1, 2, cc. Open barren ground, road-sides &c. general near the sea. Valle road, Levada de Stª Luzia, Loo-fields and St. Amaro road about Funchal; Pº de São Lourenço very abundant at the Piedade on the sandy grassy slopes. PS. in cornfields and waste ground everywhere. Not seen in the Desertas. Jan.—June, but almost at all seasons. —Root ann. or bien. pale or whitish somewhat fleshy. From its crown springs a tuft, of full gr. 1. and several procumbent st. or branches 3-12 in. long, very often reduced to one-fld. scape-like ped. bearing a single 1. or none. Whole pl. very variable in pubescence, often nearly or quite smooth especially the upperside of 1. Branches sparingly forked with a sessile subentire leaf and 1 or 2 long-stalked fl. from each fork or axil. L. 3 or 4 in. long mostly smooth above, more or less hispid at the edges and beneath, the lower sinuato-pinnatifid with short broad subobtuse subremote lobes or teeth. Ped. 2-4 in. long stiff stout thickened and smooth upwards, subcompressed or angular. Fl. small and inconspicuous ¼–½ in. in diam., bright full lemon or golden-y, with a black eye or point in the middle only so long as any of the central florets remain unopened, closing at noon. Outer involucral scales or bractlets few short membranous deep gr., inner pale thick and fleshy except at the points, all dark at the tips, the inner
or longer tightly enclosing the outer row of ach. and becoming finally in fr. very hard and horn-like with the sides flattened and back rounded. Ligules 5-toothed, in the outer fits, purple at the back; teeth of the inner tipped outside with black forming a black eye or like an insect in the fl. before its complete expansion. Ach. 20–30, linear-cylindric, the marginal sometimes obscurely 4–5-angular, truncate not beaked, longitudinally many-ribbed or striate and finely setuloso-muriculate along the ribs, the 2 or 3 outer rows black shining crowned with a short fringed chaffy cup-like crown; the central or inner abortive, very slender pale brown, crowned with from 1 to 4 or 5 pale rough awnlike or lanceolato-setose chaffs about 2 lines long furnished with a few much shorter simple setae outside at their base; the outer or marginal row of ach. tightly embraced by and adherent at the base or downwards to the inner or longer invol. scales and thus not deciduous, truncate like the rest, but with a false beak formed by the tip of the enclosing invol. scale. Heads in fr. 4–6 lines in diam., hard torulose or ribbed like a melon or Pitanga.

The following forms have been distinguished by authors; but they run so much together that they are scarcely worth separating, and according to Koch and Sprengel, ll. cc., have proved, when raised from seed, to be entirely inconstant:—

I. *cretica*. St. several branched procumbent or diffuse often reduced to 1-fld. scapes; ped. more or less thickened upwards; longer or inner scales of inv. in fr. crested or shortly muricato-setose dorsally towards the tip, smooth otherwise.—*Hedypnois cretica a. genuina* Bisch., RFG. xix. 6, t. 11. f. i. *H. cretica* DC. l. c. no. 1 (excl. var. β); Koch l. c.; Willk. et Lange l. c. *H. coronopifolia* Ten., DC. l. c. no. 2. *H. polymorpha β. diffusa*, form 3, Gren. et Godr. l. c. 289. *H. rhagadioides* var. ii. Schultz in WB. l. c. *Hyoseris cretica* Linn. l. c. 1139. no. 8; Desf. l. c.; Pers. l. c. no. 16 (not Lam. or Brot.).—This is by far the commonest Mad. form, especially about the Piedade; but it passes into the next sometimes in different heads on the same pl.

II. *monspleiensis*. Like I., but all the scales of inv. altogether smooth or naked.—*Hedypnois cretica β. monspeliensis* Bisch., RFG. l. c. ff. ii. 1. *H. monspeliensis* Willd. l. c. *H. polymorpha* DC. l. c. no. 3 (partly). *H. polymorpha β. diffusa*, form 1, Gren. et Godr. l. c. 288. *H. polymorpha a* and β Willk. et Lange l. c. *H. rhagadioides* var. I. Schultz in WB. l. c. *Hyoseris Hedypnois* Linn. 1138. no. 6; Vill. Dauph. l. c. no. 2; Lam. Dict. l. c. no. 6; Brot. l. c. no. 1; Buch 194. no. 237. *H. monspeliensis* Pers. l. c. no. 13. *Intybus sive Endivia lutea verrucaria, capitulum inclinans* Moris. Hist. iii. 53. § 7. t. 1. f. 6.—With the last at the Piedade, Pau de

III. chetocephala. Like I. or II., but scales of inv. all over hispid-setose or pilose.—Hedypnois cretica γ. rhagadiensis Bisch., RFG. i. c. ff. iii. iv. v. H. rhagadiensis Willd. l. c.; var. iii. Schultz in WB. l. c. 397. H. polymorpha DC. l. c. no. 3 (partly); β form 2, Gren. et Godr. l. c. 289; γ and δ, Willk. et Lange l. c. 208. Hyoseris rhagadiensis Linn. 1139. no. 7; Vill. Dauph. l. c. no. 3; Pers. l. c. no. 15. H. cretica Lam. Dict. l. c. no. 7, Ill. t. 654 (Hyoseris f. 2); Brot. l. c. no. 2 (not Linn.).—Not hitherto distinctly noticed in Mad., but perhaps overlooked, and very likely to occur. H. tubiformis Ten. (RFG. l. c. 5, t. 10; Willk. et Lange l. c. 207 =H. cretica β DC. l. c. =H. polymorpha β, form 4, Gren. et Godr. l. c. 289) seems to be only an abnormal monstrous form of III. with trumpet-shaped ped. thickly clavate or greatly swollen upwards and heads in fr. altogether larger. A perfectly analogous state or monstrousity of forms I. or II. supra, with smooth inv. scales, occurs occasionally in Mad., near the sea about the “Crater” in the Loo-fields between the Gorgulho and E. end of the Praia, which is perhaps more precisely than Tenore’s pl. DC.’s H. cretica β subacaulis. Gren. and Godr.’s H. polymorpha var. a erecta, with erect st.=H. mauritiana and pendula Willd. l. c.=H. pendula DC. l. c. 82 =Hyoseris mauritiana and pendula Pers. l. c. and Poir. Suppl. iii. 82 has not occurred in Mad.

†Tribe XXIV. Lampsaneae Less.

†46. LAMPSANA Tourm.

†1. L. COMMUNIS (L.).

Mostly smooth or glabrescent; heads small, scales of inv. quite smooth, the inner as long as the fits., outer (of calyce) short.—(Lapsana) Linn. Sp. 1141; Broth. i. 312; Pers. ii. 378 (misprinted 348); EB. t. 844; Hook. Fl. Sc. i. 234; Sm. E. Fl. iii. 377; Koch 477; Coss. et Germ. ii. 426; Bab. 191; Willk. et Lange ii. 212; RFG. xix. 2, t. 2. ff. iii. iv. Lamp-sana communis Lam. Dict. iii. 414; DC. vii. 76; WB. ii. 419; Gren. et Godr. ii. 291.—Herb. ann. Mad. reg. 1, 2, c. Waste ground, roadsides and vineyards about Funchal at the Valle, at Camacha, S. Antonio da Serra in the Cerca, Chestnut woods at S. Vicente, &c. Jan.–June.—St. 1–3 ft. high, erect slender virgate hard stiff leafy and branched all the way up, round smooth striated or pubescent only downwards gr. or sometimes, like the 1., v. or purplish. L. of a somewhat dark lurid gr. flaccid thin and membranous, the lower lyrate with the terminal lobe very large and subcordate, the upper simple ovate-acuminate or lanceolate, all angularly toothed and more or less
hispidulous, the upper smooth or glabrescent. Cymes terminal broad loosely and erectly fork-branched, branches and ped. slender round smooth with a narrow-lanceolate or linear l. at each fork. Fl. small 3–5 lines in diam., with about 10 florets, bright lemon-y. Heads cylindric, in fr. angular. Scales of inv. quite smooth carinate dark gr. upwards, those of the caly whole others which are only 3 lines long, forming in fr. an erect oblong-obovate or slightly barrel-shaped open cup with their tips a little connivent. Ach. very deciduous, 2 lines long, scarcely ½ line broad, slender or narrow, attenuate downwards, broader but contracted and subtruncate quite at top, without any trace of crown or pappus.

A useless but not troublesome weed.

Tribe XXV. Leontodontace Schult.

47. Thrincia Roth.

1. T. hispida Roth. Leituga.

Per. or at least bie.; root tapshaped or fibro-fusiform simple or branched immediately below the crown, tapering into long strings or fibres, not abruptly truncate or præmorse; l. in a dense radical tuft, thickly hispid remotely sinuato-toothed oblong-lanceolate attenuate and subpinmatifid downwards; scapes 1-fid. slender numerous ascending, hirtose downwards, mostly 2 or 3 times as long as the l.; fl.-buds drooping; all the ach. except the outer row attenuately produced into a slender beak of about half their whole length.—"Roth Cat. i. 99;" Brot. i. 327; Spr. iii. 665; Gren. et Godr. ii. 296; RFG. xix. 7, t. 13. f. ii.; Willk. et Lange i. 213. T. pygmaea Schultz in WB. ii. 467 (not Pers. ii. 369. no. 5 which = Hyoseris pygmaea Ait. ! Hort. Kew. ed. 1. iii. 130 which = Thrincia hirta Roth). T. nudicaulis Lowe ! Prim. 28; DC. i. vii. 100. no. 6; Seub. Fl. Az. 33, t. xii. f. 1. Leontodon nudicaule Sol. ! MSS. in BH. partly (i.e. quoad ex. Mad.); Buch ! 194. no. 222. Thrincia maroccana Pers. l. c. no. 4; DC. l. c. no. 5; Willk. et Lange ii. 214? T. mauritanica Spr. l. c. 666. T. hirta b. hispida Coss. et Germ. ii. 428.—Herb. per. Mad. reg. i. 2, 3, ccc; PS. reg. 2, 3, 4, ½; GD. and SD. reg. 2, r. Waste and cult. ground, roadsides, fields, mountain-pastures, &c. everywhere in Mad., chiefly below 2000–3000 ft., not so common in PS. In spring chiefly, but throughout the year. The two following varr. or forms grow intermixed, the first predominating:

a. chætocephala Lowe; scales of inv. setose-hispid. T. hispida Spr. l. c.; RFG. l. c. T. pygmaea A, Schultz in WB. l. c. 468 (not Ait., Pers.).—About the Valle, Funchal, Rib. de
Sª Luzia, Curral das Freiras, Arco de Calheta, Camacha, Pº de S. Lourenço, Pºº da Cruz (Serrado), Rib. da Janella to Pº Moniz; PS. on summit of Pico do Concelho.

3. gymnocephala Lowe; scales of inv. naked smooth.—T pygmea B, Schultz in WB. l. c.—With a, but less common Curral das Freiras, Arco de Calheta, Pº da Cruz (Sítio do Barreiro and Serrado).

Decidedly per. except when starved or killed by drought in scanty soil on arid banks and rocks or sunny mountain pastures. Root pale tough slender stringy hard or woody, in large robust pl. as thick as the tip of the little finger or 2-4 lines in diam. at the top or neck, mostly simple and fusiform or tapshaped, but often dividing shortly below the crown or neck into several branches tapering ultimately into fine fibres, mostly rather short and vertical, but sometimes in light soil or sand produced into a very long slender tortuous or flexuose woody string, running a foot deep or more horizontally or obliquely; in all cases swollen at the crown above ground into a small round hard fleshy flat knob or button (abortive st.) bearing the tuft of l.; the neck below without any set of adventitious roots or radicles (as in EB. t. 555), but occasionally in strong pl. thickly clothed with numerous tufted or matted fine fibres. L. in a thick radical tuft or loose rosette 4-12 in. in diam. and in old robust pl. very numerous; repandly sinuate-toothed subentire upwards, subpinnatifid and much attenuated downwards, oblancoolate, 2-6 in. long, 1-3 in. broad, all more or less densely hispid or furry with short hairs simple or glochidiately bifid at the tip, of a dark dull gr., mostly purplish or red beneath and especially the midrib in decay. Scapes slender, 3-12 or 15 in. long, hard and stiffish, hirtose red or purple downwards, a little swollen at top and before flowering abruptly hooked with pendant fl.-buds. Fl. ½-1½ in. in diam. full golden-y., the outer ligules with a pale olivaceous drab or sometimes rosy stripe beneath; the segment-tips not glandulose, the tube fringed with long w. hairs on each side at top. Stigmas always y. Heads oblong hispid or smooth; outer scales about 10 (8-12) short linear-acuminate mostly discoloured or reddish purple very close-pressed forming a sort of calyce as in Senecio; the inner abruptly longer, fleshy, prominently but obtusely keeled, mostly
gr., red or purple towards the subobtuse scarios tips. Ach. of outer row embraced or enwrapped by the conduplicate inner scales of inv. and about half their length, subcylindric, nearly smooth or even, with short cylindric beaks as thick as themselves, abruptly truncate and crowned with a cup-like coronet of very short pale chaffs. Inner ach. all free slender fusiform dark chestnut-brown elegantly and distinctly echinulato-ribbed, gradually attenuated upwards into fine slender beaks or pappus-stalks as long as or a little longer (rarely in the outer ach. a little shorter) than themselves, the beaks becoming smoother upwards. Pappus pale brown chaffy-setose of about 10 or 12 (8-15) bristles lanceolately dilated at the base, the fine setaceous upper part thinly plumose. Recept. convex alveolate naked, scarcely or very shortly velvety-fibrillose.

Such is the universal everywhere abounding Mad. pl., examined year after year a thousand times and never varying in the least. It differs constantly from *T. hirta* Roth as described by MM. Grenier and Godron in Fl. de Fr. ii. 296 in having nothing about its root answering to "Souche . . . courte, tronquée et émettant surtout du collet de fortes fibres filiformes et nombreuses," in its extremely hispid-furry l., and in the beak or pappus-stalk being in all the ach. except the outer row as long as the ach. themselves i.e. twice as long as in *T. hirta* Roth. With this account agrees also in the main the figure of *T. hirta* Roth in EB. t. 555, nothing like which certainly has been noticed in Mad. No great dependence can be placed perhaps on the duration of the root in either sp. At least in the Mad. pl. it seems, though normally per., to be much influenced by local accidents or circumstances. In all other respects, however, nothing can be more constant in its characters than the present pl. as found both in Mad. and in the Canaries.

I have never seen the beak of the ach. so long or so abrupt at its origin as in RFG. l. c. f. ii. 3, in which it is figured twice the length of the ach. themselves; cf. *T. maroccana* Willk. et Lange l. c.

*Hyoseris pygmaea* Ait. ! Hort. Kew. ed. 1. iii. 130, supposed by Schultz in WB. l. c. very naturally without examination of the original spec. to be the present pl., was founded by Dryan-
der on two small slender spec., each with only 2 l. and 2 fl. and one only with the root left entire, still extant in BH. on a sheet inscribed originally either by Dryander or Solander (I believe with Mr. Bennett the former, but Mr. Carruthers thinks the latter) in pencil propria manu "Hyoseris pygmea Hort. Kew. 1779." These are in my opinion merely weakly diminutive depauperated or young seedling drawn-up pl. of T. hirta Roth (EB. t. 555) with hispid pubescent invol.-scales and (in one) the characteristic præmorse root—such as would be likely to occur in the fine turf of the Kew garden grass-plats. Hence doubtless the subsequent entire omission of Hyoseris pygmea Ait. by Solander in his books and MSS., and by Brown in the 2nd ed. of Hort. Kew.

The sheet in BH. inscribed by Solander propria manu "Leontodon nudicaule Mscr. Madera," is truly the common Mad. T. hispída Roth, var. a Lowe supra. But L. nudicaule Sol. MSS. in BH. is a mixture of this with English T. hirta Roth. For though Solander in his MSS. says of his L. nudicaule "Radix præmorsa," it is distinctly fusiform or tapshaped in this his original Mad. spec. And his other localities, "Revesby in Lincolnshire" and "Petersfield in Hampshire," show him clearly to have had mainly in view T. hirta Roth.

†48. HELMINTHIA JUSS.

†1. H. ECHIOIDES (L.).

Harshly pustulato-strigose almost prickly, spinules simple or glochidiate; l. more or less hispid and fringed with spinules, oblong-lanceolate, the lowest attenuato-petiolate obsoletely repand-toothed, the st.-l. cordato-amplexicaul entire, all stiff and wavy; heads clustered in small terminal leafy cymes shortly stalked, their outer leafy br. large cordate-ovate loosely erect spinous or ciliato-spinous and about the length of the lanceolate hispid or hirtose inner scales, the midrib of which is produced from below and beyond the tip into a distinct short ciliato-hirtose awn. — (Helmintia) Lam. Ill. t. 648; Broth. i. 328. (Helmintia) Pers. ii. 370; Broth. iii. 668; DC. vii. 132 (excl. varr.); Koch 484; WB. ii. 465; Seub. Fl. Az. 34; Coss. et Germ. 430; Bab. 194; Gren. et Godr. ii. 304 (excl. var. β); RFG. xix. 12, t. 27; Willk. et Lange ii. 220. Picris Echioides Linn. Sp. ii. 1114; Lam. Dict. v. 310; Buch 194. no. 216; EB. t. 972; Sm. E. Fl. iii. 339.—Herb. ann. Mad. reg. 1, 2, c; PS. reg. 2, 3, cc; ND. cc; GD. reg. 2, ccc; SD. reg. 2, c. In
cornfields, vineyards and waste ground amongst them, by road­sides &c. everywhere. About Funchal, Loo-fields, S. Martinho, the Mount, Calheta, Prazeres, Pâ de S. Lourenço, S. Vicente, &c. March–Sept.—A somewhat coarse robust succu­lent dull dark sometimes leaden or greyish gr. coarsely strigose almost or quite hispid-spinulose often prickly herb. St. 1–2 ft. high, erect stout ribbed or channelled, widely dichotomously branched, thick gr. succulent hispid. L. stiff shining hispid and pustulato-spinellose. Fl. rather small or inconspicuous, \( \frac{1}{2} \) in. in diam., golden-y., the ligules red outside. Inner inv. 10-angular ventricose as in \textit{Sonechus}, its scales with broad pale membranous smooth edges and with the dark gr. hirtose mid­rib excurrent below the tip into a pectinately hirtose awn. Ach. oblong subangular very finely and closely circularly cor­rugato-striolate, plump upwards and abruptly pointed or sud­denly contracted at top into the fine slender filiform pappus­stalk, dark or light chestnut-brown, scarcely 3 mill. long or 1 broad. Pappus soft pure w. a little longer than the inv., its stalk longer than the ach.

The figures in EB. and RFG. ll. cc. represent two opposite extreme states of the pl.

†49. \textit{Urospermum} Scop.

†1. \textit{U. picroides} (L.).

Ann.; I. more or less lyrate and runcinato-pinnatifid, some­times undivided, spinelloso-denticulate or entire, the lowest oblong petiolate, the st.-l. auriculato-amplexicaul; heads echi­nulato-hispid chiefly at the base, smooth upwards, the scales ovato-lanceolate, more or less setosely hispid, not velvety­pubescent; ach. shortly stipitate, their beak abruptly swollen or bulbous at the base.—Spr. iii. 662; DC. vii. 116; WB. ii. 466; Koch 485; Seub. Fl. Az. 33; Gren. et Godr. ii. 305; RFG. xix. 12, t. 26, ff. ii. iii.; Willk. et Lange ii. 221. \textit{Tragopogon picroides} Linn. Sp. 1111. no. 7; Vill. Dauph. iii. 72; Lam. Dict. vi. 480; Ill. t. 646. f. 3; Brotn. i. 330. \textit{Arnopogon picroides} Pers. ii. 360. no 2.—Herb. ann. Mad. reg. 1, cc; PS. reg. 2, 3, cc; GD. reg. 2, c; SD. reg. 2, r. Waste ground, roadsides, beds of ravines &c., almost everywhere in sunny places. About Funchal to the east and west, &c. March–June chiefly.—A low herbaceous pl. with light gr. harsh stiff hispid almost prickly foliage, very variable in degree of both hispidity and subdivision, intermediate in habit between that of \textit{Helminthia echioides} and \textit{Sonchus oleraceus} L. St. straight erect stiff virgate, 3 or 4–12 in. high, few- (mostly 1–3 or 4–) fid. Fl. rather larger than in \textit{S. oleraceus} L., bright lemon-y., closing about noon, on stout erect straight naked ped. Heads
rather large about $\frac{1}{2}$ in. in diam. rarely an inch, ventricose hard firm compact light gr.; the scales convex downwards combined and fleshy at the base, not pubescent velvety or tomentose, but more or less echinately hispid chiefly downwards, their edges dark purplish brown giving the inv. a striped appearance. Ach. at first y., then olive, lastly chestnut-brown, rather large and peculiar with their long curved hollow bulbous beaks, compressed, very coarsely and prominently muricato-corrugate or tuberculate transversely on the sides and with a curious prominently 3-winged podogyne. Beak 3 or 4 times the length of the ach. shortly and erectly setuloso-hispid, corrugately muriculato-rugulose downwards. Pappus soft w. silky, about the length of the ach. with their beaks, copiously plumose, deciduous.

$\beta$. asperum DC. et Duby; st. about 1-fld. dwarfish, l. un-divided the upper entire.—DC. l. c.; Gren. et Godr. l. c.; RFG. l. c. f. iii. Tragopogon asperum Linn. Sp. l. c. no. 8; Lam. Dict. vi. 481; Pers. l. c. no. 3.—Mad. reg. 1, c. Beds of Ravines about Funchal, Rib. de S$\text{a}$ Luzia, de S. João, &c. A mere dwarf depauperated state of the sp.

The Açorian Microderis rigens (Ait.) has not occurred in Mad. to any botanist or collector, at least within the present century. There exists however in BH. a sheet containing two fine spec. of it, inscribed at the back “Madeira Fr. Masson, 1777.” Yet Solander in his MSS., describing from these very spec., and these alone, his “Hypochaeris strigosa MSS.,” adds “Alfazim brava Incolis Azorum. Habitat in Insulis Azoribus, Fr. Masson,” thus entirely ignoring or repudiating the habitat “Madeira” inscribed on the sheet itself. Again, he describes his Crepis rigens from a Kew-Garden spec. (it is precisely the same pl.) on a sheet marked at the back “Hort. Kew. 1779,” stating in his MS., but on the authority merely of information from the Kew Garden itself (as appears elsewhere in BH. documents), “Habitat in Madeira 2 Fr. Masson. Floruit in Horto Regio Kewensi, Julio 1779.” Yet he has added subsequently in pencil a? after the word “Madeira,” and subjoined in pencil also “Obs. nullum specimen sicicum a Masson missum.”

Now it is obvious to say that this? and “Obs.” were added not in the face or in contradiction of “Madeira Fr. Masson 1777” on the original ex. of Solander’s Hyp. strigosa, but previously to his recognition of the identity of this latter with his Kew-Garden
Crepis rigens. Yet there would still remain the fact that the added ? is also adverse to his MS. ascription of a Madeiran origin to his original Kew-Garden spec. of Crepis rigens itself. And indeed, as it is certain that at some time or other he had recognized himself the identity of his two sp., by writing on the first sheet, marked at the back "Madeira Fr. Masson 1777" (his original Hypochaeris strigosa MSS.), "Est Crepis rigens H. Kew.," and on the second sheet (his original Crepis rigens) "Hypochaeris strigosa Sol.," so it is more probable than otherwise that this recognition was prior to or simultaneous with the publication (1789) of the H. Kew. from his entire omission in that work of all reference by name to his Hyp. strigosa, indicating that he was already aware of its identity with his Crepis rigens. And then his reference of the latter pl. in the Hort. Kew. simply to the Açores, which is in any case in opposition to the Kew-Garden evidence for Madeira, would be in flat contradiction also to the habitat "Madeira" inscribed at the back of his Hyp. strigosa, and would suggest that previously to the publication of the Hort. Kew. he had found reason to set aside both the less certain information derived from Kew Gardens about Crepis rigens and the apparently more sure evidence for Madeira from the sheet itself of Hyp. strigosa.

But indeed, independently of these considerations, Solander's very particular and pointed reference in his MSS. above quoted of this Hyp. strigosa to the Açores, with even its vernacular Açorian Portuguese name added, in the face of its Madeiran superscription, may almost alone suffice to prove him to have possessed some very distinct and certain evidence, superseding in his judgment that of the inscription "Madeira Fr. Masson 1777" on the original sheet itself, and accounting also for his inserted ? after "Madeira" and "Obs." on Crepis rigens in pencil, "nullum specimen siccum a Massonmissum," in correction of the "Habitat in Madeira, Fr. Masson" before ascribed on the same page of his MSS. to this Kew Garden spec.

On the whole, then, it would be rash without further evidence to admit M. rigens (Ait.) to a place in the Mad. Flora, though botanists may be perhaps encouraged to look diligently for it. If found, it will be immediately distinguished by its plumose
nearly sessile or rather perhaps shortly stalked pappus, its scape-like st., umbellate fl., and hispid undivided oblong or elliptic-oblong. —Seubert (Fl. Az. 33, 34, tt. xii. xiii.) distinguishes two sp. in addition to the original *M. rigens* (Ait.) DC. vii. 128.

†Tribe XXVI. *Scorzonereæ* Schultz, Koch.

†50. GEROPOGON Linn.

†1. G. GLABER Jacq.

The only sp.—Jacq. Hort. Vind. i. t. 33; Willk. et Lange ii. 227. *G. glabrum* Linn. Sp. 1109; Lam. Dict. vi. 482, Ill. t. 646; BM. t. 479; Pers. ii. 359. no. 1; Buch 194. no. 215; DC. vii. 111; Gren. et Godr. ii. 314; RFG. xix. 13, t. 28. ff. i. ii. 6-12. *G. australis* Spr. Syst. iii. 663. *G. hybridus* Schultz in WB. ii. 472.—Herb. ann. Mad. reg. 1, r; PS. reg. 2, s. Amongst corn in the Loo-fields and on Pico de S. Lourenço at Canical and about the Piedad; Pto general in cornfields towards Pico d’Anna Ferreira, Camacha, Serra de Fora, &c. March–May.—Always altogether smooth in Mad. and PS., with linear long grass-like grass-gr. foliage, very variable in size and luxuriance, from 2 or 3 in. high simple and single fld. to 12 or more in. branched and many-fld. Root strong simple or tapshaped and fleshy, pale or whitish. L. closely sheathing the thick base of the st. like those of *Allium Porrum* or *sativum* L., linear-acuminate elongate entire carinate bright gr. with a pale mid-rib, 3–10 or 12 in. long, 3–6 lines broad, half-st.-clasping. St. erect hard stiff round simple or fork-branched from the base with a broader 1. at each fork. Fl. very singular, reminding one of *Agrostemma Githago* L. with their few enormously long linear gr. inv.-scales far exceeding the bright lilac or rose-pink florets, closing before noon, small, §–§ in. in diam. Ped. naked fistulose. Scales of inv. 7–9 linear finely acuminate, 1½–2 in. long, gr. with pale edges, carinate especially in fr. and then nearly as long as and partly sheathing the outer marginal ach. Flts. about 20; ligules of the outer scarcely half the length of the long free points of the invol. scales which rise above or beyond them. Ach. fusiform very slender and attenuately long-beaked, striate, 1½–2 in. long with their awns or pappus, the beaks minutely hispid-scabrous. Pappus of the outer ach. of 5 simple (not plumose) stiff minutely hispido-scabrous unequal awns or setae, mostly 3 long, 2 short; of the inner deciduous ach. many-rayed, rays finely and softly plumose, not deciduous. Recept. sparingly chaffy; scales few very fine slender narrow and filmy, about ½ in. long, produced into fine hair-like points.
Tribe XXVII. Hypochaerideae Less.

51. Hypochaeris L.

§ 1. Genuina Koch. Pappus in 2 rows; hairs of outer row simple-scabrous, of inner plumose.

1. H. glabra L.

Stemless. Root ann. simple slender, tapshaped; fl.-st. radial mostly naked leafless or with only now and then a sessile l. at the forks, mostly simple or sparingly branched, few-fld.; l. nearly all radial oblong attenuate downwards, repandly sinuate-toothed, teeth sharp triangular, sinuses shallow rounded; fl. small, the flts. not longer than the inner and longer scales of inv.; ped. 1-fld. long thickened at top, very sparingly bracteolate; scales of inv. flat smooth or naked without any fringed or echinato-serrate keel or crest; ach. of disk mostly with a beak as long as themselves, of margin mostly erostrate; pappus mostly stipitate.—Koch 490; Coss. et Germ. ii. 426; Bab. 191; Gren. et Godr. ii. 292; RFG. xix. 22, t. 47. ff. ii. iii. iv.; Willk. et Lange Fl. Hisp. ii. 228.—Herb. ann. Mad. 1, 2, 3. ccc; PS. reg. 2, 3, c; GD. reg. 2, rr.—Varr. :

a. genuina Godr. l. c.; Willk. et Lange l. c.; ach. of outer row erostrate truncate with the pappus sessile, of disk attenuate into a beak or pappus-stalk as long as themselves.—H. glabra a RFG. l. c. f. ii.; a. vulgaris, Coss. et Germ. l. c. 427. H. glabra Bab. l. c. (excl. var. β). H. glabra Linn. Sp. 1140; Vill. Dauph. iii. 64; Lam. Dict. v. 571, Ill. t. 656. f. 1; EB. t. 575; Pers. ii. 378. no. 5; Buch 194. no. 238; Hook. Fl. Sc. i. 234; Sm. E. Fl. iii. 375; DC. vii. 90; Seub. Fl. Az. 33. H. hispida and H. dimorpha Brodt. Fl. Lus. i. 332. “H. adscendens Brodt. Phytogr. Lus. t. 25.”—Mad. in vineyards, by roadsides, on sunny rocky banks and in mountain pastures in the turf everywhere especially in dry poor soil or exposed places; e. g. at top of ridge between the Vale and Rib. de João Gomes, vineyards below S. Roque’s Church, mountain pastures above the Mount, in the Rib. das Cales and up the Caminho do Meio; at Camacha, head of Rib. Fundo at the Fanal below the Paul, at the Serrado do Porto da Cruz, St. Antão da Serra, &c.; in PS. on N. side of Pico d’Anna Ferreira, and on Pico do Castello; in GD. on highest peaks. Jan.—July.

β. Loiseleuriana Godr. l. c.; Willk. et Lange l. c.; ach. all attenuately beaked with the pappus more or less stipitate (those of the outer row often only half-beaked).—H. glabra β Bab. l. c.; b. RFG. l. c. f. iii.; γ rostrata Coss. et Germ. l. c. 427. H. Balbisti “Loisel. Not. 124;” DC. vii. 91; Schultz in WB. ii. 473.—Mad. rrr, only an odd pl. here and there intermixed
with \( a \); e.g. in mountain pastures towards the Icehouse, and in fields at S. Antô da Serra near Mr. Blandy's house. May–July.—Judging from Mad. spec., this is a mere occasional chance-form of \( a \); and intermediate forms frequently occur with the pappus of some or all of the outer ach. with a stalk only half instead of quite the length (as in the inner) of the ach. themselves.

A most variable pl. not only in size but in all its characters. L. spreading in a flat rosette close-pressed to the ground, sharply sinuato-dentate; in \( a \) mostly hirtose or hispid all over above, smooth beneath, mostly pale gr. subglaucescent, sometimes shining bright gr., often with a red midrib and turning red or rose-colour in withering; in \( \beta \) mostly hispid only at the edges or on the midrib; in both turning red, pink, or rose-colour in withering. Both vary equally in luxuriance and stature. Fl.–st. one or more rising in succession like scapes from the radical leaf-rose, from 2 or 3 to 12 or even 18 in. high, straight erect virgate wiry quite smooth and naked except a small bract (very rarely a sessile l.) at the forks, sparingly and remotely branched, often 1-fld. scape-like. Ped. naked without bracts, swollen and tubular beneath the fl., the latter erect in bud, open only in the morning, closing at noon, only \( \frac{1}{4} \) in. in diam., the florets not exceeding the inv. Heads narrowly lanceolate-oblong or slenderly cylindric. Scales of inv. flat without any fringed keel or crest but quite smooth and naked, imbricate in several rows, their tips dark livid or lurid v. or olive. Ach. fusiform muricately ribbed purplish-chestnut. Pappus double; outer row short simple scabrous or denticulate, inner longer plumose. Scales of recept. linear, in fr. finely setaceo-acuminate filmy silvery-w., rather shorter than the pappus or not quite so long or finely hair-pointed as in \( H. radicata \) L., very caducous.

\( H. \) \( \text{dimorpha} \) Brot. with the sessile pappus of the outer marginal ach. simply pilose, not plumose, has not occurred in Mad.; but it can be scarcely more than a slight modification of var. \( a \).

Var. \( \gamma \) \( \text{erostris} \) Godr. l. c. with all the ach. beakless and pappus in all sessile (Willk. et Lange l. c.; var. \( \beta \) \( \text{erostris} \), Coss. et Germ. l. c.; var. c, RPG. l. c. f. iv.) has also not been noticed in Mad., but may perhaps be found.
H. radicata L. a.

Stemless; root per. or at least bien. partly stoloniferous or creeping thickish fleshy subdivided the divisions tapshaped; fl.-st. radical always naked leafless numerous from the crown ascending elongately branched; 1 all radical furry or hispido-pubescent oblong attenuate downwards deeply sinuato-pinna-tifid, lobes obtuse or rounded as broad as deep; fl. large, the florets much longer than the longer inner scales of inv.; ped. 1-fl.d. elongate thickened at top, sparingly bracteolate; scales of inv. keeled, keel black-crested at the tip, often ciliately setose-fringed below; ach. all mostly with a beak longer than themselves.—Linn. Sp. 1140; Vill. Dauph. iii. 63; Lam. Enc. v. 570; EB. t. 831; Brot. i. 331; Pers. ii. 378; Sm. E. Fl. iii. 376; DC. vii. 91; Koch 490; Coss. et Germ. ii. 427; Bab. 192; Gren. et Godr. ii. 293; RFG. xix. 21, t. 46, and t. 47. f. i: (sttii depauperato unifloro); Willk. et Lange ii. 228.

a. rostrata Moris. Gr. et Godr. l. c.; Willk. et Lange l. c.; ach. all more or less beaked.—H. neapolitana DC. vii. 91.—Herb. per. Mad. reg. 2, r. Abundant and completely naturalized in fields and by roadsides at St. Antão da Serra, extending already a mile or more along the road towards Funchal from Mr. Blandy’s house and farm which have been its centre of diffusion, though not introduced more than 15 or 20 years ago with grass-seeds from England. May-July.—Root strong vertical dividing below the thickened per. crown into 2 or 3 tap-shaped branches running deep into the ground, often stoloniferous with stout short subterranean horizontal runners from beneath the crown forming fresh pl. Leaf-st. 0 or very short; 1. all in a flat rosette of 2 or 3 rows very close-pressed to the ground and killing all other herbage, dull hoary gr. and thickly furry with short w. bristly pubescence on both sides, 3-6 in. long, ½-1 in. broad, never red or rose-coloured. Fl.-st. several or many ascending in quick succession or together from the flat radical leaf-star like scapes, 6-18 in. high remotely fork-branched hard stiff twig-like or wiry but gr. and slender, quite naked and leafless except a few minute bracts at the forks, sprinkled with bristly w. hairs downwards, villose at the base. Ped. 4 or 5 in. long angular-striate sparingly bracteolate and thickened upwards under the anthodium, br. remote scattered minute linear-lanceolate erect livid or lurid purple or v. Fl.-buds always erect, when very young globose or hemispherical, then oblong, and when closed in fl. or in fr. pyramidal and ventricose at the base. Fl. very like those of Thrincia hispida Roth, but larger, 1-1½ in. in diam. or from the size of a half-crown to that of a crown or dollar, 3 or 4 times as large as those of H. glabra L. and of a deeper fuller y. as in Thr. hispida Roth or Taraxacum officinale Wigg., the outer
broader ligules dark olive beneath. Florets with their ligules twice the length of inv., their mouth dimidiately fringed or crowned with y. hairs. Scales of inv. closely imbricate in many rows, the lowest short ovate, the rest oblong or linear-lanceolate keeled mostly smooth but sometimes hirtose at least downwards more or less with w. bristly hairs, dark gr. with lurid dark hivid or purpureo-violaceous tips like the bracts; the keel often setose-fringed or bearded with stiff w. bristles, and always darkly echinato-serrate or crested upwards at the tips. Recept. chaffy; chaffs (as in \textit{H. glabra} L.) long linear finely acuminate y. at the tips in fl., filmy w. and membranous below, shorter than the florets; in fr. setaceo-acuminate with fine hair-like withered black tips equalling the pappus and deciduous with the ach.; the latter fusiform muricately ribbed or echinato-scabrous chestnut-brown, all with slender long beaks longer than the ach. themselves, smooth upwards. Pappus dirty w. uniform stipitate in 2 rows, the outer row simple scabro-denticulate short, inner longer plumose.

This resembles the common English \textit{Leontodon autumnale} L. (EB. t. 830), which differs however entirely in its truncate root, shorter less branched sometimes simple 1-fl. copiously scaly scapes or fl.-stems and naked chaffless recept.: belonging indeed to the foregoing Tribe, \textit{Leontodonteae}.

The var. \textit{\textbeta heterocarpa} Moris. with the outer ach. beakless, from the Salinas of Cette (Gr. et Godr. l. c.), has not occurred in Mad.

Villars l. c. 64, well observes that the name \textit{juncea} would be more obviously suitable to this pl. in allusion to its rush-like st. than \textit{radicata} from its strong deep-running roots.

†Tribe XXVIII. \textit{Chondrilleae}.

†52. \textit{TARAXACUM Juss.}

†1. \textit{T. OFFICINALE} Wigg. \textit{Dandelion}.

Nearly or quite smooth; 1. in a radical tuft or rosette oblong runcinate with triangular lobes; outer lfts. or scales of inv. narrow-lanceolate squarroaely reflexed simple and scarcely or not at all gibbous or callous at the tip; ach. pale olive-grey.—Vill. Dauph. iii. 72; Brot. i. 324; Gren. et Godr. ii. 316; \textit{a. genuinum} Koch 492; WB. ii. 424; RFG. xix. 25, t. 53; Willk. et Lange ii. 230. \textit{T. Dens-Leonis} Desf. ii. 228; Lam.
Dict. v. 348, Ill. t. 653; DC. vii. 145; Coss. et Germ. a. officinale ii. 432. *Leontodon Taraxacum* Linn. Sp. 1122; Pers. ii. 367; EB. t. 510; Hook. Fl. Sc. i. 227; Sm. E. Fl. iii. 349; Bab. 195 (excl. varr.).—Herb. per. Mad. reg. 1, 2, r. Vineyards, roadsides and waste ground about Funchal, at the Valle, Mount &c.; Magdalena in the Quintal of S' Nuno de Freitas e Lamellino; Rib. do Fayal along the new Leveda, &c. Oct.—June.—Precisely in every respect the common universal British or European pl.; and none of the other forms or allied sp. have ever occurred either in Mad. or the Canaries. Root-stock a little tomentose or woolly at the crown. L. shining bright gr. mostly smooth, 2-4 or 5 in. long. Scapes 1-fld. fistulose pale often reddish 2-6 in. long. Fl. bright golden-y. 1-1½ in. in diam. produced in long succession. Heads in fr. with their elegant w. pappus globose 1-2 in. in diam., the ach. very caducous.

Much used as a salad on the continent, but disregarded in Mad.

**Tribe XXIX. Lactuceæ Less.**

**53. LACTUCA L.**

1. L. Scariola L.

St. erect tall stiff straight simple virgate paniculately shortly branched at top pale yellowish or straw-colour aculeato–strigose downwards, leafy about halfway up; L. not decurrent more or less glaucous runcinately sinuato–pinnatifid with the midrib beneath strongly fringed or ciliately aculeato–setose, the edges more finely spinelloso–denticulate; the lower simply the upper sagittately semiamplexicaul and reduced above the middle of the st. to small inconspicuous entire sheathing lanceolate br.; cymes few-fld. on short spreading side-branches towards the top of the st. forming a naked leafless oblong pyramidate panicle; fl. small pale lemon–y.; ach. black or dark coffee–brown striate shorter than their beak.—Linn. Sp. 1119 (excl. varr.); Vill. Dauph. iii. 156; Brot. i. 315; Pers. ii. 364 (excl. varr.); EB. t. 268 (small depauperated); Sm. E. Fl. iii. 346; DC. vii. 137 (excl. varr.); Koch 495; Coss. et Germ. ii. 434 (excl. var. β); Bab. 194; Gren. et Godr. ii. 319 (excl. var. β); RFG. xix. 33, t. 70. ff. i. ii.; Willk. et Lange ii. 238. *Lactuca sylvestrís* Lam. Dict. iii. 406 (excl. var. β); β. coriácea Schultz in WB. ii. 422. —Herb. ann. Mad. reg. 3 and occasionally 2, 5.; GD. reg. 2, r. Ravines and wooded banks, an odd pl. only here and there; Rib. de S'na Luzia, ravine west of the Alegria, Vasco Gil near the bridge, Chestnut–woods above the Jardim da Serra, Pico Grande,
Lombo Grande, Rib. de S. Jorge, &c., G.D. up the central valley. June-Sept.—A pl. of peculiar aspect with its pale tall round wand-like st. 2-5 ft. high often tinged with red or purple and harsh dry or stiffish but scarcely coriaceous foliage. Lower 1.4-6 in. long, 1½-2 broad, gradually decreasing in size upwards and passing above the middle of the st. into mere small ovate-lanceolate dark purplish-v. inconspicuous bracts; the midrib of the st.-l. strigously fringed beneath for about half its length with copious pale harsh prickly bristles like those of the lower part of the st. Fl. small in lateral spreading short few-fld. cymes along the upper third or fourth part of the st. forming a naked terminal pyramidal-oblong panicle 6-18 in. long and half as broad; the branches and scales of inv. smooth and usually dark v. or purple. Heads few-fld. 4-5 lines long, 1-1½ broad; scales linear-lanceolate smooth 6 lines long in fr. Ach. deep coal-black 1½ line long, ½ broad, obcuneate abruptly apiculate or shortly beaked and pectinato-ciliate or ciliato-setulose at top, much flattened, marginate, longitudinally ribbed and most elegantly and closely striolate transversely, the beak produced into a slender pale or w. pappus-stalk about the length of the ach. itself. Pappus very fine and silky snow-w. a little longer than its stalk.

The l. are more frequently horizontal or spreading in Mad. than erect.

*Lactuca sativa* L. (Common garden Lettuce, *Alface* Port.) var. *a* (Roman Lettuce) and more especially *L. capitata* DC. (Cos Lettuce) are commonly cult. in Mad.; but I have never seen them in any degree naturalized or growing spontaneously. Von Buch however includes the former in his Mad. List 194. no. 221, on the authority of a spec. still extant in BH., marked at the back of the sheet "Madera 1768," and recorded by Solander in his MSS. as collected by Banks and Solander “in vinetis.”

54. **Sonchus** L.

(a) Herbaceous, annual.

†1. **S. Oleraceus** L. Sowthistle. *Serralha.*

St. somewhat firm and slender branched; l. flat soft flaccid mostly feebly and inconspicuously spinuloso-toothed and unarmed, smoky opake dull gr. above, strongly glaucous beneath, deeply pinnately lyrate with the terminal lobe mostly large and deltoidal, sometimes pectinately laciniate, sometimes undivided; auricles of the st.-l. acute or acuminate and simply spreading; heads cymoso-umbellate, ped. and inv. mostly naked smooth sometimes glandulose; ach. immarginate longitudinally obsolesly many-ribbed or striate on each flat side and trans-
versely muriculato-granulate or rugose.—Linn. Sp. 1116 (excl. varr. γ, δ); Lam. Dict. iii. 398 (excl. var. β); Desf. ii. 224; Brot. i. 316 (excl. var. 2); Pers. ii. 363 (excl. var. β); Buch 194. no. 217; EB. t. 843; Sm. E. Fl. iii. 343 (excl. varr. γ, δ); Spr. iii. 648; Koch 497; Coss. et Germ. ii. 436; J. A. Schm. Fl. Verd. 203; Bab. 195; Gren. et Gord. ii. 324; RFG. xix. 28, t. 59. f. i.; Willk. et Lange ii. 242. S. levis Vill. Dauph. iii. 158; WB. ii. 447. S. ciliatus DC. vii. 185.—Herb. ann. Mad. and PS. reg. 1, 2, 3, ccc; ND, GD, SD, c. In vineyards, gardens, cornfields, beds of ravines, by roadsides, &c. everywhere a universal weed. At all seasons. Varr.:—

a. triangularis Wallr.; l. runcinato-pinnatifid, terminal lobe large triangular.—RFG. l. c. f. i.; Willk. et Lange l. c.; a. runcinatus Coss. et Germ. l. c.; β. runcinatus Koch l. c. S. levis B, Vill. l. c.—The usual form.

β. lacerus Wallr.; l. pinnatifid or pinnatifid, lobes subequal cuspidate-toothed or spinulose.—RFG. l. c.; Willk. et Lange l. c.; Coss. et Germ. l. c.; γ Koch l. c.—Less frequent than a in Mad.; in ND, low, branched, bushy leafy prickly.

γ. laciniatus Lowe; l. laciniately pectinate-lorate finely divided, the segm. narrow elongate linear or linear-lanceolate.—ND. near the ruined house. About a foot high, much branched bushy leafy, altogether smooth. Foliage much like that of Tolpis succulenta (Ait.) α, dark smoky gr.; auricles acute. Heads numerous in ample forked cymes, not umbellate, very prominently and abruptly ventricose and fleshy at the base. Ach. and pappus quite normal. A very distinct well-marked form.

δ. integrifolius Wallr.; l. more or less undivided oblong or sinuato-panduriform toothed.—γ RFG. l. c.; Willk. et Lange l. c.; a Koch l. c. S. levis A, Vill. l. c.—Occasionally in Mad.

The peculiar seeds at once distinguish from the following sp. every form of this most variable pl.

†2. S. asper Vill.

St. thick succulent branched; l. firm harsh stiff crispate copiously sharply and ciliately spinous-toothed and harshly armed or prickly, shining lucid mostly bright light or full gr. above, glaucous beneath, shallowly sinuato-pinnatifid or runcinate (not lyrate) or undivided, auricles of the st-l. rounded subdecurrent erectly stem-clasping or spirally up-curved and subperfoliate; heads subumbellate, ped. and inv. mostly naked smooth; ach. winged or marginate strongly and distinctly 3-ribbed on each flat face, sometimes denticulate or muricate
at the edges, not transversely muriculato-granulate or rugose.—Vill. Dauph. iii. 158; Spr. iii. 649; EBS. tt. 2765, 2766; Koch 497; WB. ii. 448; Coss. et Germ. ii. 436; Bab. 195; Gren. et Godr. ii. 324; RF.G. xix. 28, t. 59. f. ii., t. 60. ff. i., ii.; Willk. et Lange ii. 242. *S. oleraceus* γ, δ, Linn. Sp. 1117; Sm. Fl. iii. 343; var. β Lam. Dict. iii. 398; Pers. ii. 363; var. 2 Brot. i. 316. *S. fallax* (Wallr.) DC. vii. 185; Seub. Fl. Az. 31.—Herb. ann. Mad. 1, 2, r; ND. and GD. §; SD. γ. In the north chiefly of Mad.; chestnut-woods and waste ground by roadsides, borders of cornfields and cult. ground at *S.* Vicente, Boa Ventura, &c., common. ND. and GD. at top sparingly. At most seasons, chiefly May–Sept. Vari. :—

*a. vulgaris* Coss. et Germ. l. c.; l. runcinately or sinuately pinnatifid waved prickly-ciliate.—*S. asper* β EBS. t. 2765; WB. l. c. 449, var. a. β.—Mad. *S.* Vicente, borders of cornfields; ND. and GD. at top.

*β. integrifolia*; l. undivided prickly-ciliate.—*S. asper* a EBS. t. 2765; WB. l. c. var. a. a; RFG. t. 59. f. ii. Chestnut-woods *S.* Vicente and Boa Ventura in Mad.

At once distinguished from all states of *S. oleraceus* L. by its harsh prickly less divided merely runcinate or sinuately pinnatifid lucid light gr. stiffer crispate l. with more or less helicoidal rounded auricles, stouter thicker softer or more juicy st., and more flattened and broadly winged distinctly 3-ribbed seeds quite devoid of transverse granulations. The edges of the l. are copiously fringed with prickles pointing irregularly up and down, not subremote and in the plane of the l. as usually in *S. oleraceus* L., their auricles rounded and more or less cochlate. Pappus in this as in the preceding sp. very soft and cottony.

The above varr. a and β both belong to the var. β. *purpureus* Bischff. of RFG. l. c. and Willk. et Lange l. c. The unarmed var. a. *inermis* Bischff. (RFG. l. c. t. 60. ff. i., ii.) = β. *mollis* Coss. et Germ. l. c. has not been hitherto observed, but may very probably be found in Mad.

(6) Herbaceous, perennial.


Herbaceous stemless or only occasionally and shortly subcaulescent, very smooth; l. all radical somewhat stiff or fleshy glaucous between the veins especially beneath, oblong-lanceo-
late subcaudato-acuminate pectinately or runcinately pinnatisect, their lobes or pinnae shortly oblong acute or acuminate subentire or sparingly and remotely toothed or subpinnatifid; fl.-st. erect single scape-like naked leafless regularly dichotomous or fork-branched upwards into a naked mostly few-fld. corymbose cyme, the branches and ped. divaricate smooth naked, the latter thickened upwards; scales of inv. close-pressed discoloured ustulate (dark reddish v. or blackish-purple).—Prim. 22; DC! vii. 189; WB. ii. 441 (Obs. 2).—Herb. per. Mad. reg. 1, £. Sea-cliffs at the Praia, mouth of the Soccorridos Ravine, &c.; at Paul do Mar; Pra do Pargo; the Entrosa abundant; indeed general along both the S. and N. coasts of Mad. especially to the westward, but not found in PS. and rarely in the Desertas. Oct.–Dec.

Varr.:

a. angustifolia; 1. very glaucous stiff and fleshy acute or finely caudato-acuminate, pinnae pectinate distinct narrow mostly much longer (3 or 4 times) than broad sharp-toothed acute or acuminate.—Prim. 23; var. DC! 1. e. S. dentatus Sol! in BH. et MSS.; Buch! 194. no. 220.—On exposed, dry, or sunny rocks.

β. imbricata; like a, but pinnae of 1. approximato-imbricate and broadly rhomboidal, as broad as long, acute sharply angular, the terminal lobe acute narrow small.—S. ustulatus Mason 1. 249 A, Madera, Dezertas, N. H. Mason (1857) in BH.—The axils of the 1. are fawn-coloured-velvety in the single example in BH.

γ. latifolia; 1. scarcely glaucous above, somewhat flaccid thin or membranous; lobes larger broader more remote and leafy than in a, about twice as long as broad.—Var. β Prim. 23; var. a DC! 1. e. S. ustulatus Mason! no. 249 (Madera N. H. Mason 1857) in BH. S. squarrosus s. fruticosus β Sol! MSS. and BH.—In more sheltered, hollow, moist or shady spots; a mere luxuriant form of the sp.

Root strong thick fleshy scarcely branched or fibrous, striking deep into the clefts or crevices of perpendicular bare walls of rock, bearing at the crown one or more rose-like tufts of radiating stiffish succulent more or less glaucous and runcinately pinnate 1., out of the centre of which rises the single annual stiffly erect hard but truly herbaceous round glaucescent naked fl.-st. from 6–12 in. high, dying down after flowering quite to the base. True st. none or only occasional in old pl.; and then short and thick (1–2 or 3 in. long), rough or rugged with the coarse and crowded remains of the 1. of former years, hard but not really woody, the pl. being always simply and truly herbaceous. Whole pl. very smooth except the quite young 1. or
SONCHUS.

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Leaf-buds and the bases or axils of the older leaves at their junction with the crown of the root or short stem. which are covered in α and β with a dense velvety fawn-coloured tomentum, exactly as in the unique example in BH. of S. dentatus Sol. MSS. and also in the Tenerifan truly herbaceous S. radicatus Ait. This is in fact a very general char. of the tips of the branches and young leaves in the Mad. and Can. Sonchi. L. 3—6 in. long, 1—2 broad, in outline lanceolate acuminate, their lobes or pinnae 6—8 on each side, regular and equidistant, decreasing equably in length from the middle upwards and downwards, the terminal lobe or point of the leaf being very narrow small and acuminate-lanceolate or subcaudate. Cyme regularly dichotomous throughout wholly naked or leafless except a small inconspicuous membranous reddish or purplish finely acuminate scale-like br. at each fork and occasionally one or two similar minute deciduous bractlets scattered on the ped. Fl. bright yellow, about 1 or 1½ in. in diam., with rather long lax ligules. Outer scales of involucre short broadly half-ovate subremote and exposing the pale gr. fleshy swollen base of the anthod. between them; inner scales linear-oblong acute and blackish or discoloured like the outer; all compactly close-pressed in all stages. Ach. rarely perfected, irregularly oblong or oblong-oval angular striated very pale brown. Pappus short but copious silky-white rough simple very deciduous.

γ, with short broad obtuse pinnae, is merely a rank luxuriant form of α.

Growing on the most exposed and arid rocks in the hottest situations, this very peculiar and well-marked sp. is completely burnt up during the summer. Immediately after the first autumnal rains it puts forth in Oct. or early in Nov. a fresh rose of leaf from the middle of the dead and dried-up remains of those of the former winter; and the scape and fl. appear soon afterwards, not lasting usually beyond Dec.

Though not recorded by Webb as a Canarian pl., S. ustulatus occurs at Taganana and thence to P" Anaga along the N. coast of Tenerife. The Can. S. radicatus (Ait.), also a truly herbaceous pl. with precisely the same habit, is at once distinguishable by its lyrate leaf with a large deltoidal terminal lobe and only 3 or 4 lateral lobes or pinnae on each side, its 1 or 2-leaved fl.-st. and irregularly not dichotomously branched cyme. Its ascription in the 1st ed. of Hort. Kew. to Madeira was a pure mistake, which was however corrected in the 2nd.

It is scarcely conceivable how such a consummate discri-
minator as Solander could have referred any state of this pl. as a var. to *S. fruticosus*.

(c) Shrubby, per.

4. *S. Pinnatus* Ait.

Altogether smooth sparingly branched, branches rather long and slender straggling straight naked even; 1. in terminal tufts full or dark gr. above, glaucous beneath, lanceolate acute or linear-lanceolate acuminate-caudate pectinately pinnate, pinna numerous distinct lanceolate or linear remotely pinnatifidly toothed or subentire; cyme terminal large ample many-fld. naked except a small pinnate 1. at the axil of the main lower forks compound, branches straight rigid divericate, fl. umbel­late at their ends; ped. slender thickened upwards, naked or with a few minute scarious deciduous bractlets; scales of inv. close-pressed pale gr. darker upwards.—Ait. ! Hort. Kew. ed. 1. iii. 116; Pers. ii. 303; Buch! 194. no. 218; Spr. iii. 647; DC. ! vii. 188; WB. ii. 439 (excl. var. *S. Palmensis* t. 130). *S. hyoserifolius v. hyoseridifolius* Hornem. "Hort. Hafn. ii. 752;" Spr. iii. 647 (certissime sec. Schultz, in WB. ii. 441 dicentem, "Nomine *S. pinnati* cl. Hornem. semina plantas sua? e Britannia habuisse").—Shr. per. Mad. reg. 3, g. Perpendicular rocks and cliffs high up in all the principal ravines; Rib. de S'a Luzia, da Metade, de S. Jorge, da Boa Ventura, &c.; Caminho Central between the Primeira Vista and Pico Grande, and especially abundant descending thence into the Curral das Freiras. July, Aug.—A fine shr. 2-6 ft. high starting from the clefts of high bare walls of rock, with long naked flaunt-ingly spreading or ascending woody greyish smooth and even branches about the thickness of the little finger, each with a terminal spreading rose or tuft of shining handsome foliage. L. 6-12 in. long or more, extremely variable both in general outline and in the breadth of the pinnae, dark gr. above with a pale midrib, beneath slightly glaucous with darker reticulating veins; pinnae 10-15 or more, regularly pectinate and becoming gradually shorter from the middle towards each end; those of the upper 1. always narrower and more entire than in the lower; the terminal lobe mostly acuminate-caudate and entire. Cyme rising from the middle of the tufts of 1. very large ample and many-fld. with a small pinnate 1. at each of its lower main divisions, otherwise naked except a few inconspicuous scarious brown scale-like bractlets, one at each division; it extends from 1 to 3 or 4 ft. beyond the terminal leaf-tuft, and its branches are slender stiff pale gr. elegantly marked with darker gr. lines. Fl. large 1-2 in. in diam. bright golden-y.; upper half of tube of florets copiously glandular-hairy or pubescent: stigmas recurved. Heads erect, in all stages obovate or pear-
SONCHUS.

shaped, fleshy at the base, of a pale delicate gr.; outer scales of inv. ovato-lanceolate narrower and longer than in *S. ustulatus*, inner lanceolato-ligulate obtuse and obscurely ciliato-puberulous or erosulo-denticulate towards the tips. Ach. pale brown elliptic-oblong flattened truncate 2-2½ mill. long, ¾-1 mill. broad in the middle, longitudinally ribbed, finely and elegantly reticulato-granulate with transverse striae. Pappus w. extremely fine, a little longer than the ach., sessile.

Schultz in *WB.* ii. 441, makes 4 varr. or forms of the Mad. pl. from the shape of the pinnae, &c. Having for many years observed the pl. on its native rocks, I can distinguish only the 2 following forms:—

a. angustiloba; pinnae narrow linear-lanceolate acuminate sub-pinnatilatly toothed, the terminal lobe sublongato-caudate.— *S. pinnatus* Ait., Pers., Buch, Spr., DC. ! 11. cc.; form i. Candolleana and ii. Webbiana Schultz l. c.

b. latiloba; pinnae broader oblong not acuminate sparingly toothed or subentire, the terminal lobe not produced.— *S. pinnatus* form iii. Banksiana and iv. Hornemanniana Schultz l. c.

In both these forms, which pass into each other through numberless gradations, the number of pinnae and all other characters employed by Schultz have no sort of constancy, varying on different branches of the same pl.

The Canarian var. *β.* Palmensis *WB.* t. 130, with its much smaller fl., &c., requires further investigation. It looks like something very different from any form of the Mad. pl.


Smooth remotely branched, branches short thick erect rugged; l. uniform full gr. in terminal tufts oblongo-lanceolate sinuato-pinnatifid with broad few shallow rounded lobes or lyrate with the large terminal lobe elongato-triangular, the upper undivided repand-angulate or quite entire, all ciliato-denticulate; cyme terminal leafy-bracteate, fl. large umbellate in sets of 2 or 3-5 together at the ends of its branches on rather long erect ped. thickened and squarrosely leafy-bracteate at top; br. of ped. and at the forks linear elongate wavy spreading or reflexed and pendulous entire; outer scales of inv. linear-acuminate leafy squarrosely reflected dark gr.—“Linn. fil. Suppl. 346; Hér. Stip. Nov. 171, t. 81;” Pers. ii. 363 (not Jacquin). *S. squamosus* (misprint for *squarrosus*) Buch ! 194. no. 219. *S. squarrosus* v. *fruticosus* a Sol. ! MSS. and BH. *S. squarrosus* Spr. iii. 647; DC. ! vii. 187.—Shr. per. Mad. reg. 3 and
upper part of 2, cc. Wet perpendicular rocks in almost all the principal ravines; e.g. Rib. de S’ra Luzia near the Waterfall, R. Frio, R. da Metade, de S. Jorge, da Boa Ventura, &c., at Camacha, S. Anto da Serra &c. June, July.—Almost subarborescent and gigantic in all its parts, being from 4 or 5 to 10 or 12 ft. high with a trunk often as thick as the arm (2-4 in. in diam.) and the ultimate branches as thick as the forefinger ending in a large spreading or radiating tuft or rose of shining full grass-gr. 1. 10-30 in. long and 2-6 broad, broadly lobed with 5 or 6 mostly rounded lobes and sinuses on each side like oak-l. (Quercus Robur L.) and a large triangular pointed terminal lobe longer than broad. Sometimes the side-lobes are subacute or angular, and the quite young 1. are always w. or hoary with a short thick furfuraceo-cottony tomentum soon disappearing. Cyme very large 1-2 ft. broad and high many-fl. with long pendulous or horizontal narrow leafy bracts at each of its divisions, auriculate or caudate at their base; each branch or division ending in an umbel of mostly 3 or 5 fl., round erect stiff naked. Ped. about 3 in. long erect round slender, naked below, thickened and furnished upwards with a few scattered reflexed linear waved entire leafy br. Fl. like those of the common Dandelion (Taraxacum officinale Wigg.) but very large, 2-3 in. in diam. bright golden y., nearly or quite scentless. Anthod. remarkably squarrose, the outer scales with reflexed leafy gr. points, the inner dark olive-black as if bronzed upwards. Ach. as in S. pinnatus but with 3 strong distinct ribs on each flat side and pappus much longer and more copious.

I have cultivated this fine pl. for many years in England. All it requires is protection in the house or greenhouse from severe frost during the winter months. Planted out in May or June it flourishes till late in the Autumn, flowering abundantly in August, and rendered by its large and handsome foliage at all times a striking ornamental plant.

Tribe XXX. Crepideae Bischoff.

55. Crepis L.

Sect. 1. Barkhausia Mchn. Ach. all or those at least of disk distinctly beaked.


Ann. nearly or quite smooth shining bright full gr.; st. erect leafy sparingly corymbose fork-branched from the base or crown; 1. smooth shining full or dark gr., laciniato-pinnatifid
or runcinate, the lower mostly lyrate, upper irregularly laciniate or sinuate-toothed auriculato-sessile or sagittato-amplexicaul, uppermost reduced to narrow or linear auriculate entire bracts; ped. mealy-puberulous and with a few black glands; scales of inv. mealy outside, the keel mostly fringed more or less with short conical capitate black glands or spinules, finely adpressedly silky-w. inside, outer lax unequal half or more than half the length of inner, erectly ascending (neither adpressed nor spreading) forming a short loose calycle; cymes loosely corymbose; fl. bright full golden-y. umbellate 2 or 3 together on slender ped. at the ends of the branches; outer row of ligules with a broad red stripe beneath, stigmas pale dusky olivaceous; ach. dark chestnut-brown muricately 10-ribbed, all attenuated into a long slender beak or pappus-stalk as long as or a little longer than themselves; pappus very fine soft silky w. protruding half the length of the pericline beyond it in the nearly ripe anthodia.—Barthieusia laciniiata Prim. 25; DC. i. 154. Crepis intybaeea Brot. Phyt. Lus. fasc. i. ed. 1 (1801) no. 12; ed. 2 (1816) i. 57, t. 26; ejusd. Fl. Lus. i. 321 (at least partly)? C. Dioccoridis and C. biennis Buch ! 194. nos. 225 and 232 (not Linn.). B. taraxacifolia y DC. i. c. (quad saltam syn. Brot.)?—Herb. ann. Mad. reg. 1, 2, ecc. Vineyards and cult. ground, banks and roadsides everywhere most abundant about Funchal, the Mount, Curral das Freiras, P° da Cruz, S° Anna, S. Vicente, &c. GD. reg. 2, r. Not seen in PS., ND., or SD. Jan.—June, and chiefly March, April, but here and there at most seasons.—Varr.:—

a. pinnatifida Prim. 26; DC. i. c.; 1. and br. irregularly laciniiato-pinnatifid, the lower l. runcinato-lyrate.—C. biennis Sol. ! in BH. quoad spec. Mad. Masson (not Linn.); Buch ! 194. no. 232. C. Dioccoridis var. cor. undique lutea Sol. ! in BH. quoad spec. Mad. Masson (not Linn.); Buch ! 194. no. 225 (partly).—About Funchal at P° da Cruz, &c.

β. integrifolia Prim. 26; DC. i. c.; dwarfish; 1. and br. all un-divided, runcinate or repandly toothed, the lower hispid or stri-gulose on the midrib nerves and edges beneath, the upper or stl. quite smooth.—C. Dioccoridis var. folis margine nudis Sol. ! in BH. quoad spec. Mad. Masson (not Linn.); Buch ! l. c. no. 225 (partly).—Mad. with a, but less common. GD. reg. 2, r.

Root simple tapshaped always ann. Pl. 1-3 or 4 ft. high somewhat succulent nearly or quite smooth and of a fresh bright shining mostly full dark gr., the l. often with a bright red or purple midrib. St. single stout solid erect, in a 1½-3 or 4 ft., in β 6-12 or 15 in. high, erectly but remotely fork-branched from the base throughout upwards, hard stiff smooth or very obscurely and irregularly minutely puberulous or glan-
dular, strongly ribbed or striated and angular, red or purple downwards. Branches erect remote elongate subcorymbose naked with an auriculate semiamplexicaul leafy br. at each fork, often in a lacinately pinnatifid, but sometimes, and in \( \beta \) always, acuminato-lanceolate, the uppermost being always finely linear and entire with the auriculate base only toothed. L. chiefly radical tufted, in \( \alpha \) altogether smooth; in \( \beta \) with the midrib hispid or furry and the nerves and margins hispidulous beneath; the edges in all the l. being remotely and irregularly subciliately setoso-denticulate. Fl. about an in. in diam, umbel late in twos or threes at the ends of the branches, loosely corymbose, closing about noon; ped. and fl.-buds always erect forming a loose broad cyme, the former ebracteate long slender mealy-puberulous with sometimes 2 or 3 linear-filiform br. at top. Heads slightly mealy outside, inner scales about 15 twice or more the length of the outer loose caly whole, gr. with a strong fleshy keel or midrib, very obtuse and prominent downwards and fringed or crested more or less with short conical or bulbous black soft spines; outer scales of caly whole unequal imbricate not spreading, lanceolate acute or subobtuse with discoloured ustulate or after flowering withered tips, a prominent gr. naked keel, and w. mealy membranous margins; all finely silky-w. inside. Tube of florets subpuberulous. Outer ligules mostly reddish towards the tips beneath. Ov. and its beak smooth. Ach. fusiform subcompressed attenuately longistrode, their beak in all as long as or a little longer than themselves, ribbed and transversely rugulose, each with a little short pedic. which remains attached to the recept. Recept. alveolate, the edges of the cells fringed with short erect bristles. Pappus in the nearly ripe anthodia before expansion protruding half the length of the closed periclinal above it in a thick close snow-w. tuft, copious. The long-beaked ach. or distinct pappus-stalk takes this pl. at once out of the category of \( C. \) biennis L., \( C. \) nicaeensis Balb., \( C. \) virens L. (\( C. \) tectorum Sm.), \( C. \) tectorum L., &c. And from \( C. \) taraxacifolia Thuill., its nearest ally, it is constantly and at once distinguishable by its smooth shining full or dark gr. less finely divided foliage, &c.

\( C. \) intybacea Brot. ll. cc. is perhaps a mixture of it with \( C. \) taraxacifolia or something else with l. "utrinque hirsuta."

2. \( C. \) divaricata Lowe. Almeirante.

Ann. or bienn. dwarfish succulent bright shining full gr.; st. short robust fork-branched smooth downwards, upwards with the divaricate ped. hispid glandulose; l. very smooth stiff rigid undulate crowded at the base or lower part of the st., the radical tufted or rosulate sinuato-runcinate, the st.-l. at the forks deflexedly caudato-acuminate subentire semiamplexicaul
and cordate at the base, produced into long entire conduplicate decurved points, the upper linear or auriculato-caudate; cyme small divaricately branched few-fld.; ped. rather short divaricate, thickly clothed or echinulato-hispid like the inner scales of the anthod. downwards with short black capitate setules or glandular pubescence, but otherwise naked or entirely ebracteate; scales of calyce lax, quite smooth like the upper halves of the inner, which are more than twice as long as the outer and densely glandular-hispid towards their base, with their edges or interstices slightly mealy-puberulous; fl. rather large somewhat dark golden-y.; heads in fr. ovato-ventricose; ach. dark-brown or black, all rather shortly attenuato-beaked, ribbed and transversely rugulose; pappus short scarcely longer than the inner scales of the pericline.—Barhhamia divaricata Prim. 26; DC. ! vii. 157.—Herb. ann. or subbien. March–June. Varr.:—

a. robusta; st. single about a foot high erect virgate many-fld. leafy, lower 1. runcinato-pinnatifid; outer scales of anthod. quite smooth.—B. divaricata a Lowe l. c.; DC. ! l. c. Crepis denticulata Sol. ! in BH.; Buch ! 194. no. 226.—Mad. reg. 1, rrr. Pia de S. Lourenço, only on the Ilheo dos Embareadores, but there most abundantly; PS. reg. 1, r. Rib. do Cochim or Cochino near the town to the westward.

β. pumila; st. mostly several spreading few-fld.; 1. undivided subentire much waved rigid stiff and fleshy thickly tufted; ped. and heads more hispid almost shaggy and more or less farinoso-puberulous, outer scales rarely subpubescent.—B. divaricata β Lowe l. c.; DC. ! l. c.—PS. reg. 1 and lower part of 2, cc, in cornfields, waste ground and by roadsides all about the town, east, west, and north; ND. at top, ccc, abundant; GD. reg. 2, r, up the central valley sparingly; SD. reg. 2, rr.

Root stout simple fleshy fusiform. Foliage large and copious altogether smooth, of a peculiar bright yellowish apple-gr., and crisp or stiffish succulent substance. St. 6–12 in. high, never more than 12, in β much less, gr. stiff stout solid furrowed branched from the base, smooth below, sprinkled gradually more and more upwards with short minute bulbous blackish or atropurpureus glandular pubescence, sparingly fork-branched, with a narrow decurved producto-acuminate leaf at each fork. Lower 1. forming a thick tuft at the crown of the root, the lowest in a sinuato-runcinate or pinnatifidly lyrate, the upper or st.-l. less divided and broadly dilated or auricled at the base, all but the lowest acuminate much waved and puckered. In β all the 1. are mostly quite undivided or only occasionally gashed, and entire or shallowly and sharply recurvato-denticulate. Fl. of a rather darker golden-y. than usual, about an in. in diam. solitary on simple erect stiff ped., not thickened upwards but densely clothed with short black glandular pubescence, widely
divaricate, forming a loose few-fld. irregular cyme. Heads in bud oblong, in fl. slightly ventricose as in Sonchus at the base, more so in fr. and ovate, smooth at top, glandular-pubescent at the base. Outer scales of inv. (calycie) short not half the length of inner, quite smooth, linear-lanceolate, with black or purplish points and edges, at first close-pressed, but soon withering at the tips and becoming lax and spreading; inner scales 10-12 twice as long linear fleshy densely glandular-hispid at the base with short hairs like those of the ped., but not for the most part black or dark purple, with a few indistinct mealy whitish cottony hairs at their edges or interstices, but except in $\beta$ scarcely enough to give any farinose appearance, quite smooth and shining upwards above their middle and nearly or quite smooth inside. The roughness or hairiness outside of the lower part of the inner scales appearing between the perfectly smooth outer scales, contrasts remarkably with the latter and with their own smooth upper portions. Heads in fr. considerably enlarged with the scales very fleshy; ovate, pointed, tipped with the slightly exserted pappus, swollen at the base. Ach. dark brown or black fusiform slender produced into a short slender beak, many-ribbed, the ribs minutely serrulate transversely. Pappus simple dirty or dull w. silky short but copious, rather shortly but distinctly stalked. Cells of recept. fimbriate.

The base of the glandular capitate hairs or setules is dilated longitudinally, like the prickle of a Rosa or Rubus, and on the st. and ped. is blackish or dark purple though the hairs themselves are not so always, and indeed, on the base of the inner scales of inv., are mostly altogether gr. or colourless.

This pl. is much sought after by the Machico people and brought over in boat-loads from the Ilheo dos Embarcadores on Pra de Sao Lourenco in April and May to feed their pigs.

3. C. HIERACIOIDES Lowe.

Bienn. light apple-gr.; st. fistulose erect paniculately branched from the base upwards throughout with a single amplexicaul l. at each fork or division and at least upwards, together with the ped. and heads, more or less echinulato-hispid with short capitate black setules or hirtose with longer simple black spreading hairs or bristles; rarely nearly smooth or naked; l. smooth shining mostly undivided repandly sinuate-toothed or with waved shallowly repand-toothed or remotely setuloso-denticulate edges, rarely runcinato-pinnatifid, with the strong pale whitish midrib beneath more or less hirtose and the upper l. often fringed at the edges with black or purple bristly hairs or setules, the root-l. oblong-lanceolate much attenuated downwards, the st.-l. sessile amplexicaul
linear or ligulato-acuminate angulato-cordate or dilatato-subauriculate at the base; fl. numerous in terminal and lateral divergently branched broad lax ample cymes, pale lemon-y.; heads mostly small or narrow and of somewhat few lax florets with the ligules often elongate and loosely spreading or subpendulous; ped. compressed at top with often 1 or 2 linear bractlets; scales of calyx short erect about 1/3 length of inner, the ped. upwards and all the scales of inv. either hispid more or less with short black patent setules and w. cottony mealy pubescence or thickly shaggy-hirsute with long black or brown bristly hairs, quite smooth (not silky-w.) inside; ach. very dark brown elongated slender produced into a rather short or thickish beak much shorter than themselves, strongly ribbed, the ribs or their interstices finely crenulate; pappus short copious silky-w. not exerted beyond the tips of the inner scales of the pericline.—Herb. bien. Mad. reg. 1-3, ½ May-Oct.

α. levigata; heads and ped. glabrescent or sparingly hispid, sometimes nearly smooth and naked; fits. few lax with elongate subpendulous ligules.—Barkhausia hieracioides α, β Prim. 27. no. 44; DC. vii. 157. Crepis auriculata Sol. in BH.; Buch ! 194. no. 224.—Mad. reg. 1, all along the N. coast from the Entrosa to Seixal, especially on wet banks and dripping rocks by waterfalls on the sea-cliffs at the Passo d’Area and between the Rib. do Inferno and Seixal.—A mere local form of β due to excessive moisture, with the foliage sometimes altogether smooth.

β. nigricans; heads and ped. densely hispid with black setules; fits. few lax with elongate subpendulous ligules.—Barkhausia dubia Prim. 27. no. 45; DC. vii. 157.—Mad. reg. 3, in most of the ravines of the N. above 2000 ft., e. g. in the Boa Ventura all about and below the Boca das Torrinhas; all down the Voltas from the Cruzinhos to Seixal; at the Rabaçal; head of the Rib. de João Delgado; Rib. de S. Jorge, da Metade, &c. The usual mountain and probably normal form of the sp.

γ. crinita; heads and ped. thickly shaggy-hirsute or bearded with copious long brown or blackish hairs; heads larger than in α and β.—Barkhausia comata Prim. 27. no. 46; DC. vii. 157. Crepis comata Sol. ! MSS. in BH.—Mad. reg. 3, rrr, an odd pl. only occasionally here and there; Boca das Torrinhas with β; “a single pl. on a very dry rock on the Encumeada alta, Pico Ruivo and Pico do Areeiro.” Sr Moniz. Merely an extreme or perhaps monstrously developed state of β.

The discovery of numerous intermediate forms necessitates the fusion even of Solander’s pl., together with my own two former sp., into one—though the shaggy bearded involucral
scales and ped. of extreme forms, such as the original type of
C. comata in BH., give that var. a most distinct and peculiar
aspect. It passes however gradually back through β, which
seems to be the normal or average form of the sp., into the
other almost eglandulose or comparatively denuded maritime
state α,—the main distinctive characters of all three in com-
mon being the peculiar light shining apple-gr. foliage, the
mostly low habit branched from the base, the mealy-cottony-
puberulous ped. and inv., the peculiar deep-black setules or
hairs, the pale or lemon-y. fl. and small narrow heads of few
lax florets more like those of a Hieracium than of most Crepídes.
The l. vary from undivided to runcinato-pinnatifid in each of
the three forms.

The following description, taken June 10th 1830, from pl. of
β growing in my garden at the Valle, brought in the previous
Sept. from high up the Rib. de S. Jorge, is here subjoined
principally to help in forming a comparative opinion concern-
ing the doubtful C. andryaloides:—

Root at least bienn. as thick as the forefinger, nearly simple
tapshaped brown or whitish, 8 or 10 in. long wrinkled con-
centrically upwards. St. single about 2 ft. high fistulose stout
erect very straight, slightly but very obtusely angular, even,
big in proportion to its side-branches which are produced all
the way up from nearly the base, more or less bristly through-
out with short distinct patent (not glandular) hairs or seta?,
occasionally but rarely nearly smooth. From the shortness of
the side-branches in proportion to the main st. and the wide-
spreading lower l. the whole pl. forms an oblong or cylindric
bush broad in proportion to its height. Side-branches erecto-
patent slender subangular or striated leafy like the main st. to
the top with a single leaf at each fork or axil and terminating
like it in a loose subirregular cyme of from 3 to 6 or 8 fl., and
hispid more and more upwards with short glandular black or
blackish aculeiform setules. L. all of a peculiar pale bright
yellowish gr. with a whitish conspicuous midrib and of a thin
membranous substance, all quite smooth and shining except
the midrib beneath in all and edges in the upper l. which are
more or less sprinkled or fringed with hairs or setules. Root-
l. in a radiating tuft elongate lanceolate-oblong acute much
attenuated downwards into their petioles 6-12 in. long, 1-2
broad near the point; st.-l. oblong-acuminate cordate and half-
amplexicaul at the base, one at each fork or axil, the upper
gradually smaller and more linear, the margins of all except the
uppermost waved, shallowly runcinato-sinuate with more or less numerous intermediate unequal denticles or minute setaceous teeth, the uppermost entire but fringed with subulate denticles or short setules. Fl. paler y. and smaller than usual, about an inch in diam. Ped. divaricate slender a little thickened and mostly subcompressed close below the anthodium, naked or with only an occasional br. or two at top, densely clothed with short glandular black setules and slightly cottony with w. or mealy pubescence. Heads always narrow-oblong or cylindric, mealy and densely glandular-hairy at the base; calycle of about 6 unequal erect but lax or scarcely close-pressed scales linear-acuminate like the inner and about \( \frac{1}{3} \) of their length, all quite smooth and naked inside, densely clothed outside with glandular hairs or setules (black or dark-coloured at the base) and more or less hoary with a thin mealy w. cottony tomentum. Flts. somewhat lax not very numerous. Ach. whilst young beakless or of equal diam. throughout, when ripe gradually attenuated into a beak \( \frac{1}{2} \) of their whole length. Pappus scarcely longer than the ach., sessile at first, shortly stalked in the mature fr.

The Lanzarotan *Crepis Lowei* \( \beta \). *canariensis* Schultz in WB. ii. 461, t. 123, a spec. of which, sent to me by Webb in Oct. 1829, I then in litt. wrongly referred to my *Barkhausia hieracioides*, is certainly a distinct sp. characterized by its entirely smooth st., ped. and midrib of 1., its short ovate st.-l. broadly dilated at the base, and its densely setose-hispid heads ventricose in fr.—approaching indeed in this last point, as in its low leafy habit, *C. divaricata* rather than *C. hieracioides*. I found it not uncommonly from Jan. to Apr. on all the heights about Aria in the N. of Lanzarote in 1858 and 1859. There is also in BH. a spec. from Fuerteventura "ad rupes Tuineje," E. Bourg. Pl. Can. 1242.


Distinguished at once from the preceding sp., but almost solely, by its dark gr. l. all-over glandular-hispid or pubescent, like those of *Thrincia hispida* Roth; in other respects much resembling *C. hieracioides*, of which it may very possibly prove to have been a mere chance hispid-leaved form or var. This must remain however undetermined for the present. For if on the one hand and in favour of its union with *C. hieracioides*, the sp. rests on a mere single individual, on the other hand its distinctness is supported by the facts that no ambiguous forms connecting it with that sp. have occurred, and that it grew and subsequently flowered side by side with pl. of var. \( \beta \) of that variable sp., each preserving its own peculiarities.—Prim. 25; DC. ! vii. 164.—Herb. bienn. Mad. reg. 3, rrr. High up the
Rib. de S. Jorge, a little above the place where the stream fills up the whole breadth of the abruptly contracted ravine from rock to rock i. e. about half a mile above the subsequently discovered fossil-leaf-bed; a single pl., Sept. 17th 1829, growing with others of *C. hieracioidesβ* amongst loose rocks and stones in the bed of the ravine, with root-1. only. From this, transplanted into my garden in the Caminho do Valle, and flowering, all through May following, side by side with other pl. of *C. hieracioidesβ* brought from the same spot, the following description, written simultaneously with the preceding one of *C. hieracioidesβ* and under the full impression at the time of the two pl. being specifically different, is copied from my note-book:

Root bienn. or at least hapaxanthous, long simple fusiform fleshy whitish. Whole pl. hispid. St. 2-3 ft. high erect straight solitary branched upwards only above the middle in a forked paniculate manner, hollow, densely clothed throughout with patent or slightly deflexed shortish glandular whitish hairs, whose base is often black or purplish and summit tipped with a w. globose gland. Lower and middle part of st. round and even (not ribbed or striated), branches and ped. angular or ribbed. L. shining dark gr., their upper surface hirsute or pubescent all over and margins fringed with short unequal glandular hairs; beneath, the ribs only furnished with longer more copious hairs, leaving the interstices smooth and shining. Root-1. before the appearance of the fl. in a radical tuft, then withering, oblong, acute, 4 or 5 in. long, 1 in. broad, nearly entire, with fine sub-setaceous distant shallow runcinate teeth, much resembling the l. of *Thrinacia hispida* Roth. St.-l. sessile one at each fork of the branches semiamplexicaul cordato-angular but not eared or dilated at the base, oblong-acuminate, waved and subsummate with distant shallow runcinate teeth; the uppermost linear-acuminate quite entire. Cyme spreading with distant forked striated or angular branches. Fl. distant rather large 1½ in. in diam., rather paler y. than usual. Ped. slender divaricate naked or with only 1 or two distant linear br., densely glandular-hairy. Heads slender oblong, in all stages densely hairy with blackish glandular hairs; calycle of about 6 erect not very close-pressed long linear acuminated scales, after flowering more lax but not at all spreading, densely bristly like the twice as long linear inner scales. Flts. few with rather lax and elongated ligules. Ach. (unripe) oblong or cylindric ribbed with very fine close transverse lines or granulations between the ribs, giving them a slightly scabrous appearance. Pappus simple pilose silky, perfectly sessile in the immature ach., as in other sp., in which nevertheless the ach. when ripe become beaked and the pappus stipitate. Recept. flat naked with the margin of its cells or pits membranous and shortly lacerato-fimbriate or bristly.
56. **ANDRYALA L.**

1. **A. cheiranthifolia** Hérît.

Herb. ann. softly velvety-canescent fulvo-glandulous upwards; st. simple stiff straight erect branched at top only into a single terminal divaricately forked mostly spreading cyme; l. either undivided or (except the uppermost) variously sinuate-toothed or pinnatifid, their teeth, lobes, or laciniae acute; root-l. numerous persistent crowded in a thick close tuft or rose; branches and ped. of cyme stout divaricate and with the rather large heads densely fulvo-villous or viscoso-glandulous; pappus mostly pure w., 4 or 5 times as long as the dark coffee-brown or black ach.—*A. varia a, β, γ* Lowe in litt. olim (1831-2); DC. vii. 246. *Rothia cheiranthifolia* and *R. picroides* Rchb. in Holl's List.—Herb. ann. or only accidentally bienn. Mad. reg. 1, 2, 3, ccc; PS. 1, 4 chiefly, cc; ND. c; GD. cc; SD. 4. Apr.-Oct.

*a. congesta* ("Bofe de Burro"): robust mostly dwarfish thickly leafy densely tomentose and fulvo-villous, viscous upwards; l. thickly crowded on the st. and cyme, ovato-lanceolate or lanceolate-acuminate mostly quite entire or only the lower pinnatifidly sinuate-toothed; cyme thickly leafy and fulvo-villous more or less congested with short thick ped. and branches and large crowded heads with short broad ligules.—*A. robusta* Novit. 540 or 18. *A. varia β* Lowe in litt. et MSS. olim (1831-2). *A. varia v. erecta* (turn erecta obliterata, et *A. cheiranthifolia* a Dryandro suprascripta) α, β, γ Sol. ! in BH. and MSS. *A. varia* Buch ! 194. no. 233.

Subv. 1. **latifolia**; lower l. broadly oval oblong entire or sometimes sinuato-pinnatifid; upper ovate or ovato-lanceolate abbreviate dilated at the base and subcordately semiamplexical; cyme densely and conspicuously leafy and thickly fulvo-villous, the heads large congested on short thick ped. and branches. —*A. cheiranthifolia* Pers. ii. 377 (not Hért.). *A. varia a. candidissima* DC. i. c. *A. erecta a. albida fol. superioribus integris e lato basi lanceolatis: inferioribus pinnatifidis* Sol. ! MSS. *A. erecta* MSS. α, Porto Santo Fr. Masson 1777 Sol. ! in BH. *A. erecta γ. virescens fol. inferioribus subsinuatis* Sol. ! MSS. ; *A. erecta* MSS. γ Hort. Kew. Sol. ! in BH. *A. integrifolia* Linn. Sp. 1136?; Desf. ii. 236??.—Mad. on P³a de S. Lourenço, chiefly on the N. sea-cliffs. Ilheos dos Embareadores and I. de Fora abundantly; S³a Anna (S³ Moniz); P³a dos Frades in PS., passing into subv. 2; N., G. and S. Desertas, sea-cliffs. Entirely a maritime form of the sp.—A low bushy densely leafy very stout erect thickly and softly vel-
vety-tomentose pale hoary apple-gr. slightly viscous pl. about one foot high, thickly shortly and stiffly or condensedly branched at top only, forming a compact or close thickly leafy cyme clammy with y. or fulvous sometimes blackish glandular spreading hairs, copious on the st., branches, br. or floral l. and inv., but thinly sprinkled on the l. Root strong hard sparingly branched tortuous. L. densely crowded or congested in a large thick radical tuft, like those of Matthiola maderensis Lowe and closely imbricate or thickly clothing also both the st. and cyme; the lower 4 or 5 in. long, $\frac{3}{4}$–2 in. broad, mostly entire like the upper, but sometimes irregularly and more or less deeply sinuate–pinnatifid toothed or lobed, of a thick soft flaccid velvety substance, not elongate but broad comparatively with all the following varr. or forms of the sp., the lower broadly oblong, the upper 1–4 in. long, 1–3 in. broad, more or less broadly subovate or at least broadest or dilated and half–amplexicaul or subcordate at the base. Branches and ped. of the single terminal congested densely and conspicuously leafy cyme short thick robust, and, with the heads, densely fulvo–glandulose and woolly–tomentose. Fl. in large robust semi–globose short–stalked agglomerate or congested Madia-like heads, 6–8 lines in diam. with short broad oblong straight–sided 5–toothed ligules, 6 or 7 mill. long, 3 or 4 broad, not above $\frac{3}{8}$ diam. of disk, altogether plain full golden–y. Outer scales of inv. linear–lanceolate herbaceous thickly tomentose and fulvo–glandulose, the inner chaffy naked. Ach. all pappiferous, about 1 mill. long and half as broad, elliptic–oblong truncate at top with the w. or pale mammillate epignous disk encircled with a ring of minute w. denticles (bases of the deciduous pappus) and an outer coronet of strong black teeth formed by the prominent ends of the 10 strong abrupt ribs which are of a somewhat reddish dark brown and quite smooth like their black interstices. Pappus copious short scarcely so long as the inv.–scales, soft sessile very caducous pure w. simply rough or denticulate upwards, shortly ciliate or hairy downwards. Recept. thinly hairy–stose, chaffy at the margin with the naked eglandulous inner scales of the inv.—This pl., differing strikingly from other forms at first sight in its low dwarfish robust bushy leafy habit, large broad oblong or ovate thick almost fleshy l., large globose crowded short–stalked fl.–heads congested on short robust thick ped. and branches into a close dense leafy cyme viscous with y. or fulvous or blackish copious glandular hairs, passes through subv. 2 by innumerable gradations or combinations of char. into the ordinary mountain states of var. β.

Subv. 2. angustifolia ("Cravo de Gado" PS.); like subv. 1, but l. all lanceolate–acuminate.—A. varia β. angustifolia DU.
ANDRYALA.

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1. c. A. erecta β. albida fol. omnibus lanceolatis integris Sol. ! MSS.; A. erecta MSS. β, Madeira Fr. Masson 1777 Sol. ! in BH. A. glandulosa Lam. Dict. i. 154; Illust. t. 657. f. 1.—Mad. on P² de S. Lourenço here and there with subv. 1; “sea-cliffs at top beyond the Louros, S. Gonçalho” E. of Funchal, S° Moniz, approaching in foliage the less tomentose sinuate-toothed forms of β, subv. 2; P² Ferrovo (S. Jorge) and elsewhere on the N. coast plentifully; PS. reg. 4, on all the rocky peaks, especially on the N. side of the top of Pico do Castello, remote from the sea and 1400 ft. above it.

β. sparsiflora; viscous and fulvo-villous upwards only; 1. all lanceolate-acuminate; cyme compound, lax, stiffly spreading, widely fork-branched, inconspicuously leafy or merely bracteate at the forks, branches and ped. subelongate or slender, heads remote or distinct, ligules somewhat long and narrow.—A. varia α (subvarr. 1, 2) and γ (subvarr. 1, 2) Lowe in litt. et MSS. olim (1831–2). A. varia α, β and A. crithmifolia (not Ait.) Novit. 540 or 18. A. varia γ, δ, ε, ζ DC. ! vii. 246. A. cheiranthifolia Hérit., Spr. (not Pers.). A. pinnatifida and A. denudata Sol. ! in BH.; Buch ! 194, nos. 235, 236. Rothia cheiranthifolia and ? P. picroides Reichenh. in Höll’s List.—Mad. reg. 1–4, chiefly 2–4.

Subv. 1. integrifolia; 1. all undivided subentire or minutely remotely and inconspicuously repand-denticulate.—A. varia α (subv. 1, 2) Lowe in litt. et MSS. olim; A. varia α Novit. l. c.; A. varia γ, δ DC. ! l. c. A. denudata Sol. ! MSS. and BH. (Madeira Fr. Masson 1777); Buch ! 194. no. 236. Rothia picroides Rechb. in Höll’s List ?—Rocks and dry rocky banks in Mad. everywhere, especially from 1500 to 5000 ft.; about and above the Mount, in chestnut-woods about the Jardim, above P³ da Cruz, in the Serra d’Água, Rib. de S³ Luzia, Rib. Frio, da Metade, de S. Jorge, &c.; S. Vicente from the beach or sea-cliffs upwards; at “Jardim do Mar and Rabaçal” S° Moniz. June–Sept.—Varies in shady places or on moist rocks with 1. more thin or membranous naked or glabrescently pale mealy greenish (var. α, subv. 1 montana Lowe in litt. et MSS. olim = var. γ subglabrata DC. ! l. c. = A. denudata Sol. ! in BH. et MSS. and Buch ! ll. cc.), and on hot exposed dry rocks or at a lower elevation through innumerable intermediate gradations to more densely tomentose and hoary, the latter being var. α (subv. 2. aprica) Lowe in litt. et MSS. olim = var. δ aprica DC. ! l. c. The seeds of the former of these two states, which is in fact the ordinary mountain form of the sp., cult. in England at Margate in 1830 by my friend the Rev. M. J. Berkeley, produced for the most part pl. with the more or less pinnatifid or sinuately inciso-toothed 1. of the following subv. 2.
runcinata—corresponding thus precisely with Héritier's A. cheiranthifolia, which was figured from pl. raised in France or England from Mad. seeds.

Subv. 2. runcinata; 1. runcinately sinuate-toothed or pinnatifid, the teeth or pinnae spreading or recurved acute toothed or entire, the rachis leafy broader than the pinnae.—A. cheiranthifolia Hér. Strp. Nov. 35, t. xviii.; Spr. iii. 633 (not. Pers.).

A. varia γ. cheiranthifolia subv. 1 foliolum lobis abbreviatissimis subruncinatis Lowe in litt. et MSS. olim (1831–2). A. varia β Novit. l. c. A. varia ε. cheiranthifolia DC. l. c. A. pinnatifida a (wholly) and β (partly) Sol. ! MSS. and BH. (Madeira Fr. Masson 1777 and Hort. Kew. 1778); Ait. Hort. Kew. (ed. 1) iii. 129; Pers. ii. 377 (not Spr. or DC. and excl. habit. Canar.). A. pinnatifida Buch l. 194. no. 235. Rothia cheiranthifolia Rchb. in Höll's List.—Mad. here and there occasionally with subv. 1; rocky banks about and above the Mount up to the Arrebentão, Rib. de S. Luzia, R. dos Soccorridos near São Martinho, and in the N. on a rock at the head of Rib. Fundo above the Lagoa or Panal, &c. July–Aug.—Usually with thinly tomentose or mealy-naked 1. varying much in their degree of decomposition: i. e. from merely sinuate-lobed or runcinate with shorter broader mostly entire lobes (=A. pinnatifida β Sol. ! in BH.) to more deeply or completely pinnatifid with narrower ligulate or linear-acuminate laciniae (=A. pinnatifida a Sol. ! in BH.), blending thus into the following maritime state.

Obs. Solander constituted his A. pinnatifida var. β originally on a Mad. spec. (Fr. Masson 1777), still extant in BH., of the less deeply or finely pinnatifid state above referred to of the present subv. 2. He afterwards unfortunately referred to it a single sheet marked by him "A. pinnatifida β var. Teneriffe Fr. Masson 1778" which is the very distinct and purely Canarian (Tenerife, &c.) shrubby A. pinnatifida WB. ii. 412, t. 135; adding in darker ink "inter Rupes Insularum Canariensium Fr. Masson" to his original "Habitat in Maderæ locis graminosis." Hence not only A. pinnatifida Ait. of the Hort. Kew. wholly, but A. pinnatifida β of the same work partly, and originally entirely, belongs to the Mad. and not to the Can. pl. The latter sp. has indeed such small pretensions to the name of A. pinnatifida Ait., and so much confusion is attached to its reception, that the adoption for it even now of a new name, A. canariensis, might be warrantable.

Subv. 3. coronopifolia; 1. pinnatisect or subbipinnatifid, the
pinnae or laciniae narrow-ligulate or loriform elongate acute
often here and there again toothed or divided, the rachis narrow
linear not broader than the pinnae.—A. varia γ. cheiranthifolia,
subv. 2. crithmifolia Lowe in litt. et MSS. olm (1831–2). A.
varia ζ? crithmifolia DC! l. c. (excl. syn. Ait.). A. crithmi-
folia Novit. l. c. (not Ait.).—Mad. in one or two spots only;
sea-cliffs at Pτα do Sol at the E. end of the beach, and at
Magdalena on the tunnelled part of the sea-cliff road to the
westward beyond the Port. May–Oct.—In foliage this re-
sembles the more finely divided-leaved states of Plantago Co-
ronopus L. (as figured in EB. t. 892), or Artemisia argentea
Hér. or A. gallica Willd. (A. maritima EB. t. 1001), and
thus so far resembles also very nearly A. crithmifolia Ait.; for
which, indeed, till recently mistaking it, I sent it as a mere var.
of A. cheiranthifolia or varia in 1832 to the late Chev. De
Candolle. It is however merely an extreme maritime form of
subv. 2 with more divided tomentose canescent l., but not pre-
senting the other peculiar characters of the true A. crithmi-
folia Ait.

Compared as a whole with a. congesta, β. sparsiflora varies in
all its forms or subvarr. like α in being more or less thinly
mealy-tomentose i. e. greenish-naked or softly snowy-tomen-
tose. It is a taller less robust or dwarfish pl., with an open
free-branched ample lax or spreading cyme, and altogether
less leafy than α, with the st.-l. more remote and those of
the cyme narrow small remote and inconspicuous or reduced
to mere bracts. Laciniae of l. 2–2½, rachis 2–3 mill. broad.
St. about 2 ft. or from 1 to 3 feet high, tomentose but with-
out fulvous glandulous hairs like all the l. and br. except quite
the uppermost. Heads smaller (4–5 lines in diam.), but fl.
larger in diam. with longer narrower looser and more spread-
ing ligules (7 or 8 mill. long, 2–3 broad) than in α. Scales
of inv. fewer or more remote and distinct; in fr. not longer
or a little shorter than the dirty-yellowish pappus.

A. cheiranthifolia, thus constituted after many years' observa-
tion, is assuredly one of the most variable of pl. Like Schultz
in WB. ii. 414–418 in the case of his Can. A. pinnatifida, I
can find no constancy in either the degree of pubescence or of
decomposition or division of the l. taken apart. But combined
with differences of habit, port, or stature, lax or congested in-
florescence, size of heads, &c., each of these characters in turn
helps to distinguish the foregoing subvarr. or forms. Com-
bined or apart however, none of them possess stability
enough to warrant the separation of even my own A. robusta
as a sp.
Nothing short of a long and careful comparative study of numerous examples on both sides would justify at present the union of the Madeiran pl. with the European \textit{A. simuata} and \textit{integrifolia} L., into one sp.,—though certainly an Algerian spec. in Herb. Linn., inscribed by Linneus "\textit{Andryala simuata}," but with the numeral "1" prefixed, viz. that of his \textit{A. integrifolia} Sp. Pl. 1136, with which it also best agrees in char., seems undistinguishable from the Mad. P\textsuperscript{ra} de S. Lourenço \textit{A. cheiranthifolia} a., subv. 1. Desfontaines's \textit{A. integrifolia} (Fl. Atl. ii. 236) with a branched st., loosely corymbose pale y. fl. and fuscous ach., growing "in arvis" is however very doubtful.

2. \textit{A. CRITHMIFOLIA} Ait.

Root and rootstock per. or subper. frutescent woody; st. ann. tall virgate with several elongate erect virgate side-branches, each like the main st. with a terminal cyme and rising corymbose to the level of the main cyme, shortly or inconspicuously glandular-fulvous upwards only, downwards like the foliage finely mealy-pubescent and pale greyish gr. or glaucous; i. finely multifid or capillary-decompound 2–3-pinnatifid, the divisions all subspathulate capillary or linear-filiform elongate obtuse flaccid crowded intricate; cyme ample many-flowered spreading with long erecto-patent simple branches; heads and fl. small on very short ped. aggregate in small close terminal remote or distinct secondary cymes or clusters at the ends of the branches, the latter with the ped. and heads thickly but shortly fulvo-glandulous; ligules broad and short; pappus w. 4 or 5 times the length of the black pale-ribbed ach. —Ait. ! Hort. Kew. iii. 129; Pers. ii. 377; Buch ! 194. no. 234; Spr. iii. 663.—Herbaceo-frutescent per. Mad. reg. 1, rrr. Sea-cliffs to the E. of Funchal at São Gonçalho, from a little beyond the Louros or Lazaretto nearly all the way along the edge or top to the Garajão or Brazen Head abundantly; first found by the late Dr. Chas. Lemann in 1837, and recently by Sr J. M. Moniz. May, June.—A very fine and well-marked sp., not less distinct in habit, stature, mode of growth and inflorescence than in foliage from every form of the preceding sp. Whole pl. pale bluish gr. canescent finely mealy rather than tomentose, fulvous and shortly glandulous at top only. Rootstock frutescent woody, at least bienn. St. ann. 2–7 (mostly 5 or 6) ft. high and \( \frac{1}{2} - 1 \) in. in diam. at the base, hard firm and stiff but fistulose and herbaceous, dying down after flowering annually quite to the base, copiously leafy throughout but very crowdedly and densely downwards, and with its numerous long simple slender side-branches and cyme
also leafy; the l. all finely decompound like those of Fennel or of *Annu* Visnaga (L.), the lowest most, the upper gradually less, the very uppermost only of the cyme becoming simply linear; the rachis and laciniae almost capillary-linear, less or not more than one millim. wide, very narrowly and slenderly subspathulate, channelled or nerved above, convex or flattened beneath. Fl. small in little close cymose tufts or clusters at the ends of the long simple side-branches, which rising to the height of the main cyme form with it a large ample lax many-fld. corymbose panicle. Heads hemispherical compact 4-5 lines in diam. on very short stiff thickly fulvo-glandulous ped. 2-4 lines long; scales of inv. short narrow linear numerous close-set finely and shortly fulvo-tomentose or velvety. Ach. and pappus precisely as in *A. cheiranthifolia* a, subv. 1, supra. Recept. thinly sprinkled with long setose hairs.

The pl. sent by me to the late Chev. De Candolle in 1832 for *A. crithmifolia* Ait. was the P*ta* do Sol var. β, subv. 3, of *A. cheiranthifolia* Hérit. supra; and it was accordingly correctly placed in the Prodr. under his or my *A. varia*. The late Dr. Chas. Lemann in 1837 first found the true *A. crithmifolia* Ait.; but I did not recognize it as such exclusively till very recently and on examination of the original type of Solander's (Aiton's) *A. crithmifolia* in BH., having previously called it, on its rediscovery by Sr Moniz in 1865 in Dr. Lemann's locality of 1837, *A. faniculacea*.

††Order XLVIII. AMBROSIACEÆ.

The Burr-weed Family.

Fl. compound but fits, diclinous i.e. male and female in separate heads (anthodia) on the same pl. Male fits. aggregate numerous in each head; scales of inv. in a single row, distinct or concrete only at the base; cor. gamopetalous regular funnel-shaped 5-toothed; stam. 5, anthers free distinct simple at the base; style filiform simple, stigma entire, ovar. abortive. Fem. fits. single or geminate enclosed in a gamophyllous inv. of concrete scales forming a hard nutlike fr.; cor. and stam. 0, style cylindric bitid, the branches recurved with stigmatic edges, persistent and protruded in fr.; ovar. adnate 1-celled 1-ovulate. Ach. obovate without pappus enclosed in the hardened pericarp-like inv. Seed erect without albumen, embryo straight, the radicle directed towards the hilum.
Coarse weedy herbs with inconspicuous fl. and no peculiar properties or uses.

††1. XANTHIUM. Male anthodia many-fld.; scales of inv. in a single row, free; recept. chaffy. Fem. anthodia 2-fld., cor. tubular-filiform. Ach. 2 enclosed in the thickened indurated 2-celled inv. which is shortly 2-beaked and clothed with hook-tipped spines.—Erect branched herbs with coarse rough angular or lobed l.

††2. AMBROSTA. Male anthodia many-fld.; scales of inv. more or less concrete or combined into a shallow cup; recept. naked. Fem. anthodia 1-fld., cor. 0. Ach. single enclosed in the persistent inv. which is 2-beaked and encircled with a ring or coronet of short straight spines or points.—Erect herbs with divided compound pinnatisect l.

††1. XANTHIUM L.

††1. X. STRumarium L. Burr-weed.

Unarmed; l. pedately nerved triangularly cordate irregularly angulato-lobed and toothed, shortly cuneate at the base and cut away to the two outer lateral nerves; heads crowded sub sessile in short terminal or axillary more or less stalked rac., the male heads above the female; fr. erect or erecto-patent obovoidal or obovate attenuate at the base, shortly pubescent, beaks straight simple not hook-tipped, spines slender straight hooked at the tip and the length of half the diam. of the fr.—Linn. Sp. 1400; Vill. Dauph. iii. 38; Lam. Dict. iii. 412; Ill. t. 765. ff. 1, 2; Desf. ii. 343; Brot. i. 480; Pers. ii. 558; Buch 195. no. 272; EB. t. 2544; Sm. E. Fl. iv. 136; DC. v. 523; WB. ii. 241; Koch 531; Coss. et Germ. ii. 444; Bab. 208; Gren. et Godr. ii. 393; RFG. xix. 101, t. 215. f. ii.—Herb. ann. Mad. reg. 1, 2, r. Machico, roadsides and waste ground at the back of the beach; Terra Chão above P° Delgada on the S. Vicente road,” Dr. Lippold. July—Sept.—An erect branched shortly furry-pubescent dull gr. pl. 1-2 ft. high, with somewhat the habit or aspect of Chenopodium Bonus Henricus L. St. ribbed and angular, flexuous upwards, often dark reddish-brown. L. on long petioles about as long as themselves, angularly coarsely and irregularly lobed and toothed, 3-4 in. long and nearly or quite as broad at the base, subcordate shortly acuminate, soft flaccid and fast withering, strigously rough or scabrous above, nearly smooth and paler beneath, pedately 3 or 5-nerved and cut away at the base to the 2 outer nerves as in Lappa minor. Rac. short flexuous; male heads superior rather numerous (10-15) globose or oval about 2 lines in diam., their inv. inconspicuous; fem. fl. fewer at the base of the rac. Fr. burr-like very hard
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5 or 6 lines long; 3 or 4 broad, thickly clothed like the burr of a Lappa with quite straight spines one line long, hooked quite at the tip, but, as the hooks turn inwards, not prehensile; beaks distinct not contiguous or concrete, straight, but in drying they become incurved or forcipate. Ach. 2, 1 in each cell of the excessively hard woody ovoidal olive-shaped fr., much the size and shape of apple-pips, elliptio-oblong compressed tipped with the hardened pointed base of the style smooth glossy dark grey, finely multistriate longitudinally, 4 lines long, 2 broad.

††2. AMBROSIA L.

††1. A. ELATIOR L.

Finely strigulos-pubescent; st. erect simple virgate hard rigid leafy shortly and thinly tomentulose; petioles ciliate; l. solitary alternate stalked scabrous closely and minutely adpresso-strigulose, dark gr. above, paler and cinerascent beneath, loosely compound, the lower 2-3-pinnatifid, the upper pinnatisect, the ultimate divisions lanceolate remotely gashed or toothed; heads in erect terminal and shorter axillary straight candeatus or cylindric obtuse rac., the male superior numerous crowded stalked subpendulous ebracteate hemispherical many-fld., the female inferior and remote or lax sessile ebracteate sometimes closely agglomerate in small axillary tufts without male fl., br. 2 or 3 ovate acuminate or lanceolate entire leafy, as long as or twice the length of the fr.; inv. of male fl. hypocrateriform entirely combined or 2-3-partite, the margin subcrenulate; fr. small hard obovate-urn-shaped irregularly tetragonal, crowned towards the top with an irregular circlet of 4-10 short erect conical pale points or spines; beaks straight simply pointed parallel and closely contiguous or often partly concrete into a pale single bifid beak the length of the style, with the 2 long filiform stigmas protruding from its apex.—Linn. Sp. 1401; Pers. ii. 558; Spr. iii. 852; DC. v. 526.

—Herb. ann. Mad. reg. 2, rrr. Præ do Pargo in a single small plot of cult. ground about ½ mile above the Church by the Vicar's watermill, a little to the left of the road to Fajãa d'Ovelha, plentifully and quite naturalized. July-Sept.—First discovered by Sr. Moniz in 1861.—In habit and foliage a good deal resembling Artemisia vulgaris L. but wholly scentless. Root woody much branched or clothed with fibres. St. mostly single simple 1½-2 ft. high, slender but hard and firm straight ribbed or angular pale mostly reddish or purplish on one side, thinly clothed with fine short cottony pubescence, sometimes per. woody and bushy with many branches from the base. L. in outline ovato-lanceolate 2-6 in. long including the slender petiole, 1-4 broad, loosely or subremotely
2–3 composite with leafy membranous divisions, dark full rough all over with short stiff strigose close-pressed hairs. Petioles fringed irregularly with long w. bristles. Rac. chiefly in bunches at the top of the st. about 2 in. long and ¼ in. broad; male fl. thickly crowded pale ochraceous, each head 15–20-fld. 3–4 mill. in diam. shortly but distinctly stalked, the saucer-shaped inv. leafy dark gr. subglabrescent ebracteate. Female fl. gr. with their spinous coronet and beaks pale straw-colour. Fr. hard but with its investing involucral coat thin and membranous, 3½ mill. long (of which the beak is 1 mill.), 1⅛ broad. Ach. single in each fr., 2½ mill. long, 1⅛ broad, hard black smooth rather shining ob-ovate-urnshaped sharply but unequally 3–4-quetrous, abruptly rounded or subobtuse at top with a small prominent apicle or blunt point.

Order XLIX. CAMPANULACEÆ.

The Campanula or Hair-bell Family.

Fl. perfect irregular or regular. Cal.-tube adnate to the ov., limb superior free mostly 5-partite persistent. Cor. gamopetalous inserted at top of cal.-tube marcescent or persistent, limb 5-fld irregularly and bilabiately or regularly and stellately, the lobes alternate with the sep. valvate in bud. Stam. mostly 5 epigynous inserted with cor. at top of cal.-tube free from or only adnate to the cor. partially or at its base and alternate with its lobes; fil. or anth. more or less combined into a tube around the style or free; anth. 2-celled bursting longitudinally inwards. Style filiform. Caps. mostly 2–3- rarely 5-celled, crowned by the persistent or marcescent lobes of the cal. and cor., the cells many-seeded bursting either loculicidally from the top downwards, or opening at the top, or sides by pores, valves, slits, or rarely transverse fissures. Embryo straight in a fleshy albumen; radicle near the hilum.—Herba- ceous or suffrutescent acrid mostly milky pl. with alternate exstipulate l. and mostly conspicuous blue or w., rarely red or y. fl.

Tribe I. LOBELIEÆ.

Odd segment of cal. superior or anterior. Cor. irregular 1–2-labiate. Fil. often and anth. always combined or coherent; the 2 lower anth. and sometimes all bearded at top; pollen ovoidal. Style smooth fringed with hairs below the 2-lobed or undivided stigma. Caps. splitting loculicidally downwards at top.

1. LOBELIA. Cal. 5-fld. Cor. tubular, tube split down on
the upperside, limb 5-fid 2-labiate, upper lip 2-, lower 3-fid. Stigma simple with a cup-shaped fringe or collar. Caps. 2–3-celled.—Fl. bl., w., v., or red.

Tribe II. **CAMPANULAE.**

Odd segm. of cal. inferior or posterior. Cor. regular rotate campanulate or tubular. Fil. and anth. free or anth. only partially combined; fil. mostly membranously dilated at the base; pollen spheroidal. Style pubescent; stigmas 2–3, rarely 5. Caps. opening by pores, valves or transverse clefts.—Fl. bl. or w., rarely lilac pink or y.

2. **WAHLENBERGIA.** Cal. 3–5-fid, tube obovoidal or ob-conic. Cor. campanulate 3–5-lobed. Stam. 3–5 free, fil. a little dilated at the base. Stigmas 2–5 short. Caps. oblong-ovoidal or subglobose partly superior, 2–5-celled, opening loculicidally by valves at top above or within and opposite the cal.-lobes.

3. **CAMPANULA.** Cal. 5-partite, tube mostly short. Cor. campanulate 5-lobed. Stam. 5 free, the fil. dilated and membranous at the base. Stigmas 3–5 filiform. Caps. turbinate short 3–5-celled opening by 3–5 lateral pores below the segm. of the cal.—Herbs mostly per. Fl. bl. or w., rarely violet, very rarely cream-col. or yellowish.

4. **MUSCHIA.** Like Campanula, but cor. rotate or tubular deeply 5-partite and capsule opening fenestrally by numerus transverse lateral slits or fissures between the nerves. —Large robust long-leaved per. suffrutescent herbs, peculiar to Mad.:! Fl. y. or fulvous.

5. **SPECULARIA.** Cal. 5-fid, tube linear-oblung elongate prismatically 3-gonal. Cor. rotate with 5 flat spreading shallow lobes. Stam. 5 free, the fil. short dilated at the base. Stigmas 3 filiform. Caps. long linear-prismatic 3-celled opening by 3 lateral pores near the top.—Small ann. herbs. Fl. bl. or violet.

6. **TRACHELUM.** Like Specularia, but cor.-tube very slender, fil. of stam. long, style exserted, and caps. spheroidal opening by three lateral pores at the base.—Smooth per. herbs with numerous small corymbose dark bl. fl.
Tribe I. Lobelieae.

1. Lobelia L.

1. L. urens L. Cabreira.

St. erect or ascending simple virgate or branched only at top into several long many-fl. rac. leafy, lower l. oval-oblong stalked faintly or repandly toothed or crenate, upper lanceolate sessile serrate; fl. in long terminal rac. simple or branched at the base, upper br. linear entire shorter than the fl.; pedic. shorter than the narrow cal.-tube, segm. of cal. linear-acminate shorter than the funnel-shaped cor.-tube; lobes of cor. \( \frac{3}{4} \) lanceolate subequal.—Linn. Sp. 1321; Lam. Dict. iii. 586; Brot. i. 304; Pers. ii. 213; Buch 194. no. 214; EB. t. 953; Sm. E. Fl. i. 205; Höll's List in Rat. Fl. and Hook. J. Bot. i.; DC. vii. 372; Coss. et Germ. ii. 351; Bab. 209; Gren. et Godr. ii. 306. Rapuntium urens Soloncense Bocc. Sic. 21, t. 11. f. iii., C, D, e, F. Rapunculus Galeatus, &c., Moris. Hist. ii. 467. § 5, t. 5. f. 56.—Herb. per. or ann. Mad. reg. 2, 3, c. Chestnut-woods at the Mount, Jardim da Serra, Sª Anna, S. Vicente, Prazeres, &c., and on moist banks or damp shady spots above 2000 ft. in all parts of the island; not seen in PS., the Desertas, Canaries or Cape Verdes. July—Oct.—Succulent bright shining full gr., 1–2 ft. high and in Mad. always quite smooth in all its parts. Lower l. 1\( \frac{1}{2} \)–2\( \frac{1}{2} \) in. long, \( \frac{3}{4} \) in. wide, subobtuse, attenuated at the base into short petioles. Rac. slender many-fl. elongate 6–12 or more in. long. Fl. more or less deep bl. small not above 6 or 7 lines long including their short pedic. Segm. of cor. deep bl., tube paler or lilac; anthers before bursting dark indigo-bl.

The whole pl. is very acrid and milky. No animals but goats will touch it; and to them it is said to be injurious.

Tribe II. Campanuleae.

2. Wahlenbergia Schrad.

1. W. lorelioides (L.).

Smooth; st. with mostly numerous erect slender virgate leafless side-branches from the base or downwards rising to the height of the main-st.; 1. confined to the lower parts of the st. or branches sharply toothed or serrate lanceolate, the lowest obovato-lanceolate, the upper reduced to inconspicuous linear minute br.; ped. subdichotomous filiform mostly elongate and curved or drooping; fl. numerous opening in long succession corymbose mostly cernuous in bud or fl., cor. funnel-shaped,
the tube obconic short not longer than the cal.-lobes, limb 3-5-fid, stigmas 2; caps. erect ovoidal subcylindric, seeds ovoi
dal.—DC. vii. 440; J. A. Schm. Fl. Verd. 207; W. lobelioides
\[\beta\] Linneoi WB. iii. 4. "W. pendula Schrad." Campanula
lobelioides Linn. fil. "Suppl. 140;" Hort. Kew. (ed. 2) i. 345;
Lam. Dict. i. 590; Suppl. ii. 61; Pers. i. 189; Spr. i. 786:
Buch 194. no. 211. C. inconspicua Sol. MSS. in BH. "C.
parviflora Salisb. Prodr. 126." "Roella cernea Brousse."
"Lobelia Broussonetia Bory."—Herb. ann. Mad. reg. 1, 2, c;
PS. reg. 4, c; ND., GD., SD. reg. 2, c or \(\frac{1}{2}\). Dry rocks, banks, walls and
beds of ravines in Mad. everywhere; Rib. de S'\(\text{a}\) Luzia, the
Brazen Head, Camacha, &c.; rocky summits of all the hills in
PS.; general in the Desertas and varying with w. fl. on the
tops of the hills towards the S. of GD. Apr.–June.—Root w.
fleshy nearly simple or tap-shaped. Whole pl. smooth and
shining 6-12 or 15 in. high, milky. L. bright gr. shining
somewhat stiff or fleshy 1-2 in. long and \(\frac{1}{4}-\frac{1}{2}\) in. broad, crowded
towards the base of the st. which is mostly many-branched
and bushy from the base. Fl. in a prolificus repeatedly forked
erectly branched cyme, small and inconspicuous but elegant,
pale v.-blue or lilac sometimes pink or rose-colour, rarely w.;
cor. twice or nearly twice the length of ov. and cal. mostly
5-fid, the smaller lateral fl. 3 or 4-fid. Stigmas 2 large. Capsu
le 2-3 lines long, 1-1\(\frac{1}{2}\) broad, 2-celled bursting at top within
the dark gr. or purplish cal.-teeth. Seeds numerous small.

3. CAMPA NULA L.

1. C. ERINUS L.

Ann. hispid; st. low often bushy, dichotomously branched
upwards; l. oblong or oval-oblong coarsely toothed, wedge-
shaped and entire at the base, the lower spathulate stalked,
the upper ovate or oval opposite sessile 3-fid; fl. very shortly.
stalked subsessile solitary in the forks and agglomerate in little
short leafy rac., heads, or clusters, at the ends of the branches,
forming an irregular lax dichotomous or diversicately forked
cyme; cal.-tube very short shallowly or flatly turbinate, the
segm. leafy exappendiculate lanceolate, spreading and trian
gular in fr.; cor. small campanulato-tubular scarcely longer
than the cal.-segm.; caps. mutant turbinato-discoidal inde
hiscent or finally bursting towards the base.—Linn. Sp. 240;
Vill. Dauph. ii. 514; Lam. Dict. i. 585; Desf. i. 181; Brot. i.
287; Pers. i. 191; Ait. Hort. Kew. (ed. 2) i. 353; Fl. Gr.
t. 214; Buch 194. no. 213; Spr. i. 736; DC. vii. 473; WB.
iii. 8; Koch 539; Seub. Fl. Az. 34; Gren. et Godr. ii. 412;
RFG. xix. 114, t. 246. f. i. Rapunculus minor folis incisis &c.,
Moris. ii. 458. \(\frac{5}{5}\), t. 3. f. 25.—Herb. ann. Mad. reg. 1-4, ecc;
PS. reg. 2, \(\frac{1}{2}\); GD. reg. 2, r. On rocks and walls everywhere

2 \& 2
in Mad. from the sea to the tops of the highest peaks, Funchal, Machico, P° da Cruz, S. Vicente, &c.; PS. in cornfields and by roadsides; GD. only on the highest peaks. March–July.—A low leafy mostly bushy dull dark gr. or greyish pl. 4–6 or 8 in. high, with the aspect (as Villars has remarked) of some ann. Veronica (V. agrestis or hederifolia or arvensis L.) rather than of a Campanula. Root small white branched only downwards. St. erect or diffuse simple below or with several ascending side-branches from the base, widely and regularly fork-branched upwards, the branches stiff but slender. L. ½–3 in. long, the lower spatheolate aad attenuated at the base into a petiole, the upper broader and shorter more or less obovate or oval and sessile, all deeply or coarsely and bluntly 3–6 or 8-toothed. Fl. small and inconspicuous numerous nearly sessile on very short ped. mostly solitary in the forks between 2 l., rarely oppositifolious; cor.-tube w. cylindric equal, lobes 5 light bl. equal ovate obtuse reaching beyond those of the cal. which are lanceolate and suberect in fl., broader or triangular and spreading horizontally in fr. Caps. small nodding or turned to one side shallow-turbinate and flattened above, 3-celled, mostly indehiscent. Seeds small oblong subpellucid brown and shining.

4. Muschzia Dumort.

1. M. aurea (L. fil.).

Herb. stemless or subcaulescent, wholly smooth and shining; l. in radical or terminal tufts elliptic or elliptic-oblong sometimes elongato-lanceolate, broadest in the middle equally pointed at each end, the lower attenuated at the base into distinct petioles, all coriaceous very smooth and shining, finely and sharply subduplicato-serrulate, the uppermost or fl.-br. subentire; fl. erect cymoso-paniculate, panicle terminal short triangular leafy candelabrum, cymes 2–3-fld. at the ends of the spreading or declining side-branches or their subdivisions; br. conspicuously leafy oblong-lanceolate; cal. coloured, its lobes erect ovate as long as the short linear-lanceolate spreading or reflexed lobes of the cor.—DC. vii. 495. Campanula aurea Linn. fil. "Suppl. 141;" Lam. Dict. i. 590; Suppl. ii. 59; Pers. i. 192; Venten. Malm. 116; Ait. Hort. Kew. (ed. 2) i. 351; Buch i. 194. no. 212; Bot. Reg. i. t. 57; Spr. Syst. i. 728.—Herb. per. Mad. reg. 1 (sea-cliffs) chiefly, but running up ravines to reg. 3, r or s. Cliffs at the back of the Praia formosa near Funchal; "S. Gonçallo," S° Moniz; sea-cliffs all along the S. coast to the W. of Funchal here and there abundantly, and in the N. above P°a Delgada. July–Sept.—Root thick fleshy striking deep into the fissures of perpendicular dry sunny rocks. St. originally none, but in the course of years the short fleshy
root-stock becomes lengthened into one or more thick rugged naked straggling st. 2 or 3-10 or 12 in. long and \( \frac{1}{2}-\frac{1}{4} \) in. in diam., fleshy very brittle and milky, simple or rarely divided, with a terminal tuft of l. from the centre of which proceeds the ann. fl. st. and below which it is pale brown scarred and rugged. Foliage dark but very bright shining gr. as if varnished. Root-l. 5 or 6 in. long and 3-3\( \frac{3}{4} \) in. wide in the usual sea-cliff pl.; in the narrow-leaved form (\( \beta \). angustifolia DC.) from mostly higher elevations or remote from the sea, 6-12 in. long, 1-1\( \frac{1}{2} \) wide, attenuated downwards into distinct narrow-winged petioles \( \frac{1}{2}-2 \) in. long; the upper or floral l. sessile; the midrib and nerves pale whitish like the tips of the sphaeculate callous teeth. Panicle 6-12 in. high erect shortly pyramidal candelabra-like with a sessile lanceolate more or less entire l. at each subdivision, the branches stiff straight widely patent round or subcompressed bright yellowish gr. Fl. most elegant and singular, scentless, about an inch long, a mixture of gr. and golden y., essentially erect, those of the mostly 3-fld. side-branches becoming so by an abrupt curve or flexure of the pedic. close below the fl.; the terminal fl. opening a little before the others. Cal.-tube obconic 5-gonal with 5 strong intermediate ribs, and like the upper part of the pedic. of a full bright golden y.; the lobes \( \frac{1}{2}-\frac{3}{4} \) in. long, 3-4 lines broad, in all stages erect, flat or slightly concave outwardly, their tips or margins slightly recurved and gr., the rest i. e. base, middle, midrib and veins, bright golden-y. Cor. paler y. than the cal., its tube slender narrow \( \frac{1}{4} \) in. long, the lobes narrow linear-lanceolate acuminate, 8 or 9 lines long, 2 broad, horizontally patent or reflexed between the cal.-lobes, forming before expansion an erect obtusely 5-gonal pyramidal tube far within the cal.-lobes, each with a little prominent tooth at the base between the divisions. Stam. about the length of the style, with slender flaccid fl.; anth. oblong mucronate brown discharging in the bud their globose y. pollen before the expansion of the cor. Style thickish and roundish subquincangular greenish upwards, shorter than the lobes of the cor.; stigmas stellately radiant or subrecurved linear flattened greenish, 4 or 5 lines long, erect in bud. The lateral fl. have sometimes only 4 stam. and stigmas; and more rarely 2 of the cal.-lobes are partly coherent. Caps. pentagonally obconic, bursting only by the decay or contraction of the parenchyma between the nerves or ribs, like the openings of a Venetian blind. Seeds small ovoidal.

\( \beta \). angustifolia DC. l. c. is merely an occasional longer- or narrower-leaved form, growing remote from the sea at higher elevations, e.g. Rib. de S\( ^{\text{a}} \) Luzia, 3000 ft., about half a mile below the Waterfall; Curral das Freiras, S\( ^{\text{e}} \) Moniz.
Had this pl. grown in Italy, it might well be supposed to have suggested the idea of the famous golden branch of the Cumean Sybil to the Roman poet:—

"Discolor unde auri per ramos aura refulsit,
Quale solet silvis brumalis frigore visum
Frondes virere nova quod non sua seminat arbor,
Et croceo festu teretes circumdare truncos.
Talis erat species auri frondentis opaca
Ilice, sic leni crepitabat bracteae vento."

Aeneid. vi. 204–209.

Nothing can indeed exceed the singularity and splendour of a fine panicle as it occurs in Mad. on its native rocks, almost wholly of a rich golden-y., and shining as if varnished, in full contrast with the equally bright shining dark-gr. foliage. The whole pl. abounds in a thick viscid mild or tasteless milky juice.


Shrubby erect furry-pubescent, st. simple or sparingly branched, branches thick stout woody and naked downwards; 1. in terminal radiant tufts elongate obovate-oblong broadest above the middle acute contracted downwards sessile and either abrupt or subdecurrent at the base, thin flaccid membranous, finely sharply and regularly duplicato-serrate, furry-pubescent particularly on the nerves and midrib and especially beneath; fl. erect cymose in an elongated pyramidal naked or inconspicuously leafy-bracteate terminal panicle, cymes 1–3-fl. at the ends of the straight stiff horizontal or declining side-branches or their subdivisions; br. inconspicuous small lanceolate or linear-lanceolate; cal.-lobes erect linear-lanceolate much shorter than the long linear-ligulate spreading or reflexed lobes of the cor. —Lowe in Hook. J. of Bot. viii. 298; Johns. I. c. ix. 164; BM. t. 5606 (a pale greenish-y. fl. state or var.).—Shr. per. Mad. reg. 3, rr. Dark moist shady banks or gleus along the Levada in the Rib. da Metade and more plentifully all down the Boa Ventura below the Boca das Torrinhas for 2 or 3 miles, up all the streams descending from the Pico Jorge. "Serra de S. Jorge and Rib. do Seixal," S' Moniz; "Ribeiras below the Encumeada de S. Vicente, Rib. do Inferno, most of the Seixal Ravines, and at the Serra d'Agua (Seixal) not more than 600 ft. above the sea," Mr. Mason. Aug., Sept.—A remotely or sparingly branched shr. with the habit of Sonchus fruticosus L. fl. and foliage of Isoplexis Sceptrum (L.). St. often simple and from 2–5 or 6 ft. long, naked with a single terminal radiating tuft of l., at most with only 2 or 3 remote
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simple branches each similarly crowned with 1., round smooth and even, with a pale ash-cold bark, perfectly woody and naked below the 1., while young pubescent, $\frac{1}{2}$-1 in. in diam. L. 1-2 ft. long, 3-5 or 6 in. broad, thin soft and membranous, light apple-gr., mostly more or less purplish, paler but not whitish beneath, the midrib pale straw-col. subsucculent and with the nerves almost hirsute beneath. Panicle from the centre of the terminal tufts of L., 1$\frac{1}{2}$-3 ft. long, naked or inconspicuously leafy, subremotely branched and flowered, the branches widely straightly and stiffly divericate 1-3-fl. Fl. large but not very conspicuous, 1$\frac{1}{2}$-2 in. long, erect not cernuous, scentless. Cal. large pubescent or furry like the whole panicle, tube 5-angular strongly 10-ribbed obconic; lobes permanently erect, twice as long as the tube yet only reaching a little beyond the top of the cor.-tube and only half the length of the cor., the whole of a dull dark brownish gr. or purple; the sinuses simple exappendiculate. Cor. dull ochre-y. tinged tipped or streaked with dull red giving it somewhat of a purpuraceous orange or lateritious tint like Canarina Campanula L. or Isoplexis Spectrum (L.); tube a little shorter than the cal.-lobes narrow slender straight cylindric strongly ribbed, a little swollen at the base; lobes 1 in. long, $\frac{1}{2}$ in. broad, linear subcanaliculate, rather longer than and reflexed between the cal.-lobes, but reaching about an inch beyond their tips. Anth. linear straight cuspidate, about half the length of the cor.-lobes and rather shorter than their own free very slender fil., which are quite smooth and dilated at the base. Stigma very large deeply 5-cleft, the divisions $\frac{1}{2}$ in. long spreading or revolute, the style exserted $\frac{1}{2}$ in. beyond the cor.-tube: the whole, like the cor. outwardly, pubescent. Caps., like those of M. aurea, bursting by transverse slits between the nerves or ribs, but semiglobose rather than obconic. Seeds minute (1 mill. long, $\frac{1}{2}$ mill. broad) oblong compressed tawny or yellowish-brown not shining but minutely rough.

Though not equalling M. aurea in the brilliancy and beauty of its fl., M. Wollastoni is in stature and in foliage a truly noble pl.

The beautiful figure of it in BM. t. 5606 with pale greenish-y. fl., recals the poet's warning "Nimium ne crede colori" in the case of cult. pl. Nothing like it in this respect has occurred in Mad.

5. Specularia Heist.

1. S. FALCAT A (Ten.).

More or less scabrous rarely smooth; st. slender virgate mostly simple sometimes slenderly and shortly branched down-
wards; fl. axillary sessile remote in a long spike or at the end of the short side-branches, mostly solitary, rarely 2–3-nate; lobes of cal. linear finely acuminate falcately spreading or recurved nearly or quite as long as the cal.-tube or ov. and from about as long to nearly twice as long as the cor. but rarely more than half the length of the ripe caps.; seeds lenticular rounded or rounded-oval.—DC. vii. 489; WB. iii. 6; Koch 544; Gren. et Godr. ii. 405. *Prismatocarpus falcatus* Ten. “Prodr. 16; Fl. Nap. i. 77, t. 20.” *Campanula falcata* R. et Sch., Spr. i. 737; “Guss. Pl. Sic. Prod. i. 247.”


β. *scabra* DC! l. c.; very scabrous almost furry, cal.-lobes scarcely longer than the cor.—*Prismatocarpus scaber* Lowe Novit. 538 or 16.—Herb. amm. Mad. reg. 2, ttt. Curral dos Romeiros, nearly at the bottom descending from the Mount, on a dry bank on the left hand a little before reaching the bridge; top of Cabo Girão “and from thence towards Pico do Cedro in the Curral das Freiras,” Capt. Norman; S. Vicente, rocks 1500 ft. above the church on the W. side; “Rib. de S’ta Luzia, São Gonçalio, and Levada do Bom Sucesso, Funchal,” S’ Moniz. May, June.—Root small w. slender fibrous strongly fetid. St. a foot high or more, abruptly bent and ascending at the base, then straight and stiffly erect, strongly 4-angular, slender. Whole pl. harsh roughly furry-scabrous pale dull greyish-gr. Lower or root-l. stalked rounded or spathulate crenate, the rest sessile lanceolate more entire, all small and inconspicuous. Terminal fl. larger and more conspicuous than the rest, cor. light v. or purplish bl., sometimes “pink” (Capt. Norman), its throat yellowish-w., 2 in. in diam. lobes 5 lines long, 2 broad, lanceolate, at first opening a little shorter but afterwards a little longer than the finely narrow falcate lobes of cal.; style and trifid stigma pale v. about half the length of cor. Side-fl. with the cor. shorter and altogether smaller. Caps. 6–8 or 9 lines long, about 1 line broad, strongly and deeply 3-ribbed or grooved, linear-subclavate, a little contracted but not narrowly constricted at top close below the cal.-lobes, attenuated downwards. Seeds 1 millim. long, very bright shining chestnut.

The name *Prismatocarpus* is now confined to the Cape sp., distinguished from the European by having only 2 stigmas, a 2-celled ov. and caps., the latter splitting down from top to bottom ultimately into 5 laciniae.

‡2. S. *HYBRIDA* (L.).

Partially or slightly scabrous, st. mostly simple virgate; fl. corymbose agglomerate or approximate at the ends of the st.
or branches, inconspicuous; cal.-lobes shortly lanceolate or ovato-lanceolate erect about half as long as the cal.-tube or ov. and twice as long as the cor. but only from $\frac{1}{2}$ to $\frac{3}{4}$ the length of the ripe fr.; caps. linear-oblong constricted at top, seeds oblong, oval, or elliptic.—DO. vii. 490; WB. iii. 6; Koch 544; Coss. et Germ. 349; Gren. et Godr. ii. 405; Bab. 211. *Campanula hybrida*, Linn. Sp. 239; Vill. Dauph. ii. 514; Lam. Dict. i. 589; EB. t. 375; Desf. i. 180; Brot. i. 287; Pers. i. 193; Ait. Hort. Kew. (ed. 2) i. 352; Sm. E. Fl. i. 293; Spr. i. 787. *Prismatocarpus hybridus* Hér., *P. confertus* Münch. and Campari, *spuria* Pall. (ex DC.). *Camp. arvensis erecta* Moris. Hist. ii. 457. § 5, t. 2. f. 22.—Herb. ann. Mad. reg. 2, rrr. “Borders of cornfields on the Cabo Girão,” Capt. Norman; “Pico de S. Gonçalho,” Sr Moniz. May, June.—A smaller stouter or thicker-stemmed more leafy or broadly leafy pl. than *S. falcata*, not more than 6 or 8 in. high, of a pale greyish gr. L. strongly waved and crenate at the edges, the lower spatulate and stalked, the upper broadly subspathulately oblong sessile. Fl. crowded towards the tops of the st. or branches in fascicles of 2 or 3, or solitary at the ends of short side-branches, very inconspicuous; cor. b. small and insignificant often scarcely opening and subabortive; cal.-lobes leafy $2\frac{1}{2}$ lines long, always erect, subciliato-scabrous at the edges. Caps. shorter and thicker than in *S. falcata*, 6–8 or 9 lines long, $1\frac{1}{2}$ broad, less attenuated downwards and distinctly constricted into a short narrow neck at top close below the cal.-lobes. Seeds 1 mill. long, all elliptic-oblong, bright shining chestnut.

††6. TRACHELIUM L.

††† T. CÆRULEUM L.

L. ovate or lanceolate or elliptic-oblong, acute at each end, petiolate, sharply serrate; cor. deep steelly or v.-b., limb salver-or funnel-shaped, tube long filiform fine and slender; caps. 3-celled.—Linn. Sp. 243; Lam. Dict. vii. 721, Illustr. t. 126; Desf. i. 182; Pers. i. 195; Ait. Hort. Kew. (ed. 2) i. 355; Bot. Reg. t. 72; Spr. i. 738; DC. vii. 491. *Rapunculus corniculatus* valerianoides *cæruleus* Moris. Hist. ii. 465. § 5, t. 5. f. 52. *Valeriana cærulca urtica folio* Barr. Ic. 683, 684.—Herb. per. Mad. reg. 1, rrr. In several gardens in and about Funchal quite a weed, and perfectly naturalized on the river-wall of the Rib. de S'ra Luzia under the house of the late Mr. Consul Veitch. Introd. about 1840. June, July.—Root or rootstock large tuberous. St. several 1–2 or 3 ft. high erect leafy, suffrutescent downwards, hard but slender, quite smooth like the whole pl. L. dark full gr., sometimes like the st. v. or purple ovate (1–2 in. long and $\frac{1}{2}$–1 in. broad) or lanceolate (1–2 in. 2 f 5
long and $\frac{1}{4}-\frac{1}{2}$ in. broad), sometimes more deeply or coarsely sometimes finely serrate, all distinctly stalked, petioles fine and slender. Fl. minute deep v. or steelly b. in dense terminal globose or semiglobose cymes, except in col. closely resembling those of *Valeriana rubra* L. Cal. minute with 5 short linear teeth, the whole only 1 mill. long. Cor. small and slender 3 or 4 lines long; the tube very finely filiform or capillary, limb minute in 5 short lanceolate or elliptic lobes scarcely more than $\frac{1}{2}$ line long. Style far exserted finely filiform, as long as the cor., with a capitate minute 3-lobed stigma.

Order L. VACCINIACEÆ.

The Whortleberry Family.

Fl. perfect regular.—Cal.-tube adnate to the ov., limb superior free 4-6-lobed. Cor. gamopetalous inserted at top of cal.-tube 4-6-fld caduceus, the lobes or divisions alternate with those of the cal., imbricate in bud. Stam. twice as many as the lobes of cal. or cor., in a single row, calyciflorous or free and inserted with cor. on an epigynous or perigynous disk at top of cal.-tube or base of its limb, not epipetalous or adnate to the cor.; fil. free or rarely united or monadelphous; anth. free terminal vertical 2-celled, the cells distinct upwards and produced at top into 2 hornlike tubes, each ending in an orifice or pore. Ov. inferior, crowned by the persistent cal.-limb in fr., 4-10-celled and composed of 4-10 multiovulate carpels alternate with the cal.-lobes; style single, stigma mostly capitate. Fr. berry-like juicy or fleshy. Seeds small numerous, embryo minute with fleshy albumen.—Shr. with slightly bitter sub-astringent watery not milky juices, simple alternate whorled or opposite exstipulate mostly coriaceous evergreen 1. and racemose or solitary fl. mostly red or greenish. Fr. edible acid subastringent cooling disinfectant antiscorbutic.

1. VACCININUM. Cal. 4-5-lobed, lobes short tooth-like, sometimes obsolete. Cor. urceolate or campanulate sometimes cylindric, 4-5-lobed or toothed. Stam. 8-10. Berry globose 4-5-celled many-seeded.—Erect, shr.


Shr. or subarborescent, mostly evergreen; 1. coriaceous not deciduous, oblong or lanceolate acute at each end, finely serrulate, the midrib pubescent at the base beneath like the short petioles and young shoots, all the rest smooth; fl. drooping in leafy-bracteate rac. below the leafy ends of the branches; cor. globose-campanulate or ovoidal not more than twice the length of cal., anthers awnless, style scarcely exserted, about the
length of the cor.; cal.-lobes distinct acute.—Link. “Enum. Hort. Berl. i. 374;” Spr. ii. 209; DC. vii. 567. V. Arctostaphylos “Willd. Sp. ii. 353; Andr. Bot. Rep. t. 30” (sec. DC.); Pers. i. 480 (partly); BM. t. 974; Buch 194. no. 210 (not Linn.). V. padifolium Sm. in Rees Cyclop. “no. 22.”—Shr. per. Mad. reg. 3, cc. Everywhere on the open mountains and in wooded ravines; above the Mount Church, in Rib. Frio, above Sª Anna, S. Jorge, S. Vicente, Pº da Cruz, at S. Antº da Serra, &c. May–Aug.—A shr. from 4 or 5 to 15 or 20 ft. high; in open spots thickly bushy with very numerous erect straight st. \(\frac{1}{4}-\frac{3}{4}\) in. in diam.; in more sheltered places, or in woods of other tr., more loosely branched and tree-like, with st. 1–2 in. in diam.; the wood hard, the bark smooth and pale or whitish on the st. and older branches, which are also much infested with Lichens, Jungermannias and Mosses, and reddish or purplish brown on the newer shoots or twigs. L. changing to a rich russet red or red Russia-leather colour in the winter or early spring, otherwise dark full gr., shining smooth except the midrib beneath, finely reticulate and serrulate, \(1\frac{1}{4}-2\) in. (mostly \(1\frac{1}{2}\)) long, \(\frac{1}{4}-\frac{3}{4}\) in. broad, stiff coriaceous with very short pubescent petioles. Fl. numerous in erect leafy-bracteate rac. mostly from the last year’s wood close below the new leafy shoots; br. leafy conspicuous oval or roundish thin and membranous caducous, the larger 3 or 4 lines long or broad. Ped. curved slender smooth. Cal. gr. or red on upper side, its 5 lobes broadly and shortly half-ovate acute or subapiculate. Cor. 3–5 lines long, nearly as broad, with 5 broad shallow recurved or reflexed lobes, pale waxy gr. or yellowish, tinged on the upperside with more or less deep (Russia-leather) red, rose, or flesh-colour; anthers included; style simple, only just its tip exserted. Fr. oval or oblongo-globose, broadly truncato-umbilicate at top dark shining purplish black with or without bloom, 4–6 lines long, 3–4 or 5 broad, mostly larger than those of V. myrtillus L. (Bilberries) and with a finer acid flavour. Seeds small brown angular beautifully reticulated.

Strictly confined to Mad. proper, where it forms close thickets of vast extent in all the upper parts of the island from about 2000 to 5000 ft., scarcely thriving either above or below these elevations and growing in greatest luxuriance at about 4000 ft. In the exposed parts of the mountains, it becomes stripped in winter of nearly all its l.; but in more sheltered spots they hang on, changed to a rich russet-red, or, before falling, often to a brilliant scarlet or crimson, till the fresh bright gr. young l. appear in April or May—the peculiar Russia-leather redness of the foliage in the winter and to the end of March giving to
whole mountain-tracts a remarkable and striking aspect. Vast quantities of the root-stocks, or st. cut up from the roots, are brought down daily into Funchal and all the villages of the island for fuel or brush-wood; and the taller st., 8–10 ft. long or more, are now much used as rods or poles (varas) for French Beans (Feijoens) Phaseolus vulgaris L., in default of the more durable Heath-poles which are yearly becoming scarcer. The fr. is also in much request for making a conserve or jelly, being a favourite and wholesome remedy in colds or coughs, and, mixed with sugar and water, making a pleasant cooling and refreshing drink.

Professor Heer in his fossil Plants of S. Jorge, p. 30, t. ii. ff. 15, 16, represents two l. of this pl. And I do not see in what respect his figures of Ilex Hartungi p. 31, t. ii. ff. 23, 24 (especially f. 24) differ from large young l. on luxuriant barren shoots of the same.

Though included by Seubert (after DC. on Guthnick's authority) in his Fl. Azorica at p. 41, Mr. Hewett Watson believes that the true V. maderense has not been really found in any of the Açorian islands, as it assuredly has not in the Canarian. The Açorian pl. of which Seubert (Fl. Az. 41) makes improperly as Mr. Watson thinks two sp., V. longiflorum Wickst. (DC. vii. 573) and V. cylindraceum Sm. (DC. vii. 571), with a cylindric cor. 2–3 times the length of the cal. and twice as long as broad, is indeed very closely allied to the Madeiran, but yet seems, from living spec. kindly communicated by Mr. Watson, really distinct. In these the petioles and midrib beneath are quite smooth; but perhaps no reliance can be placed on this, for Seubert l. c. describes the l. as "subtus ad basin tantum subpubescentia." The l. are certainly no more properly caducous in the Açorian than in the Mad. pl.

END OF VOL. I.
ADDENDA ET CORRIGENDA.

PART I.

Page line  
1  20 and passim, for "Dezertan" read: Desertan.  
iii 23, for "cassinoides Hérît." read: Dryandri Lowe.  
— 26, for "alata Decaisne" read: fragilis Desf.  
iv 20, for "pinnatum Huds." read: sylvaticum (Huds. ed. 1).  
— 37, for "sylvestris Lam." read: sylvatica Fr.  
v 5, after europæum L. add: ?  
— 8, for "Porto-sanctana Lowe" read: Loweana Webb.  
— 21, for "Victorialis Poir." read: ovata Forsk.  
— , for "Intybus L. β. DC." read: divaricatum Schousb.  
— 36, for "stellatum Sm." read: villosum Ait.  
— 40, for "fruticosa Schr. γ, δ Lowe" read: succulenta (Ait.) β, γ Lowe.  
— 43, for "aculeatus" read: bucephalophorus.  
vi 1, 2, and passim (as in Title-page), for "Dezertas" and "Deserta" read: Desertas and Deserta.  
— 9 and 22, for "fruticosa Schr. a" read: succulenta (Ait.) δ Lowe.  
— 38, for "Phagnalon" read: Gnaphalon.  
— 9, for "fruticosa Schr. a" read: succulenta (Ait.) δ Lowe.  
— 11, for "aculeatus" read: bucephalophorus.  
— 18, for "Galium murale L." read: Aspera muralis (L.).  
viii 21, for "creticus L." read: grandifolius Lowe.  
— 27, for "Intybus L. β" read: divaricatum Schousb.  
xi 6, for "prostrata," read: erecta.  
— 9, for "communis L." read: agraria Kth.  
— 15, after "crop" add: fruit, vegetable.  
— 19, for "dos Arriéros" read: do Areiro.  
— 31, for "Encumeado" read: Encumeada.  
— 18, (2nd column) for "de" read: do.  
— 22, (""") for "de Baxo" read: Debaixo.  
1 at bottom add:  

Division I. DICHLAMYDEÆ.  
Cal. and cor. distinct.  

2  5, add: Pet. distinct, rarely 0.  
3 16, "or Ouradinha" dele.  
— 3 from bottom, for "Buch Verz. 195" read: Buch! 195. no. 300.
ADDENDA ET CORRIGENDA.

Page line
3 2 from bottom, for “sylvaticus” read: sylvestris.
4 4, for “de Seisal,” “de Jauella” read: do Seixal, da Janela.
5 14, add to syn.: Buch 195. no. 301; Seub. Fl. Az. 42.
— 18, add: A single pl. with perfectly double fl. occurred in Feb. 1865 by a roadside in Seixal.
— 2 from bottom, for “Encomiado” read: Encumeada; and add: Fuyal and Rib. da Maiata, Pº da Cruz.
6 18, add to syn. Seub. Fl. Az. 43. no. 308.
— 19, add to syn.: Seub. Fl. Az. 43. no. 308 a.
— 22, after “road” add: At the Mount, Sº Moniz; and Rib. Fundo between Seixal and Rib. da Janela, March.
— 35, for “spreading” read: reflexed.
— 38, add to syn. Seub. Fl. Az. 43.
7 8, add to syn.: Buch 195. no. 299.
— 19, add: Viuvas.
— 23, add to syn.: Seub. Fl. Az. 43.
— 33, add: Ciumes.
— 4 from bottom, add: Seub. Fl. Az. 43.
— 3 from bottom, add: Obs. I am assured by my friend the Rev. W. W. Newbouald, that this pl., though “truly the D. Consolida of Sm. in EB. t. 1839, is not D. Consolida of RFG. or of Svensk. Botanic., but clearly the pl. now called by British botanists D. Ajacis; whilst on the other hand D. Ajacis at p. 8, line 18, is possibly D. orientale Gay in Gren. et Godr. i. 47.” I must however still adhere to my opinion that the latter pl., being certainly the true D. Ajacis of Linnaeus (Sp. Pl. ed. 2. 748; Syst. ed. 12. ii. 370), is properly so called; and that his D. Consolida is rather my Mad. D. Consolida L. /β. pubescens, with pubescent caps., continuously wrinkled seeds, large deep-blue fl. and sparingly or loosely branched st., than the D. Consolida of many recent continental botanists (e.g. Rchb., Koch, Gay, Gren. et Godr. Fl. Fr. i. 45) with smooth caps., interruptedly wrinkled scarious or scaly seeds, smaller blue or w. fl. and divaricately many-branched st., and to which belong probably the syn. of Clusius and Fl. Danica and certainly those of DC., Koch and RFG. f. 4669, referred in Mad. Fl. i. 7 to D. Consolida considered as including both these forms.

The 3 pl. would therefore stand in my view thus:—

1. D. Consolida L.

St. loosely and sparingly branched, rac. few-fld., caps. pubescent, style sublateral, wrinkles of seeds continuous.—Linn. ! Sp. Pl., Syst. and Herb. !; Broth. ii. 302; Buch 195. no. 298; Sm. EB. t. 1839 and E. Fl. iii. 30; Bab. (ed. 4) 12. D. Consolida /β. pubescens WB. i. 5; Lowe Mad. Fl. i. 7. D. Ajacis Gay in Gren. et Godr. i. 46 (not Linn.); Syme EB. (ed. 3) t. xlvi. (A.) (not Rchb.). D.
ADDENDA ET CORRIGENDA.

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St. divaricately branched, rac. few-fl., caps. smooth, style lateral, wrinkles of seeds interrupted scarios or scaly.—D. Consolida of most recent continental botanists e. g. DC., Fisch. et Meyer l. c., Koch 24, RFG. f. 4669, Gay in Gren. et Godr. i. 45, probably Clusius Hist. ccvii. and Fl. Dan. t. 683, and partly perhaps Brot. ii. 302.

3. D. Ajacis L.

St. simple virgate with short erect side-branches, rac. densely many-fl., stiffly erect, caps. pubescent, style lateral, wrinkles of seeds continuous.—Linn. ! ll. cc; Lam., Brot., DC., Fisch. et Mey. l. c. WB. i. 4 ; Koch 24 ; RFG. f. 4670 ; Lowe Mad. Fl. i. 8. D. Consolida Fl. Gr. t. 504? (not Linn.). D. orientale Gay in Gr. et Godr. i. 47.

Page

1. 2 from bottom, add: Buch 195. no. 298;
2. 25, add Ciumes.
3. 36, for "Allegria" read: Alegría.
4. 26, for "Ameixeira" read: Ameixieira.
6. 33, for "Agua de Bica" read: Agua da Bica.
7. 34, for "dos Arrieros" read: do Areiro.
8. — after "Moniz" add: Boca dos Corgos between the Primeira Vista and Pico Grande along the Caminho Central (Capt. Norman).
9. 3, after "europeum L." add: ?
10. 11, for "de Conselho" read: do Concelho.
11. 14, Obs. This, Prof. Babington believes, is P. Lamottei Bor. Fl. Centr. Fr. (ed. 3) p. 30.
12. 10, after "Herb. ann." add: Mad. reg. 1, r.—And at end of same line add: Mad. at the Mount, Brazen Head, in the Rib. de João Gomes, de St. Luzia (Sr. Moniz) and at Paul do Mar up the Voltas to Fajãa d'Ovelha; in PS. general about the town &c.
13. 25, for "Desertas" read: Desertas; and "or Madeira" dele.
15. 40, for "de" read: do.
16. 10, add to syn.: Buch 195. no. 302; Seub. Fl. Az. 43.
17. 12, for "Habit" read: Aspect.
18. 2 from bottom, for "ex Germar" read: et Germ.
19. 15, y. lata. This is probably a distinct sp., F. lata Lowe.
20. 20, for "do" read: do.
21. 28, add: F. Vaillantii Loisel. is however now (1868) considered properly distinct.
22. between 7 and 8, introduce:
7. bis. HIRSCHFELDIA. Pod linear or oblong short few-seeded with a 1-2-seeded beak; valves convex with a
single dorsal nerve and a few lateral anastomosing veins; seeds ovoidal in a single row in each cell.

20 3 from bottom, after “29.” add: *Cheiranthus littoreus* Buch! 196. no. 311. And for “MD.” read: GD.

21 4, after “violet-purple,” add: rarely in a (on sea-cliffs beyond Machico) bright rose-purple.

— 12, for “MD.” read : GD.

— 23, add to syn. Buch 196. no. 314.

— 24, for “de” (twice) read : do.

— 40, add : Goivos.

— 4, for “P. de Conselho” read : P. do Concelho.

— 28, “Quebra Panella” dele.


22 4, for “P. de Conselho” read : P. do Concelho.

— 28, “Quebra Panella” dele.


— 15, after “Koch 37” add : Seub. Fl. Az. 43.

— 16, add to syn.: Buch 195. no. 309.

— 18, for “Desertas” read : Desertas.

24 20, for “Gomez” read : Gomes.

— 4 from bottom; “EB. t. 492,” dele.

— last line, after “Rib. Frio” add : do Fayal.

25 1, after “pubescent” add : Root vertical slender simply fibrous, often a mere tuft of fibres, always without any oblique subterranean st. or rhizome.

— 8, add : Possibly *C. sylvatica* Link (*C. hirsuta* EB. t. 492) may have been overlooked.

— 19, after “Koch 51,” add : Seub. Fl. Az. 44.

— 20, after “EB. t. 735.” add : Buch 196. no. 310.

— 5 from bottom, add at end: *Brassica muralis*, Buch 196. no. 317?

26 24, after “Metade” add : do Fayal (Levada dos Vinhaticos).

— 39, insert between this and line 40 :

**7 bis. HIRSCHFELDIA Mnch.**

1. **H. INCANA (L.).**

Hispid-pubescent dull greyish not hoary, branches spreading straggling naked; lower l. lyrate, upper small remote and inconspicuous linear-lanceolate toothed; pods and pedic. close-pressed very short and narrow.—*H. adpressa* “Mchn. Meth. 264;” WB. i. 85; Gr. et Godr. i. 78. *Erucastrum incanum* Koch 61; EBS. t. 2843. *Sinapis incana* Juslen in Aacen. Acad. iv. 280; Limm. Sp. 934; Lam. Dict. iv. 344; Bro'r. i. 585; Pers. ii. 205; Bro’t. Phyt. ii. 205. t. 172; DC. Syst. ii. 618, Prodr. i. 220; Spr. ii. 913; Bab. 27. *Myagrum hispanicum* Limm. 893; Bro’t. i. 563 (status fructu subabortivo monstruo, rostro solum fertili). *Erucaaria Hyrcanica* DC. Syst. ii. 676, Prodr. i. 280 (test. Fischer et Mey.) ex WB. l. c. 86. —Herb. ann. Mad. reg. 1, rrr. Magdalena, sea-cliff road to the
Arco de Calheta beyond the tunnel and especially about the ruined Chapel of N. S. da Vida, very plentifully. The 2 varr. grow intermingled. May, June. Varr.:—


b. hebecarpiim; pods pubescent, beak and pedic. nearly or quite smooth.—EBS. l. c.; Bab. l. c.

In habit, size, foliage and fl. strongly resembling Rapistrum rugosum L., but with the short-beaked pods of Brassica nigra (L.). St. and foliage pubescent dull pale greyish-gr., not smooth and shining glaucescence purplish or v. as in B. nigra (L.) and of mostly lower growth, 1-2 rarely 3 ft. high. St. and branches hard and very tough, the latter remote straggling spreading or declining naked or inconspicuously leafy retro-pubescent produced into long racemose corymbs and without the peculiar pendulous stalked smooth 1. of B. nigra (L.). Fl. pale lemon-y.; sep. erecto-patent. Pedic. compressed 4-angular little more than one line long. Pods 3-5 lines long (of which the beak is one line), 3/4 line broad subquadrangular slightly compressed and turgid 3-4 or 5-seeded; beak short compressed 2-edged 4-angular ovate or lanceolate, contracted at its base, about the length of its pedic. or half that of the pod, 1-2-seeded, upper seed fertile, lower abortive.

This pl. is so entirely local and confined to an extent of not much more than half a mile along a coast-road not formed above 8 or 10 years and 12 or 15 miles from Punchal, that it is extremely unlikely, though certainly possible, that it should have been really met with by Masson, particularly as no spec. from him is extant in BH., and no entry of it as a Mad. pl. has been made by Solander in his Mad. List. Notwithstanding, therefore, this recent discovery of the true S. incana L. in Mad., I still think that the pl. intended by Von Buch (p. 196. no. 320) under that name must have been the universal S. nigra L. (otherwise entirely omitted) as affirmed at p. 27 of this work.

Page line
27 4, for "de" read: tronchuda ou.
— 30, after "Presl 95" add: Seub. Fl. Az. 44.
— 38, for "lemon-y." read: full lemon-y. almost golden-y., especially when compared with those of Hirschfeldia incana, (L.) which are pale lemon-y.
— 39, after "long;" add: one line wide.
— 40, after "beak" add: the length of the pedic. and 1/2 the length of the pod.
28 2, for "is found" read: abounds.
— 3, for "not yet occurred in Mad." read: only occurred in one place in Mad.
— 9, after no. 317 add: But considering that Sisymbrium erysimoides Desf. is one of the commonest weeds on walls
and rubbish-heaps in Funchal and other villages in Mad. everywhere, and that it is otherwise unrecorded by Von Buch, it may almost safely be concluded that it was the pl. intended by *Brassica muralis* of his List.

28 18, for "Saramago" read: Saramargo.
— 22, for "seedless" read: mostly 1-seeded.

29 13, dele "Lowe" and add: *Couve da rocha*.
— 25, after "t. 28" add: Buch ! 126. no. 319.
— 29, for "dos Arrieiros" read: do Arreiro.

30 3, dele "Lowe."

— 11, for "de" (twice) read: do.
— 12, after "2000 ft." add: Pta do Sol, W. cliffs, and sea-cliffs between Tabua and Rib. Brava plentifully; also along the new road to Camera de Lobos near the Soccoridos Ravine (Capt. Norman).
— 21, add: *Couve da rocha*.
— 33, after "Metade" add: Rib. do Fayal (Levada dos Vinhaticos).

39, for "Entroza" read: Entrosa.
31 7, for "Fedorente" read: Fedorenta.
— 15, for "de Baxo" read Debaixo, and add: Apr.–June.
— 5 from bottom, after "162" add: Seub. Fl. Az. 44.
— 4 from bottom, for "canariense" read canariensis.
— 2 from bottom, after "Mad." add: PS.,

32 1, for "Val" read Valle; and add: PS., Campo Debaixo in sandy places, S' J. M. Moniz.
— 9, after "cell" add: in PS. often 2 or 3.
— 23, after "Fountain" add: Rib. do Fayal (Levada dos Vinhaticos).

33 6, "R. Br." dele.
— 9, after "t. 327" add: Buch 195. no. 308.
34 12, after "no. 306" add: Seub. Fl. Az. 44.
— 16, after "weed:" add: Sum., Aut., but often.
— 18, for "somewhat tough" read: very tough and hard.

35 32, add to syn.: *Cochlearia coronopifolia* (misprint for *Coronopus*) Buch 195. no. 307.
36 6, after "95" add: Seub. Fl. Az. 44.
— 10, for "Dezertas" read: Desertas.
— 19–24, See pp. 453, 454, *infra* Part IV.
37 33, for "Dezertas" read: Desertas.
— last line, after "var. a" add: Seub. Fl. Az. 44?
38 2, add to syn.: Buch 196. no. 321.
— 28, for "Praya," read: Praia; and for "Ponta S." read: Ponta de S.
39 4, for "de Facho" read: do Facho.
— 23, for "de" read: do.
— 29, for "its greater" read: its much greater.
41 10, for "Saramago" read: Saramargo.
— 29, for "β" read: γ.
The w.-fld. var. of the common English \( V. \) odorata \( L. \) has been introduced and is now (1868) fast becoming naturalized above 1500 ft.

For "\( V. \) sylvestris \( \text{Lam.} \)" read: \( V. \) sylvatica \( \text{Fr.} \)

Obs. \( V. \) sylvestris \( \text{Lam.} \) being according to the French Botanists (e.g. Gren. et Godr. i. 180) \( V. \) canina \( L. \), the name of Fries, however inappropriate in Mad. to this Violet, must be adopted.

After "caps." add: smooth.

The syn. should stand thus (omitting that of \( \text{Lam.} \)): \( V. \) sylvatica \( \text{(Fries) Bab.} \) 37; \( \text{Gren. et Godr. i. 178.} \) \( V. \) sylvestris \( \text{R.I.B. t. 94. ff. 200, 201 and t. 601. f. 822;} \)
RFG. iii. t. 12. f. 4503; Koch 91 (not \( \text{Lam.} \)). \( V. \) canina \( \text{E.B. t. 620;} \) DC. i. 298 partly. \( \text{W.B. i. 110 (not Linn.)}. \)

Add to syn.: \( V. \) sylvestris \( \text{Coss. et Germ. Fl. Par. 111 (not \( \text{Lam.} \).)} \)

For "Torre de," read: Torreiro da.

For "Encumeado," read: Encumeada.

For "The modification sylvatica of the original name sylvestris would be" &c., read: The name sylvatica is, &c.

From the bottom, for "dos Arrieiros" read: do Arceiro.

From the bottom, after "peaks," add: Pico Grande "on one of the S. slopes very large and luxuriant," Capt. Norman R.N.

Add: Amor perfeito.

For "Tamagueira," read: Tamargueira.

For "Val," read: Valle.

For "trigonal" add: sometimes.

Add to syn.: Seub. Fl. Az. 44.

For "Rasteira," read: Rasteira, and dele: "or Rasteyro."

After "Ponta" add: de.

For "Suborder" read Tribe.

For "Suborder" read Tribe.

For "Suborder" read Tribe.

Add Craveiro.

2 from bottom, "Webb and Berth." dele, and add: Herva mel.

Add to syn.: Seub. Fl. Az. 45.

From bottom, add: from \( S. \) lusitanica \( L. \) and \( S. \) quinquevulnera \( L. \).

After "Ponta" add: de.

For "Orelha Boi," read: Orelha de boi or Rilha boi.

For "Dez." read: Des.

Add to syn.: Seub. Fl. Az. 45.

For "de Conceelho" read: do Conceelho.

"Nearly or": dele.

After "Ponta" add: de.
590

ADDENDA ET CORRIGENDA.

Page line
53 38, for "sometimes subciliate towards the base" read: the lower irregularly and minutely erosulo-subdenticulate.
54 2, "Except occasionally a few long hairs or cilia sprinkled on the edges of the l." dele. Obs. The hairs or cilia are essentially characteristic of *S. nocturna* L.
   — 31, add:
     *Lychnis Flos Cuculi* L., with double fl., has occurred once "amongst corn at S. Antonio near Funchal in June or July 1859" (H. Herschel, Mannheim); but it must have been merely an outcast or accidental straggler from some neighbouring garden.
55 3, for "Suborder" read: Tribe.
   — 8, after "smooth," add: or pubescent.
   — 12, after "mucronate" add: mostly.
   — 16, add to syn.: Seub. Fl. Az. 45.
   — 34, for "acuminato-mucronate" read: acuminately cuspitate.
56 1, for "de," read: do.
   — 12, add: *Orga* or *Gorda*.
   — 25, for "Feijãa," read: Fajãa.
   — 26, for "de" read: do.
   — 3 from bottom, before "deflexed," insert: erect or.
57 13, after "Head" add: Canico near the Fort by the sea, and on P'sa Oliveira, S' J. M. Moniz;
58 15, for "Praza," read: Praça.
   — 5 from bottom, for "de" read: do.
59 4, add: *Morugem*.
   — 6, for "joints," read: nodes or knots.
   — 14, add to syn.: Buch 196. no. 348.
   — 17, for "Desertas," read: Desertas.
   — 32, after "Bab. 54." add: *S. graminea* and *S. uliginosa* Buch! 196. nos. 356, 357 (not *S. graminea* L.).
60 25, add to syn.: Seub. Fl. Az. 45.
   — 30, for "de" (twice) read: do.
61 6, add to syn.: Buch 196. no. 358.
62 24, for "joints" read: nodes or knots.
   — 34, for "beneath" read: below.
   — 7 from bottom, after "single," add: mostly.
64 14, after "DC. i. 440," add: Seub. Fl. Az. 46.
   — four last lines; Obs. This difference was due probably to change of colour merely in drying.
66 1, after "Madeiran" add:
   *γ. ribifolia* Lowe; nearly smooth or only subhirtulose; st. procumbent; l. like those of *Ribes rubra* L., bright gr., sharply and finely toothed, sprinkled with a short sparse pubescence, with very long slender petioles pubescent upwards. Fl. small; pet. pale pink; pedic. long slender erect smooth or only here and there hirtose; cal.
smooth; involucral br. linear smooth; sep. smooth closing at first tightly over the smooth even capsules, presently becoming erect or patent and quite exposing the fr. Carpels (unripe) not toothed or margined, but when ripe strongly and sharply reticulato-cancellate, with the margins raised but entire, quite smooth; central disk small. —S¹a Cruz, a single pl. on a paved terrace in front of an old house on the left hand up a steep narrow street or road a little above the church (Torreiro da casa da S¹a Vittorina, no sitio da Rochinha). Febr.—May. First observed by S¹ J. M. Moniz, Febr. 1865. At the end of Apr. 1865 I found it still in fl. and fr., growing luxuriantly; but I could find no other pl. like it, either in its immediate vicinity or elsewhere in S¹a Cruz; though in all places, as well as growing with it, there was abundance of normal M. rotundifolia L. b, of which it was doubtless a mere transient or accidental individual form. In April 1868 I could find no trace of it either on the spot or elsewhere.

after line 16, before "2. M. MAURITIANA L." insert:

bis. M. NICÆENSIS All.

“Tolerably common about the Gorgulho, Casa branca and Rib. Seco fields, March 1865. I find that the two characters which are constant as marks of distinction from M. parviflora L. are the ovate or ovate-lanceolate involucral bracts and the size of the corolla, which is always distinctly larger than in that pl.” (Capt. F. M. Norman R.N. in litt. March 23, 1865).

The following description was taken from fresh spec. sent to me at Seixal with the above remarks:—

Pale gr. hirtosely starry-pubescent; st. stout spreading prostrate or ascending, 1. subreniform or broadly roundish-heart-shaped with 5 or 7 shallow obtuse or rounded crenate-toothed lobes, on long sparingly hirtose petioles which are often on the upperside thickly pubescent; stip. large ovate or subcordate smooth with only the edges ciliato-hirtose. Fl. moderately large and conspicuous, rather shortly but distinctly stalked in axillary clusters of 1–3 (mostly 3) together, the pedic. 2–3 (in fr. 4–6) lines long, erect in all stages; pet. 2–2½ length of cal. (say fully twice the length), ligulate-oblong, widely or distinctly notched, rose-purple with 3 darker nerves, their claw not ciliate or very partially indistinctly and minutely so; invol. br. 3 ovate or ovate-lanceolate leafy and as long and large in fl. as the inner sep., smaller and more acuminate in fr.; both br. and sep. smooth with the edges hirsuto-ciliate; pedic. in fr. always erect; fr. quite smooth with the cal. incurved and erecto-patent only partially concealing the fr.; valves of carp. flatly and evenly (not sharply) neatly and finely cancelled at the back, immarginate with the edges plain and simple, not raised or prominent; the central disk quite small.
ADDENDA ET CORRIGENDA.

Page line
66 8 from the bottom, for "Praya" read: Praia.
— 7 from the bottom, for "Caniso" read: Caniço.
68 35, add to syn.: S. carpiniifolia Buch 196. no. 341.
69 10, after "longer" add: Cal. with 2 or mostly 3 linear or linear-lanceolate br. at the base as in Malva parvi-
flora L.
— 22, for "Cha Ingleza" read: Cha bravo.
— 29, Obs. The greatest difficulty and confusion besets the syno-
ymy of this pi. Webb has certainly confounded two
distinct sp. under his Can. S. rhombifolia i. 36,—one
being identical with the Mad. pi. a, and the other, S.
oculata Lowe (not found in Mad.) distinguished by its
broader greener l. not canescent beneath, its larger
deeper-coloured bright orange fl. with a dark purple eye
and more numerous ("12-15") always 2-beaked carpels.
His description as to size of l. and cor. can belong only
to S. oculata; but in what it says of the underside of
the l. and denotes of the carpel-beak or mucro, speaking
of it in the singular number, it is only applicable to S.
rhombifolia L. a. maderensis of the present work. I
have therefore to offer the following corrected and en-
larged synonymy for the Mad. pl.:—

S. rhombifolia, Linn. ! Sp. Pl. (ed. 2) 961, cum var. β; Eojisad. !
Herb. quod ex. ad dextram scheda (altero ad sinistram pedunculis
petiolos vix superantibus prorsus distincto). S. fol. lanceolato-
rhomboideibus serratis, Ejusd.! Hort. Ups. 199. no. 5.—Varr. :-

a. maderensis Lowe; carpels 1-rostrate, beak or awn from $\frac{1}{2}$
to about the length of carpel.—S. maderensis Prim. 35, 36. S. rhombi-
folia Linn. ! I. c.; Lam. Dict. i. 4 ; Buch 196. no. 340 ; WE. i. 36
f. 212. Althaea Carpini folio Bocc. Ic. 11, t. 6. ff. ii b, ii c. Alcea
Pharnambucana Moris. Hist. ii. 528. § 5, t. 19. ff. 7, 8.—Mad. reg.
1, 2; ccc. Also found here and there by roadsides &c. in the Can.
(Tenerife, Palma, and with a very short beak in Gomera), but con-
founded by Webb with another Can. sp., S. oculata Lowe.

Linnaeus by his β in ed. 2 seems to have only intended to dis-
tinguish the more depauperated roadside wild state of the pl., as
figured by Boccone and Morison, from the luxuriant cultivated
form of the Hort. Eltham. and of his own Herb.

b. canariensis Lowe; carpels 2-rostrate or bicuspidate, beaks
shorter than in a.—S. rhombifolia Cav. Diss. i. 23, t. 3. f. 12;
Willd. "iii. 740"; Poir. Suppl. i. 20; Pers. ii. 243; Spr. iii. 111.
no. 22; DC. i. 462. no. 35; Seub. 46. S. canariensis Willd. "iii.
735"; Poir. l. c. 19; Pers. ii. 242; Spr. l. c. no. 24; DC. l. c.
no. 34 (excl. syn. S. alba Cav. t. iii. f. 8, que aristis glochidiatis
carpellorum distinctissima).—Mad. reg. 1, r. Calheta, Pta do Sol,
Pta da Cruz at the Serrado. Not found in the Can. by the writer.
ADDENDA ET CORRIGENDA.

Page line
70 12, 13, the words in parenthesis, dele.
— 15, for “Inglez” read: bravo, and for “English” read: wild.
— 16, “-pl.” dele.
— 21, before “soft” insert: thin.
— 27, after “sep.” add: seeds naked.
71 1, after “Seeds” add: naked.
— after line 2 add:
Abutilon permolle (Willd.) has been growing for some years spontaneously in Sr. J. M. Moniz’s garden in Funchal, and is very likely to become more widely naturalized.

72 25, for “Limoeira” read: Limheiro.
73 4, “or shr.” dele.
— 37, add: The true Shaddock is probably a good sp. It is described by Grisebach (W. I. Fl. 132) as having the l. beneath and young shoots puberulous. My friend Mr. Wollaston says of his conservatory-spec. from Messrs. Veitch’s nurseries, that the fl. are purple in the bud and the l. thick and coriaceous as in C. medica L.

74 38, for “recession of the edges” read: recession of the inner edges of the carp. from the axis.
— 45, after “unchanged” insert: The Citron (C. medica L.) is the favourite stock at Magdalena, where 2 trees, one on each side the door of Sr. Nuno de Freitas’s house in 1863 were 16-18 ft. high, with the branches extending circularly over a space of 50-60 ft. in circumference and loaded with fr.

75 26, for “Malforada” read: Malfurada.
— 34, add to syn.: Seub. Fl. Az. 46.
76 18, for “Gomez” read: Gomes; and after “Palmeira” add: below Boa Nova.
— —, for “de” read: do.
— 20, for “July” read: May.
— last line, after “cc.” add: PS. (Herb. Paiva) reg. 1, 2; rr.
77 1, prefix: in Mad.
— 2, for “das Romeiras” read: dos Romeiros; and for “de” read: do.
— 6, after “young” add: vigorous.
— 16 from bottom, before “DC. i.” insert: Brot. Phyt. i. 189, t. 77.
— 13 from bottom, for “das Romeiras” read: dos Romeiros.
— 8 from bottom, add at end: and erect, often a little ascending and.
— 6 from bottom, for “between” read: along.
78 7, for “forked” read: once-forked.
79 5, Obs. H. humifusum L. should precede H. perforatum L., as approaching nearest of the two to H. linarifolium Vahl.
— 5, for “Erva” read: Flor.
ADDENDA ET CORRIGENDA.

Page line
79 14, add to syn.: Seub. Fl. Az. 46.
— 29, add: Pelicão.
— 36, add to syn.: Seub. Fl. Az. 46.
— 2 from bottom, for “H. QUADRANGULUM L.” read: H. UN-
DULATUM Schousb.

80 for lines 8 and 9, read: “Schousb. in Wild. Enum. 810;”
— 13, for “Passa,” read: Passo.
— , for “1-2 ft.” read: 1-4 ft.
— 15, for “6-9,” read: 6-12.
— 19, after “pale,” add: golden.
— for lines 24-27 read:

It can only, therefore, be surmised that possibly by H. ovatum the present pl. might be intended, and that the name was afterwards suppressed by Solander under the subsequent idea of its identity with H. quadrangulum L., to which he would have doubtless then referred it; for he has left no record of the char. of his H. ovatum.
— 31 and 44, prefix ††† to each.

81 17, before “Sercial” insert: Cercial or.
— , for “Lestraço” read: Listrôo.
— , for “Cara” read: Carão.
— 18, for “Moça” read: moça.
— 20, “Bual or” dele.
— 21, for “Babozo” read: Baboso.
— 25, for “Malvazia” read: Malvasia.
— 26, for “babosia” read: babosa.
— 36, for “Malvazia” read: Malvasia.
— 37, for “Bual” read: Boal.
82 1, for “Malvasia” read: Malvazia.
— 2, for “Bual” read: Boal.
— 9, for “Hockheim” read: Hochheim.
— 25, for “Fazenda” read: Fajãa.
— 27, for “Estreita” read: Estreito.
83 5, before “trellises” insert: horizontal.
— 7, for “Balseiros” read: Balseiras.
84 5, for “Passus” read: Passara.
— 18, for “de” read: da.
— 41, for “Passinhias” read: Passara.
85 6, add to syn.: Buch 196. no. 336; Seub. Fl. Az. 47.
— 28, for “Passinhias” read: Passara.
87 3, for “Agoa” read: Agua.
— 4, for “Encumeado” read: Encumeada.
ADDENDA ET CORRIGENDA.

Page line
88 13, for "de" read: do.
— 32, add to syn.: Sub. Fl. Az. 47.
— 34, for "Praya" read: Praia.
— 35, for "d'Escalas" read: das Cales.
— 37, for "P. Juliana" read: P. de Juliana.
89 5, "Hérit." dele.
— 16, for "(L.)" read: Linn.
— 19, for "de" read: do.
— 23, for "de" read: do.
— 38, "Hérit." dele.
90 14, for "d'Escalas" read: das Cales.
— —, for "de" read: da.
— 15, for "d'Escalas" read: das Cales.
— 16, for "Abobaras" read: Aboboras or Abobras.
— 4 and 3 from bottom, for "de" read: do.
92 31, after "56" read: Sub. Fl. Az. 47.
— 34, for "Praya" read: Praia.
— 36, for "de" read: do.
— —, for "Serra Dentro" read: Serra de Dentro.
93 39, after "Cruz," add: Machico and about the Casa Branca,\nLoo fields near Funchal.
— 42, after "island" add: Apr.–June.
94 28, prefix ††.
95 23, after "pass" add: in gardens in Mad.
96 37, for "Gomez" read: Gomes.
— —, for "das Romeiras" read: dos Romeiros.
98 24, for "Sep. 3–5– or" read: Sep. 3, 5 or
— 36, for "Praya" read: Praia.
— 39, after "veins" add: drooping in bud.
— 40, after "Pet. crenate" add: Caps. ovate-globose pointed
acute, perfectly smooth within and without.
99 5, after "1. 498" add: Bab. 66.
— 7, before "Mad." insert: Herb. ann.
— 30, prefix †.
— 32, prefix †.
— 3 from bottom, add to syn.: Sub. Fl. Az. 47.
100 39, before "O. ceprina" insert: Subv. 1; fl. single.
— 40, for "(with single fl.)" read:—Herb. per. Mad. reg. 2, r.
The Mount, S Moniz; roadside up the Machico valley.
— 41, for "β. pleniflora," read: Subv. 2.
— 42, for "many," read: several.
— 43, after "Deanery," read: Estreito de Calheta, a little be­
low the Church.
101 6, for "always," read: mostly.
— 9, for "PURPUREA Jacq." read: VENUSTA Lowe.
— 18, before "Jacq.," insert: O. purpurea.
— 23, after "Camacha," add: up the Machico valley and Achada
of Pº Moniz, where the tubers are eaten by the children.
— 37, add: A new name is necessitated by the preoccupation of
purpurea by Linnaeus for a very different sp.
596

ADDENDA ET CORRIGENDA.

Page line
102 26, for “de” read: da.
103 31, for “Ponta S.,” read: Ponta de S.
— 32, for “de Baxo,” read: Debaixo.
104 13, for “Moquem or Moquino” read: Mocan or Mocano
(Pto da Cruz).
— 21, for “Seisal,” read: Seixal.
— —, “growing in large quantities:” dele.
— 22, for “and” read: up the.
— —, for “1857” read: where (June 5th 1863) I found 10
small tr. growing in a group close below the source or
Fonte itself in the thick jungle of Vaccinium and Heath,
both in fl. and with full-grown but unripe fr.
— 23, “who” dele.
— 24, after “rocks,” add : and in Pto da Cruz, where it is called
Mocano, I have both had it brought to me by a shep­
erd from “rocks towards Pico da Suna” (with the l.
infested with a very peculiar brown peltate gall) and
seen it growing on rocks along the Levada dos Lama­
ceiros under P. da Suna towards the Rocha furada.
— 29, for “4-6,” read: 2-6.
— 38, after “inconspicuous,” add : above.
— 39, “at least” dele.
— 43, after “spathulate,” add : rarely acute.
105 4, at end, add: or of the fl. of Olea fragrans L. with the fr.
of an Orange.
— 16, after “Pet.,” add : distinct, a little cohering in the
middle.
— 19, after “anth.” add: adnate.
— 26, after “rusty-brown” add : smooth and even while fresh,
but when dry.
— 29-35, dele, and substitute:
The Pto da Cruz name Mocan or Mocano, often cor­
rupted into Moquem, Moquin, Moquinho or Moquino,
belongs at Seixal, Rib. Fundo and Rib. da Janelia pro­
perly to Visnea Mocanera L. fil.,—a pl. the first dis­
covery of which is due to the accurately discriminating
eye of Sr. J. M. Moniz, who in the summer of 1856 first
found and distinguished it on its native rocks at Seixal
from Catha or Celastrus Dryandri Lowe (called Buxo
at Seixal), which it very much resembles: thus at once.

PART II.

107 8, add : Petals distinct.
108 5, for “Caniso” read : Canico.
ADDENDA ET CORRIGENDA.

Page line
110 26, after “ torrent” add: between Rib. Fundo and Rib. da Janella.
— 27, for “Furada” read: Rocha furada.
111 12, add: Tintureira.
112 6, for “Azores” read: Açores.
— 17, for “Azorian” read: Açorian.
115 25, before “9. TRIFOLIUM” &c., insert:

8 bis. TRIGNONELLA. Cal. subequally 5-fid. Pet. free caducous. Fil. not dilated upwards. Pod exserted linear or oblong slightly curved or falcate more than 4-seeded.—Fl. in axillary mostly few-fld. umbels or umbellate rac.

117 7 from bottom: prefix †††.
118 13, after “lateral.” add: Seeds mostly reniform, hilum short central estrophiolate.
— 21, after “ sutures.” add: Seeds oval, hilum long linear excentric stropheiolate.
120 after line 29 insert:

††1 bis. L. ANGUSTIFOLIUS L.

St. branched irregularly from the base; lfts. linear or linear-oblong obtuse or retuse flat adpressedly pubescent subglabrescent; fl. small pale dull bl. bractleted subalternate subsessile in short congested inconspicuous few-fl. rac.; lower lip of cal. much longer than the deeply bifid or bipartite upper, ovato-lanceolate entire, br. ovate broad and short; pod villous-pubescent 45–55 millim. or about 2 in. long, 12–14 millim. or about ½ in. broad, 4–5-seeded torulose, upper suture sinuate produced into a short beak; seeds smooth and even globosely ovoidal scarcely if at all compressed 8 x 7 or 6 millim. in diam. or ½ the width of cavity of pod, marbled with dark red or purplish brown and drab or fulvous mottled with w. specks or spots.—Linn. Sp. 1015; Lam. Dict. iii. 624; Desf. ii. 154; Brot. ii. 132; Pers. ii. 294; DC. ii. 407; Spr. iii. 228; Koch 173; Gren. et Godr. i. 367.—Herb. ann. Mad. reg. 1, rrr. To the W. of Funchal on the old or upper road to the Praia under Pico da Cruz on a line from its summit down to the Gorgulho on a bank by the roadside; also a little above this spot along the Levada dos Piornães, and again in borders of cornfields at the W. end of the Praia between the beach and the cliffs. March–June.—Branched but not proliferously, somewhat bushy, 1–2 ft. high, dark gr. Lfts. ½–1½ in. long, ½ line–3 lines wide. Fl. inconspicuous indigo-bl. in short terminal rac. scarcely exserted above the foliage; br. pedic. rachis sep. and young pods covered with rusty or fawn-col. pubescence. Seeds at first tawny-brown mottled or speckled with yellowish-w. and subreticulated with dark purplish or reddish brown. The same seeds in the course of 3 or 4 months when quite dry became as fol-
lows: elegantly, thickly and subreticulately mottled with numerous pale drab and a few smaller pure w. spots on a rich dark reddish or purplish brown ground. They are now, after the lapse of 5 years, tawny or dark fulvous marbled subreticulately with dark red or purplish brown and mottled with w. spots or specks; there is also a w. or pale round space about the hilum with a faint triangular or sagittate dusky brown or blackish spot close above and a linear streak below it.

Page line
122 23, for “de” read: da.
— 35, for “or” read: for.
— 36, for “he” read: the; and for “5–7” read: 4–7.
123 9, for “Azores,” read: Açores.
— 7 from bottom add:
At Fajãa d’Ovelha, May 18th 1863, in the Rib. do Alcâide a little beyond the Lombo dos Marinheiros, on or a little above the road to Pta do Pargo, I was shown by a countryman 2 pl. of this singular var. growing apart on a hill-side amongst a thicket of the common y.-fld. sort, of which it has precisely the habit, size and aspect in all points except the fl. These in the bud at least, are cream-col. rather than pure w., and often the wings and keel have a slight pale y. tint. These 2 pl. were nearly out of fl., whilst the common y.-fld. sort was still in full bloom; in accordance with the declaration of the people on the spot, that it flowers earlier than the common kind. Again, at Pta da Cruz, May 8th 1867, specimens were brought to me from the mountains with pale lemon-y. rather than cream-col. fl. Thus the two sorts blend together, and the w. fl. may even prove not to be constant on the same bush.

124 3, after “soft” insert: mostly. And after “fulvous” insert: but sometimes silvery-w. adpressed or loose.
125 2, before “brown” insert: mostly (especially in Rib. Frio).
— 9, after “Pta Delgada” add: and also along the sea-cliff road between S. Vicente and Seixal about the Waterfall from the Rib. de João Delgada.
128 32, after “Pods” insert: dark coffee-brown.
130 12, for “da” read: de; and for “Pta S.” read: Pta de S.
— 24, for “Pta S.” read: Pta de S.
— 8 from bottom,

2. ONONIS MICRANTHA Lowe.

Obs. The name micrantha was given to this pl. without observing that there was already an O. micrantha Thunb. It would have been every way better to have called it O. microsperma. But as Thunberg’s pl. is now referred to Lotononis DC., no change is necessary.

Page line
131 5, after “Lowe Nov. p. 25 or 547” add: (not Thunb.).
— 8, for Pta S.” read: Pta de S.
Herbaceous annual glandular-pubescent viscid leafy light gr. much
branched at the crown, st. numerous slender procumbent or ascend­
ing; lower l. ternate, upper or floral simple; lfts. thin membranous
flaccid narrow linear-oblong 3 or four times as long as broad obtuse
or almost truncate, sharply and remotely inciso-5-6-toothed on each
side, the middle lft. long-stalked; stip small acuminately lanceolate
entire; fl. small inconspicuous solitary erect in terminal leafy spikes
or rac., shorter than the l., the cor. scarcely longer than the sep.;
cal. small and narrow not dilated after fl. with 5 equal entire linear­
acuminate strongly 3-ribbed divisions as long as the cor. or pod;
the latter short broadly oblong turgid 3-seeded nearly or quite as
long as sep.; seeds subcompressedly globose very small (1 mill. in
diam.) very finely granulated plain-col. light-fulvous or ochre-y. or
orange-tawny.—Forsk. ! Fl. Ägypt.-Arab. 131; Pers. ii. 290; Poir.
Suppl. i. 738; DC. ii. 163; Spr. iii. 179; WB. ii. 29 var. a (not
b 1. c. and t. 55).—Herb. ann. P.S. reg. ?, rrr; S
Muniz, Dec. 1856.
—St. numerous prostrate the ends ascending 3-6 in. long forming a
cespitose leafy tuft or patch, the short main st. sometimes erect.
Lfts. 3-6 lines long, 1-2 broad often truncate and 3-5-toothed at
the tips with 3 or 4 four more remote teeth below on each side. Fl.
dull rose or purple nearly sessile or shortly pedicelled in short dis­
tinct terminal rac., not longer than the slender narrow acuminate
divisions of the cal. which remains unchanged in fr. Pod shortly
oblong or oval, in the latter case shorter than the sep., 4-5 mill.
long, 2 broad, pale fawn-col. or yellowish-brown, 3-4-seeded. Seeds
1 mill. in diam. or half the size of those of O. micrantha, closely and
minutely granulated as if frosted, at first light fulvous, then darker
tawny orange.

O. serrata Gren. et Godr. i. 375 seems to be something very dif­
ferent from the above pl.

1. T. ORNITHOPODIOIDES (L.).

St. prostrate; lfts. denticulate obcordate or obovate-wedgeshaped;
stip. submembranaceous lanceolate finely subulato-acuminatentire;
fl. linear slender in shortly stalked axillary 1-5-fld. umbels; cal­
teeth subequal linear-acuminate longer than the tube, cor. linear,
standard longer than the wings which are shorter than the pointed
keel; pods erect oblong compressed subarcuate shortly mucronulate
not nerved or wrinkled subpubescent sometimes glabrescent, upper
or convex suture bordered; seeds 4 or 5-8 or 10 oval or ovate sub-
compressed perfectly smooth and even.—DC. ii. 184; Spr. iii. 284; Gren. et Godr. i. 398. *Trifolium (Melilotus) ornithopodioides* Linn. Sp. 1078; Fl. Dan. t. 368; EB. t. 1047; Hook. Fl. Sc. i. 218; Sm. E. Fl. iii. 298; Bab. 78. *Melilotus ornithopodioides* Desr. in Lam. Dict. iv. 67; Pers. ii. 348. *Fumagarcum humile repens*, &c. Raii Syn. 331, t. xiv. f. 1; *Falcatula false-trifolium* Brot. Phyt. i. 160, t. 65.—Herb. ann. Mad. reg. 4, rrr. “Between Pico do Areeiro and P. do Cedrado, plentifully in a turfy patch amongst rocky passes,” Capt. Norman, June 1866.—A small inconspicuous pl. easily overlooked in the short mountain turf. Whole pl. smooth. St. prostrate or procumbent, several from the crown, 1-4 or 5 in. (in Mad. 1/4-1 1/4 in.) long, scarcely branched. Petioles long, lfts. small strongly nerved and sharply serrulate, the nerves excurrent. Fl. slender about 3 lines long and 1 line broad, white in Mad. according to Capt. Norman and as they appear to have been in his dried spec. before me; reddish or pink in Europe. In numerous dried Mad. spec. from S’ Moniz also there is no trace of colour, and they certainly appear to have been either w. or cream-col. Umbels mostly 2- or 3-flvd., in Mad. often 1-flvd. and very shortly stalked, but all the spec. are much dwarfed and depauperated. Pods bi-valve dehiscent, in these spec. 4-6-seeded, 5 mill. long, 2 broad, exserted and 3 or 4 times as long as cal.-tube. Seeds 1 1/2 mill. long, 1 broad, smooth and shining, plain-col. liver-brown or fulvous, roundish-oval or ovate, not at all cylindric or truncate at each end.

Page line 136 23, for “Pta S.” read : Pta de S.
— 36, between this and the next line insert:

††1 bis. T. INCARNATUM L.

The common cult. bright deep red or crimson var. of this (BM. t. 328) has been observed by S’r Moniz at the Palheiro both naturalized and growing as a crop.

Page line 137 21, for “but hairy” read: open smooth not closed with hairs.

138 11 from bottom, after “road” add : Pta de S. Lourenço on the Ilheo dos Embareadores.

139 20, after “Lemann” add : S’r Cruz, Machico near S. Roque’s Chapel, Pta da Cruz on beach-road to Curral do mar (Capt. Norman and S’r Moniz).

140 16, after “spreading” add : S. Antonio da Serra here and there in fields about Mr. Blandy’s house, more lately introd. from England.

141 after line 18 insert:

7 bis. T. BOCCONI Savi.

Furry-pubescent dark dull gr.: st. procumbent straight rigid densely but shortly furry-pubescent like the petioles; lfts. oblong-lanceolate, the lower obovate, glabrescent or smooth above, minutely denticulate upwards, the nerves straight not curved or thick-
heads ovoidal or shortly cylindric-oblong very dense compact and many-fld. solitary or geminate sessile lateral and terminal, inconspicuously bracteate by the stip. of the floral l. at the base; cal.-tube 10-ribbed cylindric-obovate pubescent, throat open, teeth hairy at the base, smooth upwards, acuminate-subulate or aristate straight erect unequal, the longest as long as the small inconspicuous cor., the tube and teeth unchanged in fr.—Poir. Suppl. v. 333; DC. ii. 192; Spr. iii. 216; WB. ii. 73; Koch 188; Gren. et Godr. i. 411; EBS. t. 2868; Bab. 77. T. semiglabrum Brot. Phyt. i. 155, t. 63. f.ii. T. collinum Bast. (Poir. l. c.).—Herb. ann. Mad. reg. 2 (upper part), rrr. Pico da Silva, E. side or slopes of summit, end of June, 1862, growing mixed with T. striatum and T. scabrum, Dr. Robertson.—Not at all softly downy or hoary, but rather harsh, and, except the st. and petioles, naked or glabrescent and of a dull dark gr. Main st. erect short 2 or 3 in. high, side st. from its base several procumbent 2–5 or 6 in. long, their ends ascending, all hard and stiff, dark purplish brown. Foliage somewhat scanty, upper and floral l. nearly or quite sessile with narrow-oblong lfts. 3–9 lines long, 1–3 broad, and stip. subdilated but not large or sheathing at the base; lower l. stalked with smaller broader and shorter lfts.; the stip. on the whole subinconspicuous ovate produced into two acuminate-subulate or aristate free points, membranous and dark-nerved at the subdilated base. Lfts. smooth above, a little hairy only at the edges and beneath, the lower not shortly and broadly obcordate. Heads 3–6 or 8 lines long, 3 broad, hard and rather harsh, the terminal mostly geminate, all with very numerous small densely compact fl., not changed or botryoidal in fr., dull purplish or reddish; cor. small pale pink or blush, soon turning brown, persistent. Cal. unchanged in fr., its teeth always erect dark purplish stiffish but not pungent; tube not turgid urceolate or berry-like in fr., with the ribs or nerves alternately very strong and weak, and the throat open without hairs or callous lips. Pods "membranous subglobose 1-seeded." Seed very "small [1 mill. in diam. by fig.] ovoidal y. or pale brown, with the radicle slightly prominent" (EBS. l. c.).—I am greatly indebted to its discoverer for spec. of this interesting addition to the Mad. Trefoils.
ADDENDA ET CORRIGENDA.

17 bis. T. CERNUUM Brot.

Smooth succulent light gr.; st. slender wiry procumbent elongate diffusely branched and spreading, subcrenately leafy, hollow; petiolar long slender; lfts. obcordate or retusey obtuse or obovate, mucronulate, finely and sharply serrulate, the nerves simple (not thickened) excurrent; heads umbellate many-fld. hemispherical on short erect slender or filiform axillary ped. much shorter than the petioles; fl. small distinctly stalked lax subumbellate drooping or deflexed in fruit, their pedic. smooth as long as the cal. -tube, with a minute setaceous bractlet at its base much shorter than itself; cal. 10-ribbed or striate, unchanged in fr., the tube sprinkled upwards with a few hairs, glabrescent downwards, throat naked open, teeth smooth finely aristato-linear-acuminate, in fr. setaceo-subulate, subequal, the two upper rather longer than the lower and as long as the cor., at first erect, then spreading, recurved in fr.; cor. marcescent persistent, standard much longer than the keel or wings, dilated or spoon-shaped and distinctly emarginate or concavely obcordate striated, searious and deflexed in fr.; style uncinate at top; pod sessile ob-vate-oblong scarcely exserted 1–4-seeded, seeds small subreniformy oval y. or fulvous.—Brot. Phyt. i. 150, t. 62; DC. ii. 199; Spr. iii. 208. T. serrulatum Lag. Gen. et Sp. Nov. 23? T. minutimi Coss. Notes sur quelques Plantes Critiques (Paris, 1848). T. Perrey-mondié Gren. et Godr. i. 422; Lloyd Fl. de L'Ouest de la France (ed. 2, 1868) p. 141. “T. parvisflorum Perreym. cat. Frejus p. 84 (non Ehrh.)” Gr. et Godr. 1. c.—Herb. ann. Mad. reg. 2, 3, rrr. Rib. das Freiras, a small branch ravine above the road, W. of Canico, S’ Moniz; plentifully in a wet place close to the path descending into the Curral das Freiras near Pico do Cedro, and in a very dwarfed depauperated state in the mountain turf on Pico Grande, Capt. Norman. June–July.—Closely connecting Sect. V. Lotoidea L. with VI. Lupulina L., and perhaps rather belonging by its searious striated deflexed spoon-shaped standard to the latter. Yet in habit it approaches rather nearer T. repens L., though it is altogether much more delicate and slender. It has also been compared with T. glomeratum L., but I cannot see the affinity. Whole pl. smooth tender or succulent flacid light gr. Root small fibrous; st. numerous from its crown, 6–12 or even 18 in. long, round but strongly grooved or striate, procumbently spreading all round, the ends ascending. Stip. membranous ovate finely acuminate-aristate or produced into long setaceous points. Lower petioles 2 or 3 in. long, upper about ½ in., all slender filiform. Lfts. 3 or 4–6 lines long, 2–4 lines broad, perfectly smooth with numerous straight sharply spinuloso-excurrent nerves. Ped. 2–3 lines long always erect smooth from ½ to ¾ the length of the petioles. Heads from 20 to 30 or more-fld., fl. about 2 lines long, narrow-oblong, at first fasciculate and somewhat lax and spreading, presently umbellately close-deflexed as in T. repens L. Cor. pale whitish-pink or flesh-col. or w. with darker lines, turning brown in fr. Cal.-tube compressed, narrow oblong in fl., obovate and strongly 10-ribbed in fr., not dehiscent. Seeds subcompressed, 1 mill. in their longer diam.
ADDENDA ET CORRIGENDA.

603

T. serrulatum Lag. is perhaps the same pl., but it is too im­perfectly described to be positively quoted.

Page line
151 6, after "Curt." insert: Gren. et Godr. i. 423; Benth. Handb. i. 207. f. 258.
153 1, after "82" insert: T. procumbens Gren. et Godr. i. 423; Benth. Handb. i. 208. f. 259 (not Linn. or at least only partly).
— 7 from bottom, the comma before "standard" dele, and insert one after it.
— 6 from bottom, before "which" insert: and.
— at bottom add:

Obs. The number of Mad. Trifolia is by these additions raised to 22. In the Canaries Webb has enumerated 18; but he has doubtless overlooked some. Seubert mentions only 8 in the Açores. In the Cape Verdes I did not find a single sp., and Dr. J. A. Schmidt records only one, T. glomeratum L.

157 9, after "itself" insert: Capt. Norman, however, has lately found it growing plentifully in one spot on the edge of the cliff above the Praia formosa to the W. of Funchal.
— 17 from bottom add at end: All. Fl. Ped. ii. 314. no. 1150.
169 4, for "S. Anna" read: St Anna.
— 6 from bottom, for "10 or 12" read: 18-24.
172 after line 6, insert:

††5. LOTUS ORNITHOPODIOIDES L.

Ann. more or less pubescent; st. branched ascending or diffusely erect glabrescent downwards; l. shortly petiolate subvillose; lfts. obovato-cuneate, the upper subrhomboidal; stipules broadly rhomboidal sessile as long as the petiole; ped. erect or erecto-patent as long as or longer than the l.; umbels 3-5-fld. with a sessile 3-foliate leaf or br. at its base; cal. hairy, teeth subvillose as long as the tube, narrow-lanceolate finely and simply acuminate (not keeled at the tip); fl. small y., standard orbicular, keel ascending bent upwards at almost a right angle shortly beaked and acute, wings ob ovate not quite covering the keel; pods quite smooth and shining (chestnut-brown) a little drooping, slightly arcuate and falcate, 3-5-fascicled, linear, compressed, strongly torulose or lomentaceous, the valves finally twisting spirally, 10-17-seeded; seeds orbicular much compressed or flattened, quite smooth and even, dark fulvous or tawny brown.—Linn. Sp. 1091; Lam. iii. 607. "Cav. Ic. ii. 48, t. 163"; Desf. ii. 203; Pers. ii. 353; DC. ii. 209; Spr. iii. 281; Koch 196; Gren. et Godr. i. 434. Lotea ornithopodioides "Mnch. Meth. 151;" WB. ii. 80. Lotus πολυκέρατος annua procumbens siliquis ornithopodii Moris. Hist. ii. 176. § 2, t. 18. f. 8.—Herb. ann. Mad. reg. 2, rrr. Campanario, below the church in a single spot, St. J. Moniz. May.—Whole pl. pubescent, almost hairy upwards, light gr., slightly hoary, leafy. Root small fibrous tuberculiferous. St. and branches slender round wiry hard and stiffish, 8-12 in. long,
suberect or procumbent, glabrescent downwards. Stip. and lfts. rather large, the latter 3–5 lines long, 3–4 broad, the former rather smaller or shorter and more rhomboidal. Upper lfts. subacute. Petioles 2–3 lines long; ped. 9–10 or 15 lines. Fl. rather small and inconspicuous, 3 lines long, in stalked axillary umbels, with a sessile 3-foliate l. or bract at their base, lemon-y. Style and stigma simple slender filiform. Pods fascicled drooping like a dead bird’s claws, 1–1 ½ in. long, 1–1 ½ line broad, compressed but strongly torulose and even slightly constricted between the seeds, altogether much like those of *Ornithopus compressus* L. but narrower and of a shining chestnut-brown col. and quite smooth. Seeds lenticular, mostly about 15.

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Page line

172 14, after “both” insert: mostly.
— 18, after “base” insert: mostly.
— 8 from bottom, for “not” read: rather than.
— last line, after “Cal.” insert: often.

173 24, after “P. GLAUCa (Ait.)” add: Trevina.

— last line, add: of Pedrosia.

178 15, “rich” dele.
— 18, for “Porto-sanctana” read: Loveana.
— 26, for “L. macranthus” read: P. macrantha.
— 33, for “that” read: which.

180 26, after “subper,” insert: Mad. reg. 1, rrr.
— 27, before “PS.” insert: Mad. Pta de S. Lourenço on the Ilhão dos Embreadores, in one spot only, towards the edge of the S. cliff.

184 8, for “is omitted altogether in his 2nd” read: is only mentioned incidentally under his generic char. of *Ornithopus* in his 2nd ed. p. 209.

191 10 from bottom, after “darker” insert: lilac-b. parallel.
— 9 from bottom, after “lines” insert: Wings and keel w.

192 17, for “de” read: do.
— 19, after “ground” insert: descent into Pto Novo on the road from Funchal to Machico, all down the road below the Fort, borders of cornfields and waste rocky ground.
— 25, for “Fl. 1–4 very,” read: Fl. mostly 2–4 very rarely 5.
— 26, for “pale grey or bluish” read: bright lilac-blue. And after “keel” insert: in drying.
— 27, for “v.-black,” read: deeper blue.

195 21, “ ” dele.
— 24, for “Fascio.” read: Tom.
— 26, at end, after “ground,” add: cornfields.
— 10 from bottom, after “Fl.” insert: conspicuous bright lilac or.
— 2 from bottom, after “cal.” insert: Standard and wings at first b. then lilac, keel w.
ADDENDA ET CORRIGENDA.

605

Page line
196  2, before "short" insert: pale.
— 10, the ? after "7" dele.

Obs. In April 1862, i.e. within a few months after writing the present and the following page in the body of this work, I had the satisfaction of establishing completely *E. pubescens* DC. as a Mad. pl. by the discovery of the original proper form of it, *a. subpilosa* Lowe (wholly pubescent with awnless ped.), abundantly in two very remote localities, viz. Machico up the Ladeira above S. Roque on the road to Sta Cruz, and again at Calheta in the Rib. de S. Bartholomeo—in the latter place mixed and entangled with *E. gracile* (Loisel.), from which it is at once distinguished by its light apple-gr. foliage, low stature (scarcely above 12 in. high), broad lfts. and small pale lilac fl. 1 or 2-5 but mostly 2 on each ped. The standard and wings are pale lilac, the former a little streaked with darker in the middle, the keel w.; the fl. on the whole rather bluer and larger than in *E. hirsutum* L. Ped. *always awnless*. Style short quite smooth; stigma abruptly and distinctly capitate, remarkably globose, subapiculate. Pods linear-oblong. The lower ped. are 1-2-fld., the upper 2-5. Tendrils branched. Whole pl. pubescent light gr., of rather humble growth and suberect, not rampant matted or entangled. Lower and middle stip. strongly semi-sagittate, uppermost simple.

198 11-4 from bottom.

Obs. The existence of *E. tetraspernum* L. as a Mad. pl. still rests solely on this BH. spec. Down to the present moment (Nov. 1868) it has not been found in Mad. by either Capt. Norman and Sr. Moniz or by myself.

199 28, Obs. This ND. pl. might well constitute a var. β.

202 18, insert between this and line 19: γ. Fl. white.
— 25, after "Serra" insert: Calheta in Rib. de S. Bartholomeo.

209 1, at end add: pale grey or γ.
— 4, for "(purple-violet standard)" read: (i.e. pale pink or lilac standard, deep pink or dark atropurpureous wings, and w. or pale atropurpureous keel).
— —, after "compressed" add: tawny-
— 5, for "rarely and only accidentally occurs" read: occurs rarely and only accidentally amongst other crops.

210 2, dele "and after "Ped." add: ii. 350.
— 8, "and "(D.C.)" dele.

214 2 from bottom, for "straight margins" read: *straight margins*.

216 27, 28, "substrangulate with slightly sinuate margins" should be in italics.
ADDENDA ET CORRIGENDA.

Page line
222 9 from bottom, after "multiflorus" add: Lam., and after "coccineus" add: Kniph.
— 5 from bottom, after "and" add: livid.
223 4 from bottom, transpose "Lindl. in Bot. Reg. t. 830" to end of the following line.
224 13 from bottom, at end add: and as figured by Lindley in Bot. Reg. l. c.
228 22, prefix ++.
230 after line 25, add:

Though Origen was probably misled by the ambiguous word *locustæ* in supposing the pods of this tree to have been the "locusts" (*δειδάκτης*) on which St. John the Baptist fed in the wilderness, rather than the insect commonly so called, they were yet assuredly the "husks" (*κοβαρία*) "which the swine did eat" in the parable of the Prodigal Son.

— 27, for "TRICHANTHOS" read: TRIACANTHOS.
234 10, after "globose" add: umbilicate.
— 29, after "within" add: fr. smooth pruinose.
— 38, after "globose" add: umbilicate.
236 23, after "less" add: an.
237 19, for "Berries" read: Drupes ½ in. long, ovoidal, not umbilicate.
243 10 from bottom, add:

Since this was written, I have myself seen several bushes in the Curral das Freiras locality above indicated, viz. on rocks at the back of the Pico do Cedro on the path descending into the Curral from the Jardim da Serra, about halfway down. And Capt. Norman has also found "more than 20 bushes, male and female, on high ledges and steeps above the path leading from the Alegria above S. Roque to the W. brink of the Rib. de Sta Luzia."

246 after line 4, add:

According to Boreau (Seem. J. of Bot. i. 286), the Mad. pl. would seem to be not so much the English *P. proeminent* of Sibthorp (=Tormentilla reptans L., Smith EB. t. 864, &c.) but rather *P. mixta* Nolte, which, however, he considers not a distinct sp. from his "*P. nemoralis* Nestl. (partly)." But the assigned distinctions seem, I must say, very weak and indecisive.

— after line 18, add:

2. *P. REPTANS* L.

More or less hairy, sometimes glabrescent; st. *flagelliform* creeping stoloniferous prostrate or procumbent and early rooting at the joints; stip. mostly entire, upper only 2–3-cleft or inciso-toothed; lfts. 5–7, mostly 5, elongato-obovate somewhat shallowly and bluntly toothed from below the middle, all on long slender filiform petioles; fl. solitary dispersed all along the st. on long slender
P. procumbens Sibth.

More or less hairy and shining; st. flagelliform and often prostrate or procumbent but not rooting at the nodes or stoloniferous till late in the season, sometimes diffusely suberect; stip. simple entire or 2-5-cleft; st.-l. shortly petiolate, lfts. 3-5, mostly 3, obovate-wedgeshaped deeply and coarsely or strongly and sharply out-toothed above the middle, the teeth very acute and pointing forwards; fl. subterminal on long erect slender ped. in irregular few-fl. leafy cymes (about 6 lines in diam.) mostly tetramerous; pet. 4, very rarely 5, obcordate with scarcely any claw; sep. 8, very rarely 10; carp. obliquely 3-4-ribbed or wrinkled on each side.

Of the syn. quoted at p. 245 for the above Mad. pl., the following are referred by Boreau l. c. to his P. nemoralis Nestl. (of which he considers also P. mixta Molte a mere form): viz. P. nemoralis Nestl. Mon. Pot. 65 “(for the greater part)” and P. procumbens Koch 239 “and Auct. excl. syn. Sibth. and Linn.”

P. Tormentilla Sibth., Nestl. (Tormentilla erecta L., T. officinalis Sm. EB. t. 863) may possibly have been overlooked in Mad. It is mainly distinguished from P. procumbens by its more erect or diffusely spreading st., perfectly sessile st.-l., much smaller always 4-merous not at all cymose fl. about 4 lines in diam., and smooth even carpels.

Page line
248 4, after fruticosus, “L.” dce.
— 7, after “355” add: (not Linn.).
254 at bottom, add:

2 H
Two small bushes of a Rose, without fl. or fr., but otherwise strongly resembling *R. Wilsoni* Borr. EBS. t. 2723, except that the lfts. are smooth and have the strong fragrance of those of the common Sweet-briar (*R. rubiginosa* L.), were found by me in May 1867, growing in the almost wholly unfrequented path along the Levada dos Lamaceiros above P° da Cruz, about halfway between the little building where the waters are divided and the Roche furada, under Pico da Suna and at an elevation of above 3000 ft., in a perfectly wild part of the mountains, far remote from any habitation or even cultivated spot. No other Rose, not even the only native Mad. sp. *R. canina* L., could be found in the surrounding thickets; nor could I find in the only neighbouring villages of S. Antonio da Serra and P° da Cruz, each about 3 miles distant, any Rose at all approaching this, in cultivation. The appearance therefore of these 2 bushes in such an unfrequented and remote locality is at present wholly unaccountable, to whatever sp. they may prove hereafter to belong.—The following description contains all that can as yet be said about them:—

A low small shr. 1-2 ft. high. Branches slender; those of the previous year thickly clothed with crowded long pale or whitish straight horizontal or slightly declining slender subulate spines, a little compressed and extended upwards and downwards at their base; longer fewer or more remote and a little more decurved or declining on the young shoots of the year, the longest being 4 or 5 lines long. A few similar spines occur also on the petioles. Young shoots and older branches alike entirely naked or eglandulous. Petioles thinly sprinkled, stip. thickly, and lfts. less closely ciliate with glands or short (not red) capitate seta. Lfts. 7 broadly oval, 4-9 lines long, 3-7 broad, finely simply or doubly serrulate, more or less fringed with glands, quite smooth above, often a little puberulous and glandulous at the base and up the midrib beneath. Foliage full gr., a little paler beneath.

Page line  
255 16, “each” dele.  
257 18, 19, for “this tribe of Rosaceæ” read : Pomaceæ.  
258 7, at end add : with more or less of the flavour of formic acid.  
— 23, after “high,” add : or mostly in Mad. a mere bush, 6-10 ft. high.  
261 14, prefix ††.  
— 7 from bottom, prefix ††.  
262 9, prefix ††.
ADDENDA ET CORRIGENDA.

PART III.

Page line
264 13 from bottom. Obs. A ? should be put to this syn. of Lindley; for the leaves are figured pointed as in P. pomi-ferum L. and the fr. as not only depresso-globose but le- mon-y. instead of buff or golden-y.
271 5, "Schufia" dele.
275 8 from bottom, after "erect" insert: or ascending.
280 16, for "odour of musk" read: rank musky odour.
295 19, add to syn.: Bot. Reg. vi. t. 488.
296 13, Obs. The more natural place of Paronychiaceae, re-stricted to its proper limits (i.e. excluding the Tribe Polycarpaceae which belongs to Caryophyllaceae), is un-doubtedly in Monochlamydeae near Amaran-thaceae. See Benth. and Hook. Gen. Pl. i. 144.
297 13, Obs. Belongs to Caryophyllaceae.
300 2, "de" dele.
7, add: And, again, the mistake of marking formerly these spec. "I. cymosum" probably arose from the misquo-tation by Linn. for that pl. of Bocc. Sic. 41, t. 20. f. 3, which really belongs to P. echinata Lam. See Desf. i. 204.
301 4, for "ovate" read: lanceolate.
6, EB. t. 351. Obs. Mr. Newbould has pointed out to me that Smith, in a pencil correction on the original draw-ing by Sowerby for this plate, remarks that the sep. are figured too broad and blunt.
— 24, after "lanceolate" add: or linear-lanceolate.
— 25, after "acute" add: or attenuate.
— after line 29 add:
2. S. Perennis L.
Fl. fascicled in crowded or congested leafy tufted cymes at the top of the st., not axillary or loose and spreading in fr.; sep. ovate with a distinct membranous w. border, subobtuse in fr. and always erecto-connivent.—Limn. Sp. 580; Vill. Dauph. iii. 649; Lam. Dict. ii. 763, Ill. t. 374; Fl. Dan. t. 563; Pers. i. 491; EB. t. 352; Sm. E. Fl. ii. 283; Spr. ii. 382; DC. iii. 375; Koch 281; Coss. et Germ. i. 156; Gren. et Godr. i. 614; Bab. 125. Knawel incanum &c. Raii Syn. 160, t. 5. f. 1. Alchimilla &c. majori flore Vaill. Par. 4, t. 1. f. 5.—Herb. ann. Mad. reg. 3, 4, r. "On Pico do Areceiro, P. da Silva and P. Grande; on the latter near the summit, but not on the highest top, plentiful and luxuriant, but generally an inconspicuous mountain-turf pl." Capt. Norman R.N., June 1866.—Root in Mad., and I suspect elsewhere, properly ann. or only abnormally per. (see Hook. Fl. Scot. i. 133 and Coss. et Germ. i. c.), simple fibro-filiform or capillary, very fine and slender, long and tortuous. From its crown spring several (6 in each of my two spec.) slender leafy erect or ascending short jointed st., forming a small close tuft about an
inch high, simple and shortly or congestedly fork-branchd only quite at top, furry-pubescent here and there on one side. L. linear acute, connate and subciliate at the base, opposite in pairs, not fascicled, mostly as long as or longer than the internodes, erecto-patent or recurved. Fl. numerous in leafy crowded or congested terminal cymes, not lax or spreading in fr., gr. inconspicuous. Styles 2. Sepals always erect subconnivent coarsely or strongly 3-ribbed, gr. but distinctly though narrowly bordered with w., ovate acute or subobtuse especially in fr., about as long as the urceolate obsoletely but broadly or bluntly 10-ribbed tube or hard indehiscent smooth 1-celled 1-"2"-seeded caps., unchanged in fr. except in being a little more obtuse and connivent.
ADDENDA ET CORRIGENDA.

Page line
365 3, add to syn.: BM. t. 5724.
367 21, before "D. aureus" insert: D. halophilus Brot. Phyt. ii. 198, t. 168. Obs. D. maritimus With. (not Lam.). EB. t. 2560, seems to differ from this in little but the absence of the central dark abortive fl.
372 1, for "invisible" read: concealed.
376 2 from bottom. Obs. Dr. Seemann (Journ. of Bot. ii. 305, 307) distinguishes this and the Canarian Irv from the common European H. Helix L. by the cordate (instead of ovate or elliptic) uppermost l., panicled (not simple) rac., and above all by the 13-15- (instead of 6-8-)radiate furfuraceous starry pubescence of the pedic. and cal., under the name of H. canariensis, Willd.
377 12, for "style simple pointed" read: styles concrete or combined into a single short cone or column.

PART IV.

379 6, after "Stamens" insert: mostly.
— 10, after "superior" add: Stamens epigynous or perigynous.
— 5 from bottom, for "Guelder" read: Gueldre.
380 20, for "Guelder" read: Gueldre.
381 14, for "de Madeira" read: da Ribeira.
— 16, for "de" read: da.
382 20, for "Pêo da Cruz" read: Pô da Cruz.
383 19, for "sometime" read: sometimes.
396 7, after β. insert: Vaillantii—
398 8 from bottom, for "Sao Nicolao" read: São Nicolão.
— 7 from bottom, for "Chao" read: Chão.
409 13, for "P. Juliana" read: P. de Juliana.
428 15 from bottom, after "cancellate" add: and recept. very rarely chaffy.
— 7 from bottom, after "plumeose" add: Recept. sparingly chaffy.
433 2 from bottom, for "Pêo" read: Pô.
445 16, after "Mount" add: comma.
446 10, for "corymb" add: cymes.
457 3, Obs. In Mad. spec. from the same locality since obtained, the ach. are exactly as described from English.
468 18, for "Sylva" read: Silva.
470 17, Obs. The fig. is not perhaps absolutely "bad," but it represents an unusually large luxuriant state of the pl. such as I have never seen. Webb's own expression l. c. is, "exceedingly defective."
472 26, for "Feiteirinha" read: Feteirinha.
481 7, after "Masson," add: who passed on from Mad. first to Tenerife and thence to the Cape.
Page line

483  15, after "(nivea)" add:—On the Penedo do Saco, Pta de S. Lourenço, towards the edge of the N. cliff, I found (March 10th 1868) several bushes of this var. differing from others of both α and β by their dwarf low thickly and compactly bushy habit, being not more than 6–12 in. high, their short numerous interlacing thickly leafy branches, clammy greyish or silvery-green foliage, and l. so thinly silky-cobwebby or cottony as to show the 3 nerves, prominently beneath, and even above not indistinctly as 3 depressed fine lines. The cymes scarcely rise above the mass of foliage, and are very dense compact and close with short thick ped. and branches. Outer or lower scales of inv. rose-purple at their base. Outer female flts. and their prominent recurved or revolute linear stigmas dark dull purple; inner perfect flts. prominent above the outer, deep chrome or orange-y, like the copious pollen. As a mere maritime form of β, it is remarkable that the l. are less instead of more tomentose, and that the habit is so different from equally maritime states of β on sea-cliffs of the N. coast at the Passo d'Area and of α everywhere.

491  3, after "Salmantica" add: Nauplius from Paulinus.

498  7, at end add: Alcachofa.

504  20, for "Allegria" read: Alegria.

507  14, "de" dele.


520  27, "Mad." dele.

PART V.

527  22, for "Arribentão" read: Arrebentão.

554  8, 9 from bottom, dele: and instead read:

On a late fresh examination and consideration of Brotero's fig. and description of his Crepis intyboeae, for which I am much indebted to my friend Dr. Hooker, I am more inclined than formerly to refer to it my Mad. C. laciniata. Both pl. seem to be equally common and to affect similar soils and situations in both countries; and such a universal weed by roadsides and in rich moist cult. ground in Portugal might well be expected, and indeed could scarcely fail to have been introduced and to flourish in vineyards and waste ground amidst cultivation everywhere in Mad.,—a condition precisely fulfilled by C. laciniata. The fig. too may fairly represent a dwarfish few-fl. pl. of C. la-
cinia a, with the root-l. runcinato-pinnatifid; the rib or keel moreover of the inner or longer involucral scales in C. inty bace a is described as “ad usque medium moli- libus aculeolis fuscis scabra;” and though the root-l. are said to be “interdum utrinque hirsuta,” yet Brotero (p. 58) expressly distinguishes it “a Cr. taraxacifolia presertim caule erecto superne foliato, nec scapis ad- scendentibus basi solum foliosis, foliis radicalibus sepe runcinati oblanceolatisve glabris, nec omnibus runcinato- pinnatifidis hispidis.” Hence the Portuguese pl. of Brotero is certainly no mixture with C. taraxacifolia.

On the whole however, without careful examina- tion of the Port. pl. comparatively with the Mad., it is better to retain the latter provisionally as distinct.
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