Subclass III. COROLLIFLORÆ (continued).

Sect. B. Cal.-tube free or rarely and then only partly adnate at the base or downwards to the superior ov.; limb inferior or very rarely (Samolus) half-sup. Cor. inferior or at most half-superior. Stam. mostly perigynous and epipetalous or inserted on the cor., rarely almost or quite free and hypogynous.

Order LI. ERICACEÆ.
The Heath, Arbutus and Rhododendron Family.

Fl. perfect, mostly regular. Cal. wholly free persistent 4–5-partite, lobes distinct or only subcoherent at the base. Cor. hypogynous mostly gamopetalous and 4–5-fid, sometimes 4–5-partite or even 4–5-petalous, often persistent or marcescent, mostly regular, imbricate in bud. Stam. as many or twice as many as the lobes of cal. or cor., 1–2-seriate, mostly free and hypogynous or inserted with the cor. on an hypogynous disk below the ov., rarely subepipetalous or slightly adnate to cor. at its base; anth. 2-celled, the cells opening by a terminal pore or slit, not horned at top but appendiculate or candeate sometimes at the base. Ov. superior free of 4–5 and 1–many-ovulate carpels. Style filiform, stigma capitate. Fr. capsular rarely baccate, cells 4 or 5 mostly many-seeded bursting loculicidally and septicidally with 4, 5, or 8–10 valves. Seeds mostly numerous minute pendulous from the central placentae, scrobiculate; embryo straight axile in the fleshy albumen; radicle superior near the hilum.—Subarborescent shr. with mostly evergreen rigid alternate entire sessile rarely opposite or whorled 1. without
stip. Fl. more or less conspicuous w., pink or purple, rarely b. or y., mostly scentless.

Tribe I. **ERICACEÆ.**

The Heath Tribe.

Cor. marcescent 4- very rarely 5-merous. Stam. hypogynous mostly free. Fr. dry capsular mostly loculicidally dehiscent.—Evergreen shr. or undershrubs, rarely subarboreous. Buds naked.

1. **ERICA.** Cal. 4-partite rarely 4-fid, herbaceous or coloured. Cor. gamopetalous 4-lobed or 4-toothed much longer than the cal. Stam. 8 free very rarely submonadelphous. Caps. 4-celled loculicidally dehiscent at the middle of each valve. Seeds in each cell numerous.—European or chiefly S. African shr. (very rarely tr.) stiff dry rigid much branched with acerose or stiff linear revolute-marginate crowded 1. Fl. mostly drooping on short 3-bracteolate 1-fld. pedic., axillary or terminal.

Tribe II. **ANDROMEDEAE.**

The Andromeda Tribe.

Cor. deciduous 5- very rarely 4-merous. Stam. mostly free, hypogynous. Fr. capsular loculicidally dehiscent.—Shr. or undershrubs, rarely tr., mostly evergreen. Buds almost always scaly.

2. **CLETHRA.** Cal. 5-partite persistent. Cor. deeply 5-partite almost 5-petalous, the lobes obcuneate or obovate-oblong. Stam. 10, fil. smooth flattened and adnate to the pet. at their base; anthers 2-caudate presently inverted. Style triquetro-filiform 3-fid; stigmas 3 subcapitate. Caps. 3-celled. Seeds numerous fungosely angular or winged.—Tr. or shr., all American except *C. arborea* Ait. L. alternate oval or oblong toothed or entire mostly evergreen. Fl. w. in simple or panicled rac. with caducous br.
linear subobtuse; fl. rose-purple moderately large subcernuous or suberect in small terminal umbels or corymb at the ends of the branches and short side-branchlets forming a narrow elongate dense thyrse or panicle; pedic. nearly or quite as long as cor. purpurascent subpuberulous 2–3-bracteate at top, br. smooth gr. leaf-like unequal shorter than the smooth membranously bordered subpurpurascent lanceolate very distinct lobes or sep.; cor. about twice the length of sep. ovate-oblong or cylindrica-lanceolate with short recurved lobes; anth. 2-caudate, the awns serulate or cristate; style shortly exserted, stigma capitato-peltate; caps. smooth.—Linn. Sp. 501; Fl. Dan. t. 38; Lam. Dict. i. 482; Broth. ii. 23; Pers. i. 423; EB. t. 1015; Hook. Fl. Sc. i. 119; Sm. E. Fl. ii. 220; DC. vii. 665 and β. maderensis 666; Spr. ii. 183; Koch 548; Cos. et Germ. i. 236; Gren. et Godr. ii. 431; Bab. 214; Willk. et Lange ii. 344.—Sumfr. per. Mad. reg. 4, rrr. In rocky clefts or hollows on the craggy summits of the highest central peaks, especially about P. do Areeiro; but sometimes straggling down below them here and there, as at the bottom of the Voltas in the Curral das Freiras and (Sr. J. M. Moniz) “up the Caminho do Meio and about the Jardim da Serra.” Rock on the N. side of the Paul da Serra called the Cabo da Rib. de João Delgada. “Summit of Pico Ruivo,” T. V. Wollaston Esq. July.—Low and thickly bushy, not above 1 ft. high, with usually in Mad. long decumbent diffusely spreading or procumbent or even sometimes trailing branches, often in exposed places with the younger shoots or branchlets bent and twisted in upon themselves. L. 3 lines long stiff but very fine and narrow, at first ternate, presently fasciculate. Fl. very numerous and elegant, varying from light pink to full deep rose or rose-purple, never in Mad. w., scentless. Cor. more oblong than ovate, 2–3 lines long and half as broad, a little constricted close below the 4 broad shallow segm. of the limb.

I can perceive no stable difference whatever to warrant DC.'s separation of the Mad. pl. as a var. from the British or European.

2. E. ARBOREA L. Urza (Urze) mollor or (at Machico and Pio da Cruz) Betouro. Tree Heath.

Arboreous, branches and branchlets very erect straight virgate, the latter closely pyramidal tufted w. or cinereous and thickly hispid or furry as if hoar-frosted with short unequal spreading hispidulysely or spinellose roughened pubescence; l. 3–4-nate crowded smooth dark gr. short narrow-linear obtuse; fl. w. rarely with a blush or pale rose tint, small cernuous in small drooping umbels or corymb at the ends of the short side-branchlets only, forming broad thick brush-like thyrsoidal.
panicles below the extreme ends of the branches; pedic. mostly shorter than the cor. dark red or purple smooth 3-bracteate at the base, br. pale cream-col. smooth ovate, like but narrower and smaller than the sep.; cor. about twice the length of the ovate or oblong-ovate sep. narrowly campanulate, open and not constricted at top below the 4 short broadly half-ovate more or less obtuse erect lobes; anthers shortly 2-caudate, awns or auricles short broad ligulate minutely serrulate or subciliato-denticulate; style thick shortly exserted, stigma large peltate; caps. smooth turbinate short and thick.—Linn. Sp. 502; Lam. Dict. i. 479; Desf. i. 328; Pers. i. 421; Buch 193. no. 207; Spr. i. 195; DC. vii. 690; Fl. Gr. t. 351; WB. iii. 13; Koch 548; Gren. et Godr. ii. 432; Willk. et Lange ii. 346.—Tr. or subarb. per. Mad. reg. 3 and upper part of 2, cc. Everywhere above 1000 ft. where any native wood remains, but largest from 4000 to 5500 ft. as on Pico Ruivo, in the Serra d'Agua, Boa Ventura, Paul da Serra (flanks of), Serra do Seixal, Cerca at S. Antonio da Serra, &c. where trees were commonly seen 20 or 30 years ago 30-50 ft. high with trunks 2-6 or even 7 ft. in circumference. March, Apr.—Varying from a tall shr. 6 or 8 ft. high to a tree of mostly 20-30 ft. with a distinct mostly straight and subcylindric trunk and pyramidal bushy head of a peculiarly dark gr. with erect straight virgate branches, naked below, ending in erect pyramidal leafy densely crowded tufts or fascicles of slender laterally flowering branchlets, clothed with a w. or hoary pubescence of which the longer stouter hairs are minutely feathered or echinately hispidulous all round, with a shining silky lustre. Foliage densely crowded dark gr. somewhat soft or at least not harsh and rigid. L. linear ½-1 mill. broad, 4 or 5-10 long obtuse quite smooth. Fl. very numerous but small and inconspicuous, 3 mill. long, 2 broad, in little distinct terminal umbels or corymbose bunches of 3-5 together, pure w. or very rarely tinged with blush, fragrant like hawthorn, discharging when the branches are abruptly struck or shaken clouds of w. or greyish pollen. Anth. with a short flat auriform or strap-shaped obtuse minutely subciliato-denticulate vertically pendent auricle rather than awn at their base of a light or deep pink col. Style smooth w. thick exserted 1 mill. beyond cor. Stigma gr. with a pink or red border or rim and 4 pink or red dots set cruciately in the middle. Caps. 2 mill. long, 1½ broad, truncate at top or turbinate.

This has been perhaps one of the most generally serviceable of all the indigenous forest-growth of Madeira. The timber of the larger trees is extremely hard and tough, and useful for a great variety of purposes—though, when sawn into planks, very liable to warp and split, which prevents its being much employed
in cabinet or finer sorts of housework, for which its handsome light salmon-colour, streaked and rayed with darker cinnamon-red, would otherwise recommend it. It is also used for making troughs, bowls, spoons, &c., being very durable and proof against moisture. The stronger and thicker st. make excellent stout "bordois" or hammock-sticks; and the long slender virgate stems of the smaller or younger shr. were also formerly the favourite material for the poles (varas) used to support the French bean (Feijão)-pl. in the north; affording also, with the root-stocks, the best and most lasting fuel (lenha); whilst the terminal leafy finer boughs and twigs or top shoots yielded when dry the best brushwood (queima) for kindling or heating ovens; though now indeed, owing to the yearly reckless destruction of the native forests, recourse is almost everywhere becoming necessary for all these purposes to what is called in Mad. "the Lisbon Pine" (Pinus Pinaster L.). Another use for the young fresh green tops of the branches which I can from personal experience commend, is that of forming a dry elastic clean and scentless substratum for a bed or mattress in encamping on the mountains.

b. Anthers eciaudate.

3. *E. scoparia* L. *Urza* (i. e. *Urze*) durazia.

Suffr., shr. or subarborescent mostly bushy, branchlets erect smooth cinnamon-brown or reddish; l. 3-4-nate not fascicled, stiff rigid very smooth and shining bright gr. linear subobtuse; fl. inconspicuous pale yellowish gr. more or less tinged especially above with dull red or rose-purple, rather small cernuous solitary or 2-3-nate in the axil of each leaf towards the ends of the branches and branchlets, forming subunilateral rac. collected into brushlike thyrsoidal terminal panicles; pedic. mostly shorter than the cor. smooth 2-3-bracteolate about halfway up, sometimes dark dull reddish, br. minute; sep. broadly ovate smooth united halfway up, ½ length of cor.; cor. subglobose or globose-campanulate open and not constricted at top, lobes broadly ovate or triangular half the length of tube; anth. simple included or shorter than cor.-lobes, dark dull reddish brown or purple; stigma large peltate subquadrangular or 4-lobate sub-exserted beyond the tips of the cor.-lobes, dark dull red; caps. ... —Linn. Sp. 502 (partly); Vill. Dauph. iii. 515; Lam. Dict. i. 479; Brot. ii. 21; Pers. i. 423 (partly); Spr. ii. 192; DC. vii. 692; WB. iii. 14; Coss. et Germ. i. 237; Gren.
et Godr. ii. 433; Willk. et Lange ii. 346. *Erica fucata* Thumb. *Diss. no. 9* (DC.). *E. fucata scoparia* Buch 194. no. 208. *E. azorica* a et β Seub. 40.—Shr. or subarb. per. Mad. reg. 2, 3, cc; PS. reg. 4, r. In Mad. everywhere, but scarcely below 1500 ft. on the S. side of the island, though descending in the N. much lower. Its upper limits are on the whole rather lower than those of *E. arborea* L., e. g. on the N. ascent of Pico Ruivo, the middle region is filled with the two growing intermixed: but *E. scoparia* ceases presently, whilst *E. arborea* becomes larger and more luxuriant on approaching the summit. P"° S"° only on the highest peaks, P. do Facho, P. do Castello, &c. Apr.—June.—Seldom exceeding 5 or 6 ft. in height even in thickets, and in open places usually much smaller and forming a low thick bush, but occasionally rising into a tr. 15 ft. high, with a trunk 1 ft. in diam. Foliage shining bright gr. rigid. Branchlets or young shoots bluntly 3-ribbed or angular; sometimes very minutely subpuberulous, but mostly quite smooth. L. shining gr. on both sides, hard and harsh or stiffish, very caducous in drying or even on the pl. in hot dry weather. Fl. small inconspicuous 2 mill. long, 2 broad, scentless herbaceous or pale gr. tinged or streaked chiefly on the upper side and lobes with (Indian) red or rose, globose in bud, each on its proper pedic. forming crowded subunilateral leafy rac. Anthers and stigma dark crimson or dull brownish red or atropurpureous, the former included, not longer than the tube, the stigma scarcely exerted beyond the tips of the lobes of cor.

Much used as brushwood for heating ovens, kindling fires, &c., but not usually attaining size enough to be serviceable for other purposes, except sometimes for rods or varas for French beans (*Feijoens)*.

**Tribe II. Andromedae.**

**2. Clethra L.**

1. *C. ARBOREA* Ait. *Folhado* or *Folhadério*.

L. oblong or oblong-lanceolate acuminate at each end, sharply and finely serrate, reticulate, with the nerves rusty-pubescent or subvillose beneath; rac. paniculate terminal rusty-villosous-pubescent; br. minute deciduous; stam. included.—Ait. Hort. Kew. (ed. 1) ii. 73, (ed. 2) iii. 57; Vent. Malm. 40; BM. t. 1057; Buch 194. no. 209; Spr. ii. 316; DC. vii. 589; WB. iii. 12.—Arb. Mad. reg. 3, cc. Woods and thickets in ravines everywhere from 2000 to 5000 ft.; Rib. Frio, da Metade, all the ravines in the north from P"° da Cruz to Rib. da Janella; also frequently planted about cottages and in pleasure-grounds and
gardens down to 1500 or 1000 ft. Aug.–Oct.—A small evergreen tr. 15–25 ft. high with compact bushy pyramidal or oblong head and straight trunk rarely more than 6 in. in diam. covered with a rugged greyish brown or ash-coloured bark. The tr. is at once distinguishable amongst others by the bright red petioles and peculiar light gr. of the young l. Petioles, young branches and nerves of l. beneath rusty-pubescent like the mainstem of the panicle, rachis of rac., pedic. and cal. Petioles ¾–1 in. long slender and with the lower part of the midrib and the young shoots dark bright red or reddish. L. 3–5 in. long, 1–2 in. broad stiffish but not coriaceous, shining dark gr. and smooth above, paler and glabrescent beneath and finely reticulate with the principal nerves always more or less rusty-pubescent. Panicles terminal not rising much above the terminal tufts of l. Fl. snow-w. and very elegant in long loosely spreading unilateral rac. 3–6 in. long forming a depressed or short panicle, fragrant like Friar’s Balsam; rachis and pedic. straight slender rusty-villoso-pubescent like the small inconspicuous br. which fall before the fl. expand, pedic. 2–3 lines long; sep. 2 lines long broadly ovate or oval velvety-pubescent subcilicate. Pet. reaching 3 lines beyond the sep. broadly obtuse subbilobed or emarginate distinct not laterally imbricate, falling separately, each with 2 stam. attached to its base, the base of the limb or throat inside villose. Stam. 10 attached in pairs to quite the base of pet. and deciduous with them. Anth. apiculate or shortly cuspidate y., dark rich chestnut at the tip, presently inverted; cells distinct opening by an oblique and at first basal pore, each shortly acuminato-cuspidate at the tip or (ultimately) base; fil. smooth flattened scarcely longer than the anth. Style persistent simple smooth triquetrous slender, the length of the pet. trifid; stigmas subcapitate. Ov. densely villose. Caps. 3-celled subtrigonal subdepressed brown silky-pubescent loculicidally dehiscent dry, the septa separating from the axis. Seeds 1 in each cell pendulous from the top of the axis, mostly abortive.

The wood of the Folhado has no particular quality to recommend it. But the straight young tr. or saplings make admirable walking-poles (hasteas) for which purpose they are universally employed, combining with great lightness, toughness, strength and elasticity.

Order LIII. TERNSTROEMIACEÆ.

The Camellia or Tea Family.

Fl. regular perfect, rarely imperfect or diclinous. Cal. mostly 5-, rarely 4 or 6–7-sepalous, sep. free or coherent and subadnate
with the ov. or cor. at the base, imbricate. Cor. hypogynous mostly subgamaropetalous; pet. mostly 5 rarely 4–9, mostly a little coherent at the base, strongly imbricated or contorted. Stam. indefinite, sometimes as many or twice as many as pet. hypogynous or subperigynous i. e. adnate to pet. and to each other at the base. Anthers erect or versatile introrsal ex-appendiculate. Hypogynous disk 0. Ov. free or partly immersed in the torus or fleshy concrete base of cal. 3–5–, rarely 2–many-celled. Ovules pendulous sometimes erect. Styles as many as cells of ov. free or partly connate, stigmas simple. Fr. fleshy or woody and indehiscent or capsular and dehiscent. Seeds few or many pendulous from the central often permanent placenta; embryo cylindric mostly amphitropal rarely straight; alb. mostly little or 0, rarely copious fleshy; radicle various in form and direction upwards or downwards towards the hilum; cotyled. mostly small or narrow, rarely broad and flat.—Tr. or shr. L. mostly alternate simple coriaceous evergreen. Stip. 0 or minute and caducous. Fl. axillary solitary or racemose, rarely paniculate, subconspicuous or middle-sized.

**Ternstroemiaceae** are assuredly more closely allied to Ebenaceae than to Clusiaceae (Guttiferœ DC.), with which they have been hitherto associated; and their transfer to this position amongst the Corolliflorœ from the Thalamiflorœ has the advantage of bringing them also into proximity with Ericaceæ and Sapotaceæ, to the former of which they approach through Saurauja, Visnea and Clethra, whilst through Eurya they have at least as much affinity with the latter as with Hypericaceæ or Dipterocarpaceæ &c.

**Tribe I. Ternstroemiæ.**

Fl. perfect. Pet. imbricate. Stam. subperigynous adnate to cor. at base. Anth. erect. Fr. rarely dehiscent. Seeds mostly few pendulous or laterally affixed; embryo amphitropal curved or hooked; alb. fleshy, rarely copious; cotyled. linear shorter than the radicle.—Tr. or shr. L. simple. Ped. axillary 1-fl'd. Fl. w.

1. **Visnea.** Cal. 5-fid; sep. combined and adnate with the ov. at the base, persistent. Pet. 5 coherent at the base caducous. Anth. smooth. Ov. nearly free scarcely at all immersed in the torus or fleshy base of cal. Styles 3. Ovules 2–4 in each cell pendulous. Fr. half-immersed in and connate with the fleshy base of cal., involved in the persistent sep.; alb. copious surrounding the embryo.—Fl. rather large bracteate w. fragrant.
Tribe I. Ternstræmieæ.

1. Visnea L. fil.

1. V. mocanera L. fil. Mocano.

The only sp.—Linn. fil. Suppl. 36, 251; Lam. Dict. iv. 208; Willd. Sp. Pl. ii. pars ii. 926; Pers. ii. 19; Spr. ii. 465; Hook. Icon. iii. t. 253; WB. ii. 145, t. 69 B; Johns. in Hook. J. of Bot. ix. 161.—Arb. Mad. reg. 2, rrr. From S. Vicente to P° Moniz on the N. coast on steep banks and perpendicular rocks from 500 ft. to about 1500 ft. in all the principal ravines (Rib. do Inferno, de João Delgada, do Seixal, Rib. Fundo and Rib. da Janella) but chiefly in Rib. Fundo and never seen to the E. of S. Vicente; first observed “on rocks at Seixal, July 1856” in fruit by St. J. M. Moniz, from whom I received it in the following Sept. I have since frequently found or obtained it in fl. or fr. at the mouth of the Rib. do Inferno (Fajãa da Vinha) or of Rib. Fundo on the cliff-road to Rib. da Janella. Fl. Dec.—March; fr. July.

—Properly a large not very lofty tr. with a short thick knotted rugged trunk and bushy head of subdiffuse widespread branches; though now in Mad. scarcely existing but as a low bushy tr. or shr. 6-12 or 15 ft. high, with the short st. or trunk not thicker than the arm or leg. Foliage evergreen and copious, but light and tressy, like that of Ficus comosa Roxb. and of a paler or brighter gr. than usual from the light col. of the l. beneath. Petioles short 1-2 lines long, whilst young hairy like the young shoots and l. often reddish. Stip. very minute linear hairy evanescent. L. elliptic, acute at each end, sharply and finely serrulate, 1-2 or 2½ in. long, ½-1 in. broad, at first hairy especially at the edges and on the midrib beneath, finally glabrescent, shining bright full gr. above, paler beneath with the midrib mostly ferruginous or reddish brown like the strongly and sharply angular young twigs or branches. Fl. axillary, solitary (rarely binate or ternate) cernuous bell-shaped mostly unilateral or secund along the branchlets, about the size and with the fragrance (though with a slight fetid after-scent) of those of Lilies of the Valley (Convallaria maialis L.), pure w., 2-3 lines long; smaller but otherwise in shape or form resembling those of Sollya heterophylla Lindl. Pedic. short, 2 lines long, hooked ferruginously subpubescent, with one or two minute inconspicuous adpressed bractlets mostly at base of cal. but sometimes lower down or at the base. Sep. 5 unequal ovate more or less rusty-pubescent and obtuse, stiff, leafy, gr., erecto-patent, laterally imbricate, closed in fr., persistent. Pet. 5 distinct but slightly connected at the base and inserted at the junction of the sep. with the ovary, about twice the length of sep., erect, loosely imbricate, 2 or 3 apiculate or pointed, the rest
retuse or notched, pure w., thickish or leathery, completely though shortly united quite at their base, so as to fall off as a monopetalous cor. together with the 10 stam., which are very shortly adnate in pairs to their base inside and to each other in a single ring or row. Anth. small 2-celled erect apiculate not awned, the fil. or connective produced into a short point. Ov. conoidal or half-ovate ferruginously villous smooth and shortly ribbed or sulcate at the base, 3-celled, cells 3-2-ovulate, ovules pendulous amphitropal. Styles 3 simple smooth gr. subspirally twisted. Fr. half inferior slightly fleshy and berrylike but dry and scarcely eatable, black, shining, about 4 lines long or broad, globoso-turbinate, the upper half covered by the thickened ad pressed persistent sep., the lower immersed and concrete with the fleshy base of cal., 1-2-celled, 1-3- or 4-seeded. Seeds rather large obversely triquetropyripiform hard finely granulate. Embryo slender cylindric curved like a fish-hook within the distinct fleshy albumen, the radicle (forming the shank) straight erect superior, twice as long as but of the same diam. and continuous with the narrow linear semicylindric cot. (forming the crook), all very much as in Cneorum pulverulentum Vent. (belonging to the Family SIMARUBACEAE) as fig. by WB. t. 66 B, except that the cot. are much shorter instead of longer than the rad., and that the latter is erect and straight, the whole embryo being merely hooked downwards, not curved throughout.

In Tenerife and Grand Canary this tr. occurs but sparingly or locally, and in the eastern islands of Lanzarote and Fuerteventura it is not found at all, the value of its wood having no doubt led to its extinction. But on the north coasts of Palma, Hierro and Gomera, in precisely similar conditions of locality as those under which it grows in Mad., it still flourishes abundantly up to an elevation of about 2500 ft.; and in the district called El Golfo in the north of Hierro, about a quarter of the way up the zigzag road called Las Vueltas above La Lapa, I saw, Feb. 19th 1858, 3 tr., growing close together by the road, which measured respectively, 3 ft. from the ground, 9 ft. 11 in., 12 ft. 7 in., and 17 ft. 2 in. in circumf. These noble tr. were in full vigour and grew very much like large old tr. of the Carob (Ceratonia Siliqua L.) with short rugged gnarled and knotted trunks not above 10 or 12 ft. high before branching, and of nearly equal circumf. throughout, with a vast spreading umbrageous thickly bushy head, and altogether of a most picturesque and handsome aspect. The wood is in great request for its strength and dura-
53. AQUIFOLIACEÆ or ILICACEÆ.

bility, and was said on the spot to be as hard as but less heavy
than that of the “Carrisco” or “Palo branco” (Notelaca excelsa
(Ait.)).

Webb relates that in the Canaries a syrup is made from the
fr. and occasionally used as an astringent medicine. In Mad.
the fr. is quite neglected and scarcely eaten even by children,
being dry with little sweetness and merely an astringent
flavour.

Visnea has assuredly, as remarked by Mr. Johnson, some
affinity with Clethra; but certainly not enough to warrant its
removal from Ternstroemiaceæ to Ericaceæ.

EBENACEÆ. Distinguished from Ternstroemiaceæ by little but the
normally diclinous or rarely perfect gamopetalous 3–7-lobed
fl. and mostly straight or slightly hooked embryo with folia-
ceous ovate cot. and cartilaginous alb.—A Mad. spec. of
Diospyros Lotus L. from the garden of the Sta. Clara Convent
occurs in the Banks. Herb. and is included in Eydell’s MS.
Mad. List though not mentioned in Von Buch’s. There was
also, in 1830, a small pl. of it in the garden of the late Rob.
Page Esq. K.T.S. at the Mount. But there is no ground at
all for supposing it to have ever been indigenous to Mad.

Order LIII. AQUIFOLIACEÆ or ILICACEÆ.

The Holly Tribe or Family.

Fl. regular perfect or imperfect (diclinous or polygamous).
Cal. 3–6– (mostly 4–5-) fid. or toothed, imbricate in bud, mostly
persistent. Cor. hypogynous deciduous, mostly gamopetalous,
lobes or pet. 4–6 mostly 4 or 5 and connate at the base, rarely
free, imbricate. Stam. definite 1-seriate, as many or rarely
twice as many as, alternate with, and mostly adnate to the pet.
at their base or subperigynous. Anth. erect introrsal exappen-
dicate. Hypogynous disk 0. Ov. free 2–many-celled; style
0 or very short; stigma sessile or subsessile, lobed, discoidal or
capitate; ovules anatropal 1–2 in each cell, pendulous, funicle
sometimes cup-shaped. Fr. a thinly fleshy 2–many-pyrenous
pome; pyrene 1-seeded bony. Seed pendulous anatropal; em-
bryo very small straight at the top of the abundant fleshy albu-
men; cot. small; radicle superior.—Evergreen mostly smooth
tr. or shr. with aqueous astringent viscid juices and hard or at
least close w. wood. L. coriaceos alternate simple, without
stip. Fl. small w. dichotomously cymose or single on
solitary or aggregate axillary ped. Fr. small berry-like glo-
bose.
1. ILEX. Fl. mostly perfect. Cal. small 4–5-fid persistent. Cor. gamopetalous 4–5 or 6-partite rotate; the lobes obtuse. Stam. as many as the lobes of cor. and adnate to its short tube; anth. oblong. Ov. sessile subglobose 4–8-celled; style 0 or short and thick; stigma lobed, lobes as many as cells of ov. Fr. globose 4–8-pyrenous.

1. ILEX L.

Holly.

1. I. Azevinho Sol. Azevim or Azevinho.

Arb.; branches erect and proliferously umbellate throughout; l. small obsolescently nervd. and veined, ovato-elliptic or lanceolate, subacute at each end, mostly less and rarely more than half as broad as long, unarmcd at the tip and mostly quite entire at the edges; petioles moderately long; fl. in aggregate or single axillary and terminal distinctly stalked fork-branched leafless cymes towards the top of the last new shoots, shorter than the l.; their branches after flowering all marcescent and deciduous ultimately from their stalk or axis, leaving for fr. only the single central or axile fl.; fr. persistent, always solitary or simple mostly subelongated ped. always much longer than the petioles, sparingly aggregate or clustered towards the upper part or top of the old penultimate shoots; not cymose.—Sol. ! MSS. in BH.; Fydell's MS. Mad. List no. 86: I. aestivalis Lam. Dict. iii. 147? Pers. i. 151? Buch Mad. List 198. no. 422, I. aquifolium γ (not δ as quoted by DC. ii. 14. no. 2) v. I. balearica Hort. Reg. Lam. Dict. iii. 145? I. balearica "Desf. Arb. (1809) ii. 262"? Spr. i. 494? DC. ii. 14. no. 2? Holl's List in J. of Bot. i. 20. I. maderensis Willd. Enum. Suppl. (1813) 8 (ex Link sec. DC.) name only without descr. (not I. maderensis Lam.). I. canariensis Poir. Suppl. iii. (1813) 67; DC. ii. 14. no. 4; WB. ii. 137. t. 69. I. Perado Buch Can. List 157. no. 518 and p. 183. no. 75 (not Ait.).—Tr. or subarb. per. Mad. reg. 2, and lower part of 3, cc. Clothing in some places open mountain-sides, or scattered elsewhere here and there in the thicket of Erica, Vaccinium, &c.; crest or ridge in the Cayados Ravine beyond Camacha; forming extensive thicket.s on the mountains at the head of the Machico Valley, at the top of the Pena d'Agua and on all the mountain chains above P° da Cruz; along the Levada dos Lameceiros or da Rocha furada, and in Rib. Frio, da Metade and do Fayal; above Seixal, about the mouth of the Rib. Fundo and thence along the way to Rib. da Janella, &c. May, June.—A small tr. 10–20 ft. high, with normally a distinct trunk 3–6 or 8 in. in diam. (10–25 in. in circumf.) and a thick pyramidal bushy head like an Orange-tr., but
now usually reduced by lopping to a shr. 8-10 ft. high. Trunk as thick as the arm or leg, straight, erect, and with the branches evenly cylindric with a smooth cinereous or greyish bark blotched with large w. or pale cinereous patches. Foliage dense, dark blackish gr. and shining. L. subacute or more or less acuminate but not mucronate or pungently apiculate or spinose at the tip, 1-3½ in. long, ¼-1⅛ in. broad, moderately stiff and rigid but not thick, plain not undulate; the upper thicker or stiffer and always perfectly entire much like those of *I. Aquifolium* L., but sometimes those of the undergrowth or lower barren branches more or less irregularly spinuloso-serrulate and then rarely tipped also with a small weak flexible (not hard pungent) spinule; all dark gr. and shining above, paler or brighter gr. and without lustre beneath, the nerves and their submarginal loops on both sides quite inconspicuous and obsolete, more or less attenuate at the base into the petioles, which are 4 or 5 lines long or from ¼ to ½ the length of the l. and grooved or channelled above. Inflorescence normally cymose, as in *Catha cassinoides* Hér. Fl. small pure w. strong-scented like Privet (*Ligustrum vulgare* L.) or Black-thorn (*Prunus spinosa* L.), in shortly stalked terminal and axillary cymes shorter than the l. at or towards the ends of the terminal or last year's shoots; sometimes intermixed with or all rarely reduced to 1-fld. ped. Cymes erect or erecto-patent on short square or angular slender gr. stalks, 1-4 together from each axil, ½-1 in. long, fork-branched, leafless, with a minute bractlet at each division, 3 or 5-10 or 12-fld.; the whole with the pedicels and cal. quite smooth. Fl. 3 or 4 lines in diam., all but the central primary or axile one ultimately abortive i. e. marcescent and deciduous with their stalks and branches. Sep. and pet. 4, rarely 5, both blunt, rounded, the former wholly smooth (not ciliolulate) with spathelate brown edges, the latter pure w. round concave. Anth. presently dark purplish coffee-brown, their til. thick flat smooth pure w. Cal. 6-toothed smooth, in fr. persistent. Ov. ovato-globose mostly small short or depressed and scarcely rising out of the throat of cor. or base of stam. Berries dark shining vermilion or coral-red, ultimately almost black, globose or depressibly globose, 9 mill. in diam., each solitary (or very rarely binate) on an erectly ascending square or angular slender continuous ped. 6-9 lines long and mostly 1- or 2-scarred oppositely at or about the middle with the marks or remains of its former marcescent deciduous side-branches; remaining at the top of the preceding year's branches till the fl. appear at the top of the terminal last year's shoots. Flesh or pulp of berries y., soon turning at first olive-brown, then inky-black and viscous. Seeds 4 large hard and bony triangularly oblong, the back rounded and grooved down the middle, the 2 sides flat; pale yellowish, 3 lines long, ½ broad at the back.
Little or no use is made of the w. somewhat hard and fine-grained wood except by cabinetmakers for inlaid work.

This must be the Mad. pl. intended by Webb under the name of *I. Aquifolium* which he says (Phyt. Can. ii. 137) he found with *I. Perado* in Rib. Frio. I cannot detect the least difference between the Mad. *Azevim* and *I. canariensis* Poir.—a pl. widely diffused in the Canaries and forming tr. 20–25 ft. high at La Esperanza above Laguna in Tenerife.

A careful study and consideration of the above synonymy will probably be found to justify the preference of Solander’s original MS. name, though unentitled to precedence by priority of publication; his *I. Azevinho* having been by some accident omitted in the Hort. Kew., though, in his MSS., equally well distinguished and defined side by side with his *I. Perado* published in that work.

*I. aestivalis* Lam. seems to have had the l. or foliage of *I. Azevinho* with the fl. and inflorescence of *I. Perado*, and was possibly a hybrid. Willdenow (Sp. i. 708) has referred it, with ?, to *I. Perado* Ait.

*I. balearica* Desf. is very possibly a mere var. (=*I. Aquifolium* γ Lam. ?) of *I. Aquifolium* L.

*I. maderensis* Willd., being unaccompanied by any description, has no claim whatever for adoption; and indeed the name had been previously employed by Lamarck in a misspelled form (*maderiensis*) for *I. Perado* Ait.

*I. canariensis* Poir. is considered by Webb distinct from the Mad. *Azevim*; and though I cannot agree in this opinion, having been unable to detect any real difference between them, the adoption of the name would be objectionable even were this identity entirely established. The Can. pl. is widely diffused in the islands, particularly in Tenerife; where I especially observed it as a large shr. in one of Von Buch’s localities for his *I. Perado* (not Ait.) Can. List p. 183, viz. at Agua Mansa above the Villa Orotava, and again forming a tr. 20–25 ft. high at La Esperanza above Laguna. In the Canaries the berries occasionally become even on the shr. quite black, as described by DC. l. c. In Mad. I have found this to be the case only when quite old or in dried spec.
2. I. Perado Ait. Perado.

Shr. sparingly and remotely branched, branches elongated weak and flaunting, horizontally spreading or declining, the upper more erect sometimes subumbellate; 1. large and broad, distinctly nerved and veined, broadly oval or oblong-oval, always more than half and often nearly or quite as broad as long, mostly flat or but slightly undulate thick stiff and rigid, abruptly and shortly acuminate, always mucronate or tipped with a small hard pungent spinule and mostly more or less spinuloso-serrate at the edges, rarely quite entire; petioles very short; fl. like the fr. solitary on short 1- (very rarely 2-3-)fd. ped. aggregate in clusters on very short axillary spurs (abortive branchlets) towards or at the top of the last new shoots; ped. short scarcely longer than the petioles or the diam. of the persistent fr.—Sol. ! MSS. in BH.; Ýydell's! MS. Mad. List no. 85; Ait. ! Hort. Kew. (ed. 1) i. 169, (ed. 2) i. 278; Willd. Sp. Pl. i. 708; Pers. i. 151; Buch ! Mad. List 108, no. 421; DC. ii. 14. no. 3; Spr. i. 495; WB. ii. 137; Seub. Fl. Az. 46; Wats. in Godm. Az. 146. I. maderiensis (sic) Lam. Dict. iii. 146 (not sec. Link, I. maderensis Willd. Enum. Suppl. 8); Duham. Tr. des Arbr. (ed. nov. 1801-1816) i. p. 7. t. 2. I. crassifolia Meerb. Ic. pict. t. 4. I. platyphylla WB. ! ii. 135, t. 68 (forma arborea) ; Bot. Mag. t. 4079 (inflorescentia nimis luxuriante submonstrosa). Aquifoli um amplissimis foliis ex Insulis Fortunatis Pluk. Alm. 38. t. 262. f. 1.—Shr. per. Mad. reg. 3, 5. Here and there, occasionally but not commonly, in thickets of Erica, Vaccinium, &c., chiefly in ravines with I. Azevinho, but much less frequent and not forming thickets by itself. Rib. da Metade along the Le­vada, Boa Ventura, Serra do Seixal, Levada dos Lamaceiros or da Rocha furada above Pª da Cruz; not seen below 3000 ft. Apr., May.—Always in Mad. a mere straggling shr. 3-6 or 8 ft. high branched from the base, the branches loose remote and flaunting, mostly gr.-barked till 2 or 3 years old. L 2-3½ in. long, 1½-2 broad, often distichous or all in one plane, of a lighter or brighter gr. and mostly thicker stiffer substance than I. Aze­vinho, with the veins more distinct and with a strong pellucid nerve forming the edge or border and produced at regular or ir­regular intervals into fine short pellucid spinules pointing for­wards in the plane of the leaf itself, rarely perfectly entire or without at least 1 or 2 spinules and never without one at the tip. A little within the margin each primary nerve bends arcuately upwards and joins the next above it, forming a series of outwardly convex loops or scallops and enclosing about 8 ob­long spaces on each side the midrib between the 8 or 9 primary nerves. The lower or smaller 1. on the branches are sometimes almost or quite orbicular or rounded; all are mostly very thick and rigid but only slightly undulate, shining above, paler and
merely glossy beneath, somewhat abruptly acute at the tip and slightly rounded or at least not at all attenuate at their base into the very short stout petioles which are only 2 or 3 lines long, dark purplish and channelled above. Inflorescence abortively cymose as in *Catha Dryandri* Lowe. Fl. pinkish w., purplish in the bud, mostly larger than in *I. Azevinho*, in close compact axillary clusters towards the ends of the young branches on short woody knobs or spurs, each solitary on its own 1-fld. ped. which is about 3 lines long, smooth and round, with a pair of minute brown ovate bractlets at its base; lobes of cal. very obtuse rounded obscurely and minutely ciliolulate. Pet. elliptic concave pure w. inside, purplish outside towards their tips, Anthers small; fil. w. about half the length of pet. or a little more. Ov. very large prominent exactly the height of the fil., globose bright gr. smooth shining, crowned with the large flattened depresso-globose subumbilicated sessile light-yellowish gr. stigma. Berries shining bright light coral-red, crowned with the black scarlike remains of the stigma, slightly depressely globose, 9 mill. in diam. But few arrive at maturity comparatively with the quantity of fl. Their ped. are only 1½–3 lines long, equal cylindric.

Looking simply at the inflorescence, *I. Perado* might seem to be a mere form of *I. Azevinho*, in which the greater development of the l. had checked the full evolution of the 1-fld. ped. into cymes. But other differences remain not thus to be accounted for, and indicative on the whole of aboriginal distinction.

Though the country people in Mad., from relying too exclusively on the "spinose and not'spinose" or entire l. occasionally apply the name "Perado" to mere states of the "Azevim," yet are they generally fully cognizant of their absolute distinctness, and indeed rarely make the mistake just mentioned.

In the Canaries, especially at Agua Garcia in Tenerife, *I. platyphylla* Webb is quite arborescent. But this is the only difference I can discover between it and the Mad. pl.

In *I. platyphylla* BM. t. 4079 the inflorescence is evidently not truly cymose, though so described, i. e. not in distinctly stalked few-fld. regularly fork-branched cymes, but in aggregately clustered 1–3-fld. ped. crowded on axillary leafy spurs or branchlets, just as occurs in luxuriantly flowering states of *Catha Dryandri* Lowe as contrasted with *C. cassinoides* Hér. Indeed in inflorescence these two last-named pl. present re-
spectively an exact analogy with *I. Perado* and *I. Azevinho*, though the correspondence is just reversed with respect to foliage.

**Order LIV. SAPOTACEÆ.**

The Star-apple or Sapodilla Family.

Fl. perfect regular. Cal. free persistent mostly 5- rarely 4-12-partite, the lobes imbricate or valvate, adpressed in fr. Cor. deciduous hypogynous, gamopetalous, the lobes as many or 2-3 times as many as and alternate with those of cal., imbricate in bud. Stam. definite distinct, mostly of 2 sorts, barren and fertile; the barren petaloidal, the fertile or antheriferous mostly as many as and alternate with them and adnate to the base of the cor.-lobes. Anth. mostly extrorsal. Style 1 simple. Stigma minutely lobed. Ov. free mostly hispid 2-5-12-locular, cells 1-ovulate. Ovule single anatropal pendulous from the top or ascending from the base of the axile angle of its cell, in fr. adherent to the same. Fr. a pome or by abortion a drupe, the cells mostly becoming all but one or two abortive. Seeds crustaceous or hard and bony shining, hilum inferior or lateral sometimes scarlike very large and elongate; embryo large orthotropal; alb. either none with a large oily embryo, or fleshy and oily. Cotyled. large leafy or fleshy and oily, contrary to the hilum except in *Argania* R. Br. Radicle inferior. Tr. and shr. with milky juices, mostly soft wood and often esculent fr., chiefly tropical; the only exception being the Madeiran pi. here recorded. Another sp. of the Family (*Sapota marginata* Dene.) is also peculiar to the Cape Verdes; but none occurs in the intermediate Canaries! L. mostly coriaceous and alternate, penninerved entire shortly petioled exstipulate, mostly silky beneath. Fl. axillary small aggregate or solitary.

1. *SIDEROXYLON*. Cal. and cor. 5-partite or 5-fid. Stam. inserted on the very short cor.-tube in 2 rows; 5 sterile petaloid, alternate with the pet. and like an inner cor.; 5 fertile alternate with the sterile and opposite the true pet.; anth. extrorsal shorter than their fl. and affixed to them by their middle, not erect or adnate. Ov. 5-(rarely 4-2-)celled, the cells 1-ovulate; ovules all but 1 or 2 or 3 abortive. Fr. an ovoidal or globose 1-3-seeded drupe or berrylike pome. Seed ovoidal or globose bony shining obtusely 5-ribbed; with a small round hilum, copious albumen and large flat leafy cotyledons. — Evergreen unarmed tr. or shr. with hard wood, coriaceous reticulately veined 1, small aggregate w. pink or flesh-col. fl. and small red or blackish rarely y. fr.
18

54. SAPOTACEÆ.

1. SIDEROXYLON L.

1. S. MARMULANO LOWE. Marmulano.

Shr. unarmed; young shoots and petioles more or less pale rusty-pubescent; I. always quite smooth and shining coriaceous reticulate subspathulately obovate-oblong and acute or obtusely or retusely obovate or spathulate, very entire, pubellidiously margi- nate; pedic. 2-5- or 6-aggregate in axillary fascicles short unequal never more than twice the length of the cal. or half that of the petioles, both pedic. and cal. closely and adpressedly rusty-pubescent or velvety; sep. broadly ovate subobtuse, the inner with coloured margins; cor. pale rose-pink or flesh-col. campanulate with a very short tube; pet. twice the length of sep. erecto-patent, ovate; barren or antherless stam. ovato- lanceolate concave resembling an inner cor. or corona; fr. obo- vate or obovoidal, at first red, then black.—Lowe Prim. 22 and App. iii.; DC. viii. 181. S. MIRMULANS (sic) Buch! 193. no. 205.—Shr. per. Mad. reg. 1 chiefly, 2 occasionally, 3; PS. reg. 1, rrr. Sea-cliffs to the East of Funchal, at S. Vicente above the Cemetery and near the sea, between Seixal and Rib. de João Delgada, at Rib. da Janella, about the Entrosa, at Sª Anna, and in 1829 on the small rocky islet off Pº da Cruz; also 1500-2500 ft. up the Rib. de S. Jorge, &c. Pº Sª, June 1832; “Serra de Dentro,” Sª Moniz, Dec. 1850. Fl. Dec., Jan.; fr. July, Aug.—A low thickly bushy and leafy shr. mostly about 3 or 4, rarely above 7 or 8 ft. high, with bright full gr. shining handsome foliage and subproliferously branched; the branches stiff and thickish round erect with a rough greyish brown bark sprinkled with numerous brown Hysteriform lenticels; the younger or last year's shoots, on which the fl. are produced, gr., with often somewhat of a glaucous hue and more or less pubescent with fine short close-pressed whitish or pale rusty hairs. L. alternate 3-5 or 6 in. long, 14-2½ broad, spa- thulately obovate or obovate-oblong pubescent acut or very obtuse, smooth altogether from the first, light fresh gr. and flaccid thin and delicate whilst young, coriaceous still and rigid afterwards and darkish full gr. above with pale midrib, paler beneath, shining on both sides but most brilliantly above whilst young, finely and elegantly pellucid-reticulate and with a distinct pale pellucid sharp thin border continued a little down the petioles; the midrib prominent and pale y., or reddish downwards, the lateral nerves equidistant faint and inconspicuous. Both l. and st. whilst young give out a thick viscid bitter milky juice when cut or bruised. Petioles ½-1 in. long, mostly about ⅔ in., pubescent above and all round at their axis, presently glabres- cent, pale y. like the midrib of the l., but often red or purplish brown whilst young. Fl. small inconspicuous, in crowded
axillary clusters on the newest shoots; ped. 1-fld., 2 or 3 lines long, round or a little compressed. Cal. deeply 5-fid persistent. Cor. rotato-campanulate, pet. concave, their edges erosulate or subtomentoso-ciliolulate, very pale pink or flesh-col., deeper in the throat; barren stam. petaloidal erosulate alternate with and as long as the pet. Fertile stam. alternate with the barren or opposite the pet., exserted, longer than the pet.; anth. oblong 2-celled rose-red beneath at the insertion of the fil.; pollen pale or whitish. Style single thickish cylindric shorter than the pet.; stigma merely the smooth abrupt or obtuse tip of the style. Ov. ovate rusty-pubescent 5-celled; ovules one in each cell, oval, 4 mostly abortive. Fr. a shortly stalked or nearly sessile drupe (abortive pome) about the size and col. of a Sloe (*Prunus spinosa* L.) i. e. § in. long and § in. broad, shining deep black without bloom shortly obpyrifomi or obovately globoso-ovoidal; the flesh one line thick, firm, bright sap-green, rather copiously milky, the milk thin viscosous whitish; taste sweetish but somewhat salt or mawkish and disagreeable, like that of the fr. of *Chrysophyllum oliviforme* Lam. or rather the seeds of *Stephylaea pinnata* L. Seed almost always single large irregularly or obliquely ovato-globose, apiculate, about § in. long, 4 or 5 lines broad, smooth shining light brown, divided into 5 unequal raised compartments like a melon. *Hilum* oblique small.

The fr., having a little sweetness, is occasionally eaten by the country people, notwithstanding its dryness and somewhat saline unpleasant flavour.

This pl. is strictly peculiar to the Mad. group, and is not found in either the Açores, the Canaries or Cape Verdes. In the Açores it is represented by *Myrsine africana* L., β. *retusa* Alph. DC.; the “Marmolan” of the Canaries is *Myrsine* (or *Fleiomeris* DC.) *canariensis* Willd.; and the “Marmulano” of the Cape Verdes (“Sideroxylon Marmulana? (Madeira)” of Chr. Smith’s St. Iago List in Tuckey’s Narrative 249) is *Sapota marginata* Dene. (Webb Spic. Gorg. 169. t. 13), found by me not only in St. Iago but in St’ Antão, Fogo and Brava. Chr. Smith’s original Cape Verde spec. without fl. or fr., marked by himself “Sideroxylon MSS. no. 41,” is still extant in BH.

Order IV. OLEACEÆ.

The Olive Family.

Fl. perfect regular, rarely imperfect apetalous. Cal. gamosepalous 4-lobed or 4-toothed free persistent. Cor. deciduous
hypogynous more or less gamopetalous, lobes or pet. 4, united either all together or in pairs, rarely free or 0, valvate in bud. Stam. 2 (rarely 4) opposite each other, adnate to and alternate with the pet.; anth. introrsal. Style single short or 0, stigma bifid or entire. Ov. free 2-celled, cells alternate with the stam. or opposite the pet., each 2-ovulate; ovul. pendulous. Fr. drupaceous, baccate, capsular or samaroidal, 2-celled and 2-4-seeded, or often by abortion 1-celled 1-seeded. Seeds inverted pendulous; embryo straight axile, half the length of the seed, mostly enclosed in copious thick fleshy or horny albumen; cot. leafy; radicle superior.—Tr. or shr. with opposite branches often compressed upwards and with a terminal bud. L. without stip. opposite simple or rarely (as in Fraxinus) odd-pinnate. Fl. small in terminal or axillary trichotomous panicles or rac., w. or lilac often fragrant, pedic. opposite 1-bracteate.

Tribe I. OLEINEAE.

The Olive Tribe.

Fr. fleshy drupaceous and 1–2-seeded, or baccate and 2-4-seeded. Alb. copious.—L. simple mostly coriaceous and entire. Wood close or fine-grained, hard and durable.

1. OLEA. Cal. small 4-toothed. Cor.-tube short, limb 4-partite. Stam. 2 inserted on base of cor.-tube, exserted. Style short; stigma large conico-capitate notched or bifid. Flesh of drupe oily; stone (putamen or pyrenca) hard bony mostly 1–rarely 2-celled and 2-seeded.—L. naked or scaly i. e. lepidoto-punctate.

2. NOTELJEA. Like Olea, but pet. 2 distinct and each bi-partite (i. e. 4 united by twos into 2 distinct opposite pairs) with stam. inserted at their base or claw, and stigma sessile; style 0.—L. naked, often simply punctate, not scaly.

Phillyrea. Like Olea, but cor. rotate equably 4-partite almost tubeless, anth. subsessile not exserted, flesh of small berry-like drupe not oily, putamen thin fragile papery or parchment-like and l. always naked, simply punctate, not scaly.

Tribe I. Oleineae.

1. OLEA L.


Arb. or shr. branches subverruculate; l. nerveless or veinless especially beneath, lanceolate, oblong, oval or ovate entire, minutely lepidote or scaly, glabrescent shining and puncticulate
OLEA.

above, furfuraceous and mostly silvery-grey or hoary beneath; fl. in erect axillary mostly simple few-fld. or compound many-fld. bractiately divaricate panicled rac. or racemose panicles; fr. ellipsoid, ovoidal or globose, drooping.—Linn. Sp. 11; Vill. Dauph. ii. 5; Lam. Dict. iv. 537; ejusd. Ill. t. 8. f. 1; Desf. i. 9; Brot. i. 10; Pers. i. 8; Ait. Hort. Kew. i. 21; Spr. i. 34; Risso Hist. Nat. ii. 6 with a good fig.; WB. iii. 161; Koch 553; DC. viii. 284; Gren. et Godr. ii. 474; Willk. et Lange ii. 672.

3. maderensis Lowe; shr. somewhat loosely branched, branches subelongate slender; l. nerveless or veinless especially beneath, linear-lanceolate acuminate-cuspidate much attenuate downwards into the distinct moderately long petioles, glossy dull greyish gr. above, paler but not silvery w. beneath, the margins slightly reflexed or revolute; panicles ebracteate distinctly stalked solitary axillary or both axillary and terminal, erect, once or twice compound somewhat loosely or remotely many-fld., about half the length of the l., pyramidal bractiately and divaricately branched, branches opposite horizontally patent or deflexed, racemously 3-5- or more-fld., rarely again branched or twice compound; fr. rather small subgloboso-ovoidal shining purplish black scarcely fleshy.—Lowe Novit. (1838) p. 15 or 537. O. europaea 3. cerasiformis WB. (1840) iii. 162. O. europaea, "Sp. valde simile Oleae glabellae" (scil. Herb. Banks. = O. exasperata Jacq.), "Fructus parvi subrotundi stylo persistente coronati" Buch! Mad. List 192. no. 168. "O. divaricata Banks. MS. Smith's Herb." Lemann in lift. Elaeagnus angustifolia Sol! in BH. quoad ex. Mad. (not Linn.). —Shr. per. Mad. reg. 1, 3. Sea-cliffs here and there all along the S. coast of Mad., more rarely in the N. A little out of Funchal to the eastward along the Caniço road on the sea-cliffs and sides of ravines, S. Gonçallo; on the E. face of the Brazen Head; at Camera de Lobos close above the bridge beyond the town ascending out of the ravine, on the right of the road; at the top of Cabo Girão on the face of the cliff towards its further or W. end; on the Ilheo do Porto da Cruz, &c. Fl. and fr. May, June.—A low somewhat loosely branched shr., 2 or 3 to 6 or 8 ft. high, with pale dull grey or hoary (not silvery) foliage. Branches slender straight virgate grey or whitish, smooth but sprinkled with little tumid wartlike lenticels, quadrangular while young. L. with petioles 1^-3 in. long, 3 lines wide, stiffish but not rigid, sharply cuspidate and almost pungent at the tips, punctate glabrescent and shining above, closely scaly or punctato-lepidote and duller but not much paler or greyer beneath; their petioles 2-3 lines long. Panicles stalked axillary rarely also terminal, 1-2 in. long, 3^-4 broad at the base, their stalks 1^-2 in. long, rarely more than once compound, the
branches subremote or distinct, regularly opposite on alternate sides of the rachis and like the short pedic. widely divaricate, mostly 5-fld.; br. and bractlets obsolete or 0. Fl. scentless small w., in bud obovoidal yellowish; lobes of cor. equal ovate pure w. Anthers large, deep or., exserted, with distinct fil. Stigma nearly as large as the ov. on a distinct style, notched at top, bilobed at the base. Fr. 5 or 6 lines long, 3-5 broad erect on its pedic. and in erect or erecto-patent pan. of 2-5 or 6 together, at first in ripening bright purplish red, then black and altogether much resembling the fr. of the Portugal Laurel (Prunus lusitanica L.), shining, without bloom and apparently quite smooth and even, but through the lens faintly shagreened; the skin and flesh very thin and dry, bitter without any oily flavour; the stone ovoidal very large.

The panicles are smaller and much more widely divaricate in all their parts, but otherwise precisely of the form and on the plan of that of Ligustrum lucidum Ait. (BM. t. 2565).

The bitter dry and thinly fleshy fr. (Azeitona) seems to be entirely neglected. Indeed it is unfrequently produced at all, and in every case would yield a very poor return in oil.

In drying, the Camera de Lobos and Cabo Girão spec. gave out a quantity of a loose mealy or granular sweet powdery substance, of a pale y. col., somewhat shining and almost exactly resembling fine light-col. raw-sugar. This is certainly an exudation from the pl. itself (the 1. chiefly), and no product of an Ecidium, as suggested by Webb l. c. It is evidently of the nature of the drug commonly called Manna in our shops.

I cannot perceive, either in dried spec. or in the characters assigned by DC. to the Cape Olea verrucosa Link, any thing except the smaller fr. (not bigger than a pea or 2-3 lines by 2 lines in diam.) to distinguish it from the present Mad. and Can. pl., which is certainly a mere var. of the common European Olive (O. europaea L.).

In Fogo, one of the southernmost Cape Verdes, as also in the more northerly islands of S. Antão and S. Nicolão, I procured spec. of an Olive resembling perfectly in foliage the present pl., but without fl. or fr.

γ. buxifolia Ait.; shr. thickly and closely branched or bushy, branches short stiff crowded; 1. hard and rigid rather small shortly oblong, oval, obovate or rounded, mostly obtuse and abruptly apiculate or mucronulate, very dark gr. shining and glabrescent above, paler and more or less scaly or furfuraceous
yet not w. or hoary beneath, the margins slightly revolute.—*O. europea* & *buxifolia* Ait. 1. c.; Risso var. 1, l. c. 7; β, Lam. 1. c. 538 (*l'olivier sauvage*); ejusd. Ill. 28. no. 73; *a. Oleaster* DC. 1. c. partly.—Shr. per. Mad. reg. 1; ND.; rrr.

Subv. 1; l. decussate short rounded or broadly oval mucronulate nearly or quite sessile; branches straight regularly opposite and decussate, stiffly divaricate or erecto-patent, sometimes spinescent; fl. and fr. as in β.—N. or Flat Deserta, in the centre of the island, 15—20 pl. which have been burned or stubbed down to their stocks or stumps which are sometimes 2 or 3 ft. in circumf. They are apparently the relics of former cultivation, growing at regular intervals in a central spot of about 2 acres, inclosed by traces of a wall and near the ruins of a house or cottage.—A small low bush. Branches very hard stiff straight and rigid, squarish towards the ends and often subspinescent, pale ash or whitish. L. small 3 or 4—6 or 7 lines long, 2 or 3—5 broad, mostly round or broadly oval, obtuse or retuse and mucronulate, but sometimes on young vigorous shoots lanceolate-oblong and acute, very hard stiff and rigid, dark gr. shining and nearly naked or with only a few scattered scales above, but pretty closely lepidote or furfuraceous beneath; in one or two cases beautifully variegated with y. In June 1855 I found several of these pl. in fl., with plenty of old fr. or their stones beneath them on the ground.

Subv. 2; l. irregularly crowded, oblong or obovate-oblong petiolulate not mucronulate; branches thickly and irregularly crowded abbreviate.—S. Gonçalvo below the Chapel of N. S. das Neves on rocks inland but towards the sea.—A little scrubby peculiarly dark densely branched shr. with short stiff crowded rigid thickly leafy branches coated with a black soot-like *Fuligo*. Petioles short but distinct, 3—1 line long. L. rigid very dark blackish gr., paler but not at all hoary and inconspicuously yet pretty closely furfuraceous or lepidote beneath, shining and punctate but nearly or quite smooth or naked above, 6—12 lines long, 3—4 broad, obtuse or retuse, not mucronulate, rarely subacute. Fl. and fr. not seen.

2. *NOTELLEA* Vent.

1. *N. EXCELSA* (Ait.). *Pão branco.*

Arb.; branches proliferously umbellate, the younger compressed decussately or alternately in opposite directions between each pair of l., smooth, sparingly verruculate; l. petiolate stiff coriaceous oblong-lanceolate or elliptic acute at each end, altogether smooth and naked, entire finely reticulato-granulate and obscurely and remotely punctate; fl. in axillary and sometimes terminal binate or solitary rac. which are at first drooping, then
in fr. erect; bracts large conspicuous minutely furry-pubescent at the edges, the lowest pair connate subpersistent membranaceous-coniaceous, the upper membranous and quickly falling; ovary ovate-oblong, stigma capitate entire oppositely bilobed at the base; fr. erect large oblong-ovoid or elliptic.—WB. iii. 163. t. 186. *Piconia excelsa* DC. viii. 288; Seub. Fl. Az. 35. *Olea excelsa* Ait. i Hort. Kew. (ed. 1) i. 14, (ed. 2) i. 22; Pers. i. 9; Poir. Suppl. iv. 139; Buch! 192. no. 169; Spr. i. 34.—Tr. per. Mad. reg. 3, r. Wooded ravines and thickets here and there a solitary tr. or two; Rib. da Metade, Serra do Porto da Cruz, Rib. do Gato at the head of the Curral das Freiras, Rib. da Boa Ventura, Serra d'Agua, Rib. das Fontes at Seixal, &c.; also planted in gardens at the Mount, Camacha, &c. Fl. Feb.-July; fr. Aug., Sept.—A lofty tr. 40–60 ft. high, with a branchy not spreading nor yet bushy head and whitish or pale ash-coloured smooth or even bark; wholly smooth except the fl.-bracts. Terminal branches umbellate thickish and alternately compressed beneath each pair of l. much as in the common Ash (*Fraxinus excelsior* L.) solid or almost without pith but very brittle, rounded downwards and roughened with tumid Hysteriform lenticels. Leaf- and fl.-buds large (especially the latter) with valvate caducous scales or bracts. L. regularly decussate, 24–3 in. long, 3–1 in. broad, very hard and rigid, cymbiform, somewhat shining and dark gr. above, paler and duller beneath, the side-nerves parallel and little branched, without furfuraceous scales but with a few indistinct remote pores. Petioles 4–9 lines long, channelled above, very convex beneath. Fl. pure w. falling without turning brown, larger than in *Olea europea* L. and sometimes very fragrant somewhat as in *Osmanthus fragrans* Lour. They grow in loose slightly drooping short axillary or axillary and terminal 6–12-fld. rac., 1–2 in. long, much shorter than the l., and produced mostly singly but sometimes in pairs from each axil towards the ends of the branches, and in the latter case one above the other, the uppermost thus becoming superaxillary; rachis and pedic. quadrangular smooth. Pedic. 2 or 3 lines long decussately opposite. Br. concavely ovate or ovate-lanceolate smooth but a little fringed or cottony at the edges, pale yellowish gr. at first, then turning brown, the upper presently falling, the lowest pair or two more persistent large rigid brown and subtubularly connate. Sep. 4 distinct small ovate obtuse, sometimes minutely fringed or cottony at the edges, persistent brown and withered in fr. Pet. 2 distinct very deeply bilobed almost to the base, lobes long ligulate and undulate, mostly irregularly notched or bifid with incurved or recurved tips. Stam. 2 attached to the base or claw of the 2 opposite pet. about half their length and falling with them; fil. very short broad flattened; anth. large adnate narrow-oblong or lanceolate acute 2–4 times the length of their
fil., 2-celled, bursting laterally; pollen bright y. Ov. large smooth gr. fleshy subangular ovate-oblong, elliptic or subelongato-conic, narrowing upwards and crowned by the large capitale yellowish perfectly sessile deflexedly 2-lobed stigma. Ovules geminate in each cell, oblong or elliptic. Fr. an erect drupe, at first red then dark v.-blue with a fine blue bloom resembling a small damson-plum, elliptic-oval, 9–10 lines long, 4–5 lines broad, fleshy or even pulpy but not juicy or in the least oily, sweet but intensely bitter with a slight astringency, not wholly unpleasant, yet not eaten. Flesh scarcely one line thick dark-coloured, reddish towards the stone; the latter large elliptic acute at each end, hard and bony, with 2 opposite prominent (sutural) ribs and 3 intermediate (8 in all) anastomosing by transverse branchlets towards the top, and complicated at the base by other short longitudinal ribs reaching only partly up the intermediate spaces of the 8 stronger ribs, 1-celled by abortion of the 2nd cell. Shell between crustaceous and bony, not very hard, about 1 mill. thick, smooth and satiny inside. Seed single large ellipsoidal sharp-pointed at each end, ½ in. long, half as broad, not compressed, smooth and brown like an almond, nearly tasteless but very slightly bitter, composed wholly of the somewhat horny, not brittle or fleshy albumen, curiously impresso-venulose longitudinally, attached by the hilum a little above the middle to the rather long membranously winged or dilated pseudo-arillate funiculus which rises vertically from the base of the cell, being thus truly, though laterally, pendulous. Wings of aril curiously striolate closely and parallelly, and cleft or toothed at the edges. Embryo straight, longitudinally axile in a large roomy central hollow, very large, distinct, whiter than the albumen or rest of the kernel.

The wood of this tr. is extremely heavy, hard and solid. A cube of it barely floats in water with the upper side level with the surface. It is highly valued for purposes in which strength and toughness, combined with hardness, are required; such as especially the keels of large and heavy boats, liable to constant shocks and grinding on a rocky or shingly beach. Hence the yearly increasing scarceness of the tr., which indeed seems likely soon to become extinct altogether, though it can be raised most readily from seed.

Phillyrea Lowii DC. viii. 293 (Olea microcarpa Lowe MSS. o.im, not Vahl) was founded on spec. from 2 or 3 bushes in the shrubberies of the late J. D. W. Gordon Esq. at the Mount, 1900 ft. above the sea, and alleged by his Portuguese gar-
dener, by whom they were called "Oliveira," to have been 
brought thither from "near the sea to the E. of Funchal." 
Thus I was led originally to suppose them to be mere depau­
perated forms with imperfectly developed fr. of the common 
native Mad. Olive, O. *europea* L. var. β, supra. They belong 
unquestionably, however, as referred by the late Chev. de 
Candolle to *PHILLYREA*; and as no such pl. has ever been 
found "to the E. of Funchal" or elsewhere in Mad. wild by 
myself or any other botanist, and as the similarity of these 
Mount garden pl. to *O. europea* β, supra, growing plentifully 
on the sea-cliffs to the E. of Funchal, is quite sufficient to ac­
count for the wrong Portuguese name and origin ascribed to 
them by the gardener, it may be almost certainly concluded 
that they have no legitimate claim to a place in the Mad. 
Flora, but were introduced with sundry other pl. and shr. in 
the same grounds from either Portugal or England, and are 
thus most probably merely a slightly aberrant form of *P. an­
gustifolia* L. I will append however my original description 
from the living pl.

"In Mr. Webster Gordon's garden at the Mount, Apr. 23rd 1831. 
Several low thick bushes in full fl. Branches stiffer than in 
the ordinary state of *O. europea* L. wild in Mad. L very dark 
gr. above, rather paler or brighter beneath but not in the least 
silvery-grey or hoary! distinctly 3-nerved on both sides and 
veined or reticulate above, the edges usually entire, but oc­
casionally with here and there a minute tooth or even sometimes 
regularly minutely toothed, narrow-lanceolate, very acute, di­
strictly petiolate, about 2 in. long and ¾ in. broad, hard coria­ 
ceous and remarkably stiff and rigid." (In a dried ex. now 
before me, they are sprinkled with a few remote large pores 
beneath, but are perfectly naked or without any silvery or 
branny scutate or umbilicato-peltate scales, being also exces­
sively minutely, finely and closely shagreened or papilloso­
pustulate on both sides.) "Fl. in very short close erect 
densely crowded many-fld. sessile axillary forked coarctate or 
congested tufts or cymes, usually 2 from each axil, 3 or 4 lines 
long or broad and not above ¾ or ¼ the length of the l., slightly 
fragrant like Primroses, but less pleasantly. Branches of 
cymes and pedic. minutely furry-puberulous, sep. smoother or 
only minutely ciliate. Cor. distinctly 1-petalous, 4-fid, the 
lobes equal rounded pale yellowish gr. Anth. large. Stigma 
large emarginate at top, 2-lobed at base exactly as in *Olea ex­
celsa* Ait. Ov. 2-celled, each cell 2-seeded.—Drupes (Oct. 8th 
1831) now ripe, produced sparingly and singly here and there 
and among a profusion of clustered abortive withered or dried up 
fl. and pedic., very small, 2-5 mill. in diam., nearly spherical 
i. e. depresso-globose, apiculate by the short dried-up remains 
of the style, soft smooth or even, but through a lens finely 
granulated as if close-shaven, like shagreen, of a dark dull 
v.-blue like a plum and appearing pruinose or covered with a 
bloom but which does not rub off."—I have unfortunately
no note concerning the nature of the stone or *putamen* in the fresh pl.; but though my original reference of it to *Olea*
would imply its being hard and bony, it is distinctly described
by DC. from my spec. to be chartaceous as in *Phillyrea*. And
so accordingly I find it in an old dried spec. to be stiff and
firm but fragile thin and certainly papyraceo-crustaceous or
pergamentaceous, not hard thick and bony as in *Olea*.
The more regularly or distinctly 3-nerved 1. seems to me the only
point in which the above pl. (which is most certainly *P. Lowei*
DC.) differs from *P. angustifolia* L.

**Order LVI. JASMINACEÆ.**

The Jasmine Family.

Fl. perfect regular. Cal. gamosepalous 5–8-fid or toothed
free persistent. Cor. hypogynous gamopetalous hypoclerateri-
form 5–8-lobed, lobes in bud imbricate and twisted, rarely val-
vate. Stam. 2 inserted on and included in the cor.-tube. Anth.
2-celled erect intorsal. Style short simple; stigma capitato
2-lobed. Ov. free without hypog. disk, 2-celled, 2-lobed at
top; ovul. at first lateral, then ascending or erect, 1–2 (rarely
3–4) in each cell. Fr. a didymous i.e. deeply bilobed or bipar-
tite berry or caps. Seeds erect with little or no albumen when
ripe; spermoderm often thickened; embryo straight; radicle
inferior; cot. fleshy flattened.—Erect or sarmentose and climb-
ing shr. L. without stip. opposite or alternate simple or mostly
odd-pinnate, lfts. 3–5 or 7. Fl. trichotomously paniculato-
cyme w. or y., mostly fragrant. Pedic. opposite 1-bracteate.

1. **JASMINUM.** Cal. campanulate 5–8-lobed, lobes short and
tooth-like or subulate. Cor. salver-shaped, the tube slender,
limb flat 5–8-lobed, lobes oblique twisted in bud. Fr. a
didymous berry, lobes divaricate, each mostly 1- (rarely
2-)seeded. Seeds erect nearly or quite exalbuminous.—
Shr. mostly climbing. L. compound and odd-pinnate or
1-foliolate by abortion of side-lfts. Fl. cymose w. or y.
fragnant.

1. **JASMINUM L.**

§ 1. *Trifoliolata* DC.; 1. opposite 1–3–5-foliolate; cal.-teeth
short; fl. w.

1. **J. AZORICUM L. Jasmin branco.**

Sarmentose or climbing, smooth; branches weak or flexible
round elongate diffuse or trailing; 1. 3-foliolate, lfts. rather large
undulate smooth shining subcoriaceous ovate or subcordate-
oveate acute or subacuminate; cymes axillary and terminal form-
ing a leafy oblong panicle; pedic. short longer than the cal.; cal. campanulate 5-toothed, the teeth short ovate acute; tube of cor. scarcely longer than the lobes; "berries obovato-globose."—Linn. Sp. 9; Lam. Dict. iii. 218; Pers. i. 8; Ait. Hort. Kew. (ed. 2) i. 17; Bot. Reg. t. 89; BM. t. 1889; Buch 192. no. 166; Spr. i. 32; DC. viii. 311; Seub. Fl. Az. 35. J. azoricum trifoliatum, /lore  albo odoratissimo /Commel. Hort. med. Amstel. i. 159. fig. 82.—Shr. per. Mad. reg. 3, rrr. Clefts of overhanging rocks or cliffs in remote deep glens of the interior, about 3000 ft. above the sea. "In the Cerejeiras ravine, descending from the Caminho Central into the Rib. Brava, in a deep glen to the right of the path, 3 or 4 pl. hanging down a perpendicular cliff or at its base, undoubtedly wild, Oct. 10th 1866," Capt. Norman R.N.; having been first discovered in the spot a year or two before by a Portuguese countryman employed to collect pl. Previously it had occurred to myself, Lemann, and other botanists or collectors only in gardens occasionally at Funchal and the Mount. June—Oct.—St. climbing, rampant or decumbent; branches slender straight long virgate or rather osier-like flaunting or declining; either trailing or hanging loosely over walls or down rocks or rocky banks, not self-supporting, ash-coloured below, gr. upwards and always in Mad. smooth. Foliage large and somewhat dense or cumbrous, bright shining dark gr. Petioles ½—1 in. long, petiolules ¼—½ in. long, all round slender smooth not twining, the middle petiolule longest. Lfts. 3—(rarely 4-)nate, ½—3 in. long, about half as wide, thin but somewhat stiff or coriaceous and evergreen, mostly considerably waved or undulate. Fl. pure w. deliciously fragrant in loose leafy terminal panicles, rather larger than in J. officinale L., with the lobes broader and less acuminate and the tube thicker and shorter (i.e. about 4 or rarely 6 lines long). Cal. (including its teeth) 1—1½ line long. The immature fr. is described by Commelyn as "oblongo-rotundus et viridis. Lauri baccis magnitudine non cedens." The ripe fr. is figured in the Bot. Reg. globose, black, size of a small cherry.

The objection against the old-established and familiar name of this species does not seem so absolute or surely grounded as to warrant any change. For though the pl. has not been found in the Açores by any botanist or collector of the present century, it cannot positively be affirmed not to have existed in them formerly, at least in gardens, in the time of Commelyn, who says positively, "Soboles est insularum Azores dictarum, indeque advectam primus possedi," — especially considering that even in the well explored island of Mad. (to which it had
been long ago assigned as a native by Solander) it escaped as a wild pl., though diligently searched for, the observation of myself and every other recent botanist or collector till 5 years ago.

§ 2. Alternifolia DC.; l. alternate 1–3–5–7-foliolate; fl. y.


Erect, smooth; branches stout stiff straight and woody rounded or faintly angular; l. 3-foliolate rarely 1- or 5-foliolate, lfts. broadly oval ovate-oblong or lanceolate-oblong, coriaceous stiff shining, acute or subobtuse; cymes axillary and terminal few-fl. shorter than the l.; pedic. short longer than the cal.; cal. campanulate 5-toothed, the teeth short ovate subobtuse; cor.-tube longer than the broad obtuse lobes; berry 2-lobed, lobes distinct large oval horizontally patent or divaricate subpellucid, each 2-seeded.—Linn. Sp. 10; Lam. Dict. iii. 219: BM. t. 285; Pers. i. 8; Hort. Kew. (ed. 2) i. 18; Buch 192. no. 167; Spr. i. 32; DC. viii. 312. J. Barrelieri WB. iii. 165? J. flavum odoratum v. Gelseminum trifolium odoratissimum &c. Barr. Ic. 123. t. 62.—Shr. per. Mad. reg. 1 and ND. §. Sea-cliffs to the E. of Funchal along the Caniço road beyond the 1st ravine (Louros) and up the S. Gonçalo and other ravines at Funchal for about a mile above the sea; cliffs above the Cemetery at S. Vicente and descending to the Rocha do Navio at S. Anna; central ridge at the top of ND. Febr.–June, but almost at all seasons; fr. May, June.—An evergreen upright shr. 4 or 5 ft. high, with bright shining full or often yellowish gr. more or less stiff and coriaceous foliage. St. quite self-supporting virgate woody and erect. Branches brown stiff woody round but striate or subangular. Petioles ¼–1 in. long, petiolules of the 2 side-lfts. very short or none, of the terminal larger lft. 2–6 lines long. Lfts. dark shining gr. above, paler beneath very variable in shape, ranging from rounded to lanceolate and from retuse to acute, the terminal one 1–2 in. long and about half as broad, the 2 side-lfts. mostly nearly or quite sessile. The lower l. are sometimes 1-foliolate and the upper rarely 5-foliolate or with 2 pairs of side-lfts. Fl. bright rich golden y. rather larger than in J. fruticans L., in small few-fl. cymes aggregate at the ends of the branches, fragrant, equally by day and night in Mad., like those of Clover (Trifolium pratense L.), but not powerfully or so as at all to warrant the specific name. Lobes of cor. shorter than the tube, rather broadly oval or elliptic, laterally imbricate, more or less obtuse; the tube 4–6 lines long, limb about 3. Cal. (including its teeth) 1–1¼ line long. Fr. (from ND. spec.) large handsome and conspicuous in thick bunches or panicles, each con-
Consisting of a pair of horizontally spreading shining oval drupe- or berry-like lobes united at their base (one often abortive) of a dull livid greenish-olive colour with a pale watery or pellucid waxy appearance like a Mistletoe-berry (or dried Litchi fr. with the outer shell or crust removed), dark in the middle from the black central seeds shining through the pellucid watery or juicy pulp and thin smooth skin; each lobe 5 or 6 lines long, 3 or 4 in diam., mostly both 2-seeded and only by abortion one of them 1-seeded. Seeds intense black like charcoal, large elliptic-oblong pointed at each end, 4 lines long, 2–3 broad, mostly flattened and quite plain and even (as if cut with a knife) towards each other, more or less convex at the back, and lying, like 2 thickened scales, closely face to face.

Though the fr. is sweetish juicy and not unpleasant to the taste, with a strong flavour of paregoric or laudanum, it is strange that, even in a place so nearly destitute of food as the N. Deserta (where it abounds), neither lizards, birds nor men appear to touch it. Yet it is not reputed to be poisonous, though from its botanical affinities, besides the above fact, it must be regarded with suspicion.

The ND. pl. is a mere maritime form of the sp., of a stiffer more stoutly branched habit, with excessively thick and leathery more rounded l. and larger handsomer fl. than in the Mad. pl.

Webb (Phyt. Can. iii. 166) says that the fr. is not larger than a pair of barley-corns; and on this ground, with others less important, rejects the syn. quoted by Linn. of Ferrari; who however describes it to be, exactly as in the ND. Mad. pl., of the size of small olives (delle ulive più piccole). I have gathered Webb's pl. in Tenerife, Palma and Hierro; but I have no note about the fr., and only this remark about the fl. of the Hierran pl., viz. that they are "fragrant, but not like Clover," as they are in Mad. Is then the Can. pl. possibly distinct from the latter? Lamarck compares the fragrance in his pl. to that of Jonquils.

The objections against changing the name of J. azoricum L. apply à fortiori to the present sp.

Order LVII. MYRSINACEÆ.

Fl. perfect regular (rarely diclinous) 4–6- or 7- mostly 5-merous. Cal. gamosepalous 4–6-fid or -partite persistent. Cor. mostly gamopetalous 4–6-lobed or partite. Ästivation various,
ARDISIA.

mostly twisted. Stam. as many as and opposite cor.-lobes. Anth. 2-celled mostly erect introrsal. Style simple. Ov. mostly free 1-celled with few (5-1) or many amphitropopal ovules immersed or imbedded in the pits or cells (alveolae) of the free central placenta. Fr. a dry thinly fleshy mostly small globose drupe or berry. Seeds rarely numerous, mostly one and then globose peltate i. e. umbilicate or concave at the base or hilum, clothed with the placental membranes and almost entirely consisting of horny or fleshy albumen enclosing the mostly cylindrical straight or curved embryo lying across it transversely or parallel to the hilum.—Partially resinous tr. or shr. L. without stip. coriaceous evergreen, simple mostly alternate and entire. Fl. small w. or pink rarely yellowish or greenish.—Differs from Primulaceœ merely in its indehiscent baccate or mostly drupaceous fr. and woody st. or shrubby or arboresous habit.

Tribe I. ARDISIEÆ.

Cor. gamopetalous. Ov. free wholly superior. Ovules indefinite few or many. Fr. 1-seeded. Seed clothed with the placental membranes, umbilicate or excavated at the base.

1. ARDISIA. Cal. 5-4-fid or -partite. Cor. 5-4-partite rotate, lobes patent or reflexed imbricate and twisted, rarely valvate, in the bud. Stam. distinct inserted into the base or throat of the short cor.-tube; fil. free mostly short; anth. erect free bilobed or cordate at the base. Style filiform subulate. Ovul. numerous radiant in concentric rows or stages round the placenta, all but one (very rarely 2 v. 3) early abortive. Drupe thinly fleshy.—Fl. mostly cymose or paniculate rarely fascicled.

Tribe I. Ardisieœ.

1. ARDISIA SW.

§ Heberdenia; lobes of cor. valvate in bud, their edges velvety-pulverulent. Anth. shorter than their fil. acute bursting by a longitudinal slit. Style subulate as long as stam.—Inflorescence lateral aggregato-fasciculate.—(§ 1. Parathesis DC. proxima.)

1. A. EXCELSA Ait. Aderno.

L. obovate-oblong stiffly coriaceous smooth entire reticulately veined and punctate on both sides; pedic. fasciculate or aggregate in more or less dense tufts on short lateral spurs (undevloped or abortive branchlets) below the l. of the present year; lobes of cal. ovate, of cor. linear-lanceolate patent 3 times the length of cal.-lobes.—Ait. ! H. K. (ed. 1) i. 261, (ed. 2) ii. 5; Pers. i. 233; Spr. i. 662. Heberdenia excelsa Sol. ! in BH;
DC. viii. 106; WB. iii. 169. t. 188. Leucophyton (an error or misprint for Leucoxyllum Sol.) excelsum Buch! 193. no. 206. Anguillaria excelsa and A. bahamenensis ("Gaertn. t. 77. f. 1") Lam. Ill. ii. 110; Poir. in Lam. Dict. vii. 688 and Suppl. v. 313. Leucorea Lam. Ill. t. 186. f. 1. (fr. only). Condalia coriacea Reichb. in Holl! List in J. of Bot. i. 39 (not Rhamnus coriaceus Nees von Esenb. or R. integrifolius DC.).—Tr. per. Mad. reg. 3, 5. Rib. Frio, Rib. da Metade, do Fayal, Serra de Machico, do P. da Cruz, da Rib. da Janella, do Seixal, about the Cruzhinhos, on Pico Grande, &c. Fl. July–Sept.; fr. Nov. mostly. —Growing amongst other forest-tr. the Aderno rises to a height of 50 or 60–80 ft. with a cylindric or pyramidal head; but single or detached tr. are not above 20–30 ft. high with a compact thick rounded bushy head like an Orange-tr. Trunk straight cylindric, in small detached tr. 5–10 ft. high without branching, in the taller 2–3 ft. in diam., covered like the branches with an even smooth light grey or whitish-ash-coloured bark. Branches rather unusually brittle, very rugged with the large scars of the fallen l. and with pale grey raised lenticels, ending proliferously in subcorymbose leafy tufts of shoots or branchlets, which, like the buds, petioles, fl.-spurs and pedic., are ferruginous and slightly furfuraceous whilst young. L. all suprafloral on the short corymbose proliferous tufted shoots or branchlets of the present year 2–3 in. long, half as broad, hard rigid coriaceous shining rather light gr. above, paler and without lustre beneath, simply 1-ribbed, sprinkled with minute raised glandular dots and reticulately veined on both sides, their sharp pellucid margins sprinkled with minute deep-red glandular dots, mostly quite entire or only very rarely, and chiefly in young vigorous seedling plants or shoots, with a few teeth upwards; either acute, obtuse or reute, often cymbiform, mostly more or less revolute and waved at the edges, but always obovate towards the base and attenuated more or less into the short petioles, which are scarcely 3 lines long, ferruginous, and sprinkled like the young shoots and prominent midrib of the l. beneath with very minute dark red dots and lines or clefts. Fl. small pale gr. or yellowish gr. scentless, produced in small scattered subcorymbose more or less dense and globose tufts or fascicles on very short woody spurs below the l. on all sides of the naked branches of the preceding year, or rarely also in the axils of the lower l. on the leafy young shoots. These spurs have often a terminal bud, which, after fl., shoots out into a branch, and sometimes are so crowded that the whole branch below the l. is clothed all round with fl. Each spur bears from 2 or 3 to 7 or 8 round smooth 1-fld. pedic. 2–3 lines long in a terminal tuft, with often several rather longer clustered lateral ones below them; all widely divaricate and furnished with a small deciduous brown bractlet at the base. Thus the inflo-
rescence is almost precisely that of *Ilex Perado* Ait. or of *Catha Dryandri* Lowe. Cal. cleft rather more than 3 down into 5 or rarely 4 permanent half-ovate rather thick and fleshy subobtuse teeth, slightly imbricate only at the base, rugose and sprinkled with minute red dots, exactly the length of the ov. Cor. deeply 5- or rarely 4-fid, segments in bud perfectly valvate! forming an obtuse 5- or 4-angular cone or pyramid; in fl. spreading stellately but scarcely reflexed, with the tips very slightly if at all spirally contorted, narrow-lanceolate or acuminate-ligulate, of a thickish spongy substance, bright gr. outside, pale yellowish and appearing covered on first opening with a whitish mealy coat inside, about two lines long or 3 times the length of the sep. and so deeply cleft as to appear like distinct pet., being united at the base only by a narrow ring which is concealed by the cal. Stam. 5 or rarely 4, opposite but shorter than the pet., ascending and slightly converging; fil. broad flattened gr., inserted on each pet. just above its junction with the next; anth. large a little shorter than their fil., pale yellowish. Style simple taper-pointed, as long as the smooth turbinate or depresso-globose subprismatic i.e. 5-4-angular rugose 1-celled ov. Ovules numerous radiant, all but one almost from the first abortive. Fr. a small hard subdepressedly globose 1-seeded berry-like drupe, 3-4 lines in diam., smooth shining with sometimes a slight bloom, at first bright reddish purple, then dark purplish black, scarcely at all succulent, crowned with the subulate persistent more or less worn-down style. Flesh thin (a mere skin) with no pulp and very little juice. Taste sub-astringent with but very little sweetness, yet in the neighbourhood of the Jardim da Serra occasionally eaten by children, and in the Canaries reported by Webb to be made into a conserve, which, however, he adds, is solely indebted to a quantity of sugar for any good qualities it may be considered to possess. Immediately beneath and in close adherence with the thin and nearly juiceless skin or sarcocarp is the pale brown crustaceous shelly thin and brittle smooth and even seed-coat (testa), lined with a thin chestnut-brown smooth skin or pellicle, which is easily separable both from the shelly testa and the seed or kernel which it immediately envelopes, and which consists almost entirely of hard corneous subpellucid bluish w. albumen, and is peltately depresso-globose or cushion-shaped with a very large roundish umbilical pit or cavity beneath (*hilum*) filled with a brown spongy and partly woody mass, the surface smooth and even except a few irregular erose pits or sinuous cavities, like those on the surface of an Almond-shell (*Amygdalus communis* L.), filled with a friable brown spongy substance. The depth of the umbilical pit is half that of the seed itself, and its width one third of the diam. of the same; its margins are obtuse, slightly 5-lobed and wrinkled, with the
bottom flat. Embryo pure w. cylindric slender straight or slightly curved, lying transversely across the centre and distinctly visible through the subpellucid substance of the bluish w. albumen parallel to the hilum.

The wood of the Aderno is w., splitting or cleaving readily longitudinally, and not particularly hard or solid, but not breaking easily across, and therefore probably elastic—resembling on the whole a good deal that of the Ash (Fraxinus excelsior L.). Indeed in Machico it is much esteemed even for the keels of boats, and formerly, as Dr. Heberden told Solander, was used for the staves of casks, though now, and for the last 70 or 80 years, entirely superseded for the last named purpose by American Oak. The fr. is produced abundantly, but is not much devoured even by birds. In fact it is almost quite fleshless and very dry and insipid. It ripens mostly in Nov., but occurs also partially at other seasons.

Though scarcely met with now below 3000 ft., the Aderno formerly grew quite down to the level of the sea. On the Ilhéo do Pto da Cruz, a small isolated rooklet off the port or promontory of the town, there existed formerly a conspicuous Aderno tr., from which in Oct. 1829 I gathered spec. in fr. This tr., which was of some note or celebrity amongst the people of the place, was destroyed by the great storm of wind in Oct. 1842. On the same rock in 1829 grew also shr. of Olea europea L. and of Sideroxylon Marmulano Lowe.

The leaf-impressions figured by Prof. Heer (Foss. Pl. of S. Jorge p. 28, t. i. ff. 19–23) under the name of Myrica Faya L., assuredly belong rather to the present pl.

Solander himself, in Ait. Hort. Kew. ed. 1, suppressed his own MS. genus Leucoxylon or Heberdenia, founded on this pl., in favour of the then just previously published Ardisia Sw.; nor can I discover in the Mad. pl. any sufficient ground for its revival. The inflorescence is indeed peculiar; but in Ardisia Sw. it is also most variable.

Order LVIII. PRIMULACEÆ.

The Primrose Family.

Like MYRSINACEÆ, but herbaceous and mostly stemless with non-coriaceous l. and capsular dehiscent many-seeded fr.
ANAGALLIS.

Seeds (except in Hottonia L.) amphitropical, the embryo parallel to the hilum.

Tribe I. ANAGALLIDEÆ.

The Pimpernel Tribe.

Caps. a superior free pyxid, circumscissilely dehiscent. Seeds amphitropical, hilum ventral.—St. branched rarely suffrutescent.

1. ANAGALLIS. Cal. 5-partite persistent. Cor. larger than the cal. rotate deeply 5-partite without tube or almost 5-petalous but caducous entire. Stam. 5, fil. hairy.—L. opposite or alternate, fl. axillary solitary.

Tribe II. SAMOLEÆ.

The Brook-weed Tribe.

Caps. half-adherent to cal. semisuperior valvately dehiscent. Seeds amphitropical, hilum ventral.—Smooth succulent semi-aquatic herbs with small w. scentless fl.

2. SAMOLUS. Cal.-tube adherent to the ov. 5-fld persistent. Cor. perigynous at top of cal.-tube rotate' or cup-shaped with a short open tube, limb 5-partite spreading, lobes with intermediate scales (barren stam.), caducous entire. Stam. perigynous, 5 fertile internal opposite cor.-lobes, 5 barren alternate external. Ov. half-inferior. Caps. half-sup. 5-valved, bursting at top with 5 teeth.

Tribe I. Anagallidea.

1. ANAGALLIS L.

Pimpernel.

1. A. ARVENSISS L. Murrião.

Ann. smooth; st. herbaceous prostrate or procumbent 4-angular; l. sessile opposite and decussate or ternate, oval or lanceolate; pedic. slender as long as or longer than the l.; sep. lanceolato-acuminatae with membranous edges; pet. rounded eroso-lenticulate and glanduloso-fimbriata, laterally close subimbricatae, scarcely longer than the sep.; caps. nearly as long as the sep.—Desf. i. 168; DC. viii. 69; WB. iii. 171; Seub. Fl. Azor. 40; Coss. et Germ. i. 242; Gren. et Godr. ii. 467; Bab. 268; Willk. et Lange ii. 648.—Herb. ann. Mad., PS., Des., reg. 1, 2. Cornfields, roadsides and waste ground. Varr.:—

a. phoenicea WB. l. c.; Coss. et Germ. l. c.; Gren. et Godr. l. c.; st. subequilaterally 4-angular, often somewhat weak and
slender, spreading or ascending, fl. scarlet with a violet-purple eye.—\textit{A. arvensis} a Bab. 269. \textit{A. arvensis} Linn.! Herb. and Sp. 211; Fl. Dan. t. 88; EB. t. 529; Pers. i. 173. no. 1; Ait. Hort. Kew. (ed. 2) i. 316; Buch 192. no. 159; Hook. Fl. Scot. i. 72; Sm. E. Fl. i. 280; Koch 668. \textit{A. phoenicea} Lam. \"Fl. Fr. 285,\" Dict. iv. 335. no. 1, Illust. 441. no. 1983, t. 101; Brot. i. 282; Spr. i. 570. \textit{A. mas} Vill. Dauph. ii. 461.—Mad. reg. 1, rr. Funchal about the Valle; Machico about and above the E. Fort; at foot of sea-cliffs, Campanario; Pte da Cruz, ascent of the Penha d'Agua, N.W. side. Nov., May.—Precisely the common English or European \"Red Pimpernel;\" nor in the Mad. pl. can the least difference be discovered between it and var. \(\gamma\), except in the colour of the fl., the more nearly or quite equilaterally 4-angular st. and less distinctly subauriculate or cordate mostly narrower or smaller 1.

\(\beta\). \textit{cærulea} Coss. et Germ. l. c.; Gren. et Godr. l. c.; like \(a\), but fl. bl. or sometimes w. or lilac.—\textit{A. arvensis} \(\beta\) Fl. Dan. t. 1570; Bab. 269. \textit{A. cærulea} \"Schreb. Spicil. Fl. Lips. 5;\" EB. t. 1823; Lam. Dict. iv. 336. no. 2, Ill. 442. no. 1984; Brot. i. 262; Pers. l. c. no. 2; Hook. l. c. 72, 73; Sm. E. Fl. i. 280, 281; Spr. i. 570; Koch 669. \textit{A. faæmina} Vill. l. c. A. \textit{Monelli} Linn.! Herb. and Sp. Pl. 211.—Mad. reg. 1, rr. Cornfields above the Brazen Head; Campanario at foot of the sea-cliffs at the port or Ilheo, mixed with \(a\), with which it agrees in habit and size of fl. Apr., May.—Precisely the English or European \"Blue Pimpernel.\" Pet. in the Mad. pl. as glandulose at the edges as in \(a\), and not as Koch l. c. says, eglandulose. Habit, st., l. and fl. in size, and every thing except colour, as in \(a\), but passing into \(\gamma\) by imperceptible gradations and really nothing more than a depauperated state of it.

\(\gamma\). \textit{latifolia} Willk. et Lange l. c.; mostly altogether stouter or more robust and succulent and brachiately branched, with st. decussately broader or compressed alternately between the nodes, broader subauriculate or subcordate strongly 3-nerved l., and fl. rather larger and deeper or fuller bl. than usually in \(\beta\), with a deep rose-purple eye.—\textit{A. latifolia} Linn.! Herb. and Sp. 212 (excl. syn. Barr. t. 584) descr. opt. Lam. Dict. iv. 336. no. 3, Ill. 442. no. 1985, Brot. i. 263; Pers. l. c. no. 8; Ait. l. c. 317; Spr. l. c.; BM. t. 298; DC. viii. 70. \textit{A. arvensis} J. A. Schm. Fl. Verd. 250 (excl. syn. plerisque). \textit{A. arvensis} \(\beta\). \textit{cærulea} WB. iii. 172 (excl. syn. plerisque). \textit{A. cærulea} Chr. Sm. ! in Tuckey's Voy. 252; Webb Spic. Gorg. 169 (nec Schr. nec alliorum). \textit{A. Monelli} var. \textit{Willmoreana} BM. 3380 (status cult. valde luxurians).—Mad. and PS. reg. 1, 2, c; GD. and SD. reg. 2, \(\delta\). Roadsides, waste ground and borders of cornfields about Funchal and elsewhere, general. Machico about and above the E. Fort intermixed with \(a\), and at the Piedade;
ANAGALLIS.

PS. between the town and Fonte d’Areá and ascent of Pico Debaixo; GD. and SD. at top. Nov.–June, but chiefly Apr., May.—Merely a large luxuriant form or state of a or β. Root long thin simple ann. Primary st. erect, 2 or 3 in. high, throwing out brachiately from the axils of the 1. long trailing prostrate or decumbent branches which are again remotely or sparingly branched chiefly towards their base, the ends ascending; all sharply and inequilaterally 4-angular, with the 2 opposite sides alternately between each pair of 1. broader and narrower, and the branches always springing from the bottom of the narrow grooved sides or top of the broad flat pair of the internode below. Hence the branches are decussately compressed, with alternately opposite broad flat and narrow grooved sides, the latter with prominent sharp edges. L. in pairs, deccussate, broadly ovate or ovate-oblong, 6–8 or 9 lines long, 4–6 broad, waved and subauriculate or subcordate at the base and perfectly sessile, their base occupying the whole breadth of the broad flat sides of the branches, but not semiamplexicaul, pale gr. and quite smooth like the st., dotted beneath with pale purple, strongly 3-nerved, quite entire but through the lens minutely cristallino-erosulate. Pedic. solitary filiform or capillary, as long as or longer than the 1., deflexed in fr. Sep. very narrow lanceolate finely acuminate shorter than the cor., their edges w. pellucid membranous either entire or very minutely and irregularly serrulate; keel strong pellucid and distinctly cristallino-serrulate or crenulate. Fl. conspicuous, rather larger than in a, sometimes very much so, not closing after being gathered, but becoming strongly deflexed, cor. of a very rich deep bl., rather paler outside, with a ring of bright deep rose-purple inside at the throat or base of pet.; the latter broadly obovate or roundish subtruncate or obtuse, laterally close together or subimbricate, their edges finely erosulo-denticulate and fringed with numerous very short minute capitate pale purple glands, falling unitedly. Fil. often connivent in the middle above the ov. like an hour-glass, densely villous w. below, bright red-purple upwards, their hairs purple thickened upwards or subcapitate. Anth. bright chrome-y. Ov. rather long subcapitate, style smooth, the latter bright rose-purple; stigma simple capitate greenish or y. Caps. smooth globose pale brown shorter than the sep., crowned by the persistent style. Seeds dark brown sharply 3–4-angular, minutely granulato-rugose exactly as in a or β.

When starved or drawn up or otherwise depauperated, or even when far advanced in fl., passing completely into β.

A. Monelli BM. t. 319 seems to differ only in the more narrowly obovate remote or distinct (not laterally imbricatated) pet.
which are figured quite as eroso-denticulate as in the Mad. pl. Indeed, not only *A. latifolia* L., but also *A. Monelli* and *linifolia* L. et Auct. and *A. collina* Schousb. seem to be merely casual or local aberrations from or cult, states of *A. arvensis* L. *a supra*. Not one of the characters usually assigned to them respectively is constant; unless it should prove to be that of the lateral remoteness (as in *A. Monelli* BM. t. 319 and Barr. t. 584), or imbricating closeness (as especially in *A. arvensis* γ *supra*), of the pet.

Duby in DC. I. c. rightly refers *A. Monelli* Herb. L. on Sweet's authority to *A. arvensis* L. The spec. agrees entirely by its slender habit and pale bl. fl. with var. β *supra*.

**Tribe II. Samoleae.**

2. **SAMOLUS L.**

**Brook-weed.**

1. **SAMOLUS VALERANDI L.**

St. erect virgate leafy, branched chiefly upwards; lower l. rostrate spatulate obtuse stalked, upper more or less acute and sub sessile; fl. in simple or branched and sub compound erect terminal many-fld. finally elongated rac.; ped. 1-fld. 1-bracteate at top, pedic. as long as or longer than the ped.; cor. twice the length of the subacute broadly ovate sep.; stam. included short, the barren as long as the fertile; ov. half-adnate; valves of caps. not reflexed at tip.—Linn. Sp. 243; Fl. Dan. t. 198; Vill. Dauph. ii. 463; Lam. Dict. vi. 486, Ill. i. 443. no. 1990, t. 101; Desf. i. 183; EB. t. 703; Brot. i. 286; Pers. i. 171; Ait. H. K. (ed. 2) i. 365; Hook. Fl. Sc. i. 80; Sm. E. Fl. i. 323; Spr. i. 702; WB. iii. 175; Koch 681; DC. viii. 73; Coss. et Germ. i. 242; Gren. et Godr. ii. 465; Bab. 269; Willk. et Lange ii. 650. —Herb. per. Mad. reg. 1, 2, c. Moist dripping rocks, chiefly on the sea-cliffs all round the coast, but occasionally also in ravines of the interior. Sea-cliffs along the road from Rib. Brava to Ptna do Sol, beyond Paul do Mar above the waterfall, at Sta. Anna, S. Vicente, &c. and descent into the Curral das Freiras (east side) &c. May—Sept.—Smooth shining bright gr., rarely sub glaucous cent. Root short praemorse emitting numerous w. simple fibrous radicles. St. firm stiff, harder and more solid than in the British pl., about a foot high. Fl. 1½—2 in. long, ½ in. broad. Fl. small w. inconspicuous scentless. Ped. and pedic.
slender erecto-patent, with a slight bend or knee in or below their middle subtended by a small l. or linear br.

Of the familiar British or European Tribe LYSIMACHIEÆ, Asterolinum Linum-stellatum (L.) DC. viii. 68 (Lysimachia, Brot. i. 264) has been found abundantly in the Great Salvage, as also here and there in the Canaries (Tenerife and Grand Canary), but it has not hitherto occurred in Mad. It is an insignificant weedy ann. pl., resembling Stellaria uliginosa Murr., with small w. fl., and growing mostly in thick tufts or masses.

No pl. of the normal Tribe in this Order, PRIMULÆ (Primrose proper), has been found either in Mad., the Açores, the Canaries or Cape-Verdes; and the common Primrose (Primula vulgaris Huds. = P. acaulis Jacq. = P. grandiflora Lam.) is only preserved with difficulty in a few English gardens in Mad.

Order LIX. GENTIANACEÆ.

The Gentian Family.

Fl. perfect regular or slightly irregular, mostly 4—5-, rarely 6—12-fid. Cal. free gamosepalous persistent, lobes valvate or contorted. Cor. gamopetalous hypogynous (very rarely bilabiate), lobes alternate with those of cal. imbricately twisted in bud, sometimes induplicate or plaited, mostly persistent marcescent. Stam. as many as and alternate with cor.-lobes, inserted in its tube or throat. Ov. free single of 2 concrete carpels either 1-celled or imperfectly 2-celled, many-ovulate. Stigm. 2 or 1, with or without a distinct persistent or deciduous style. Ovules anatropal. Caps. 2—1-celled (rarely 4-celled or baccate) mostly 2-valved septicidal with parietal placentas. Seeds numerous minute. Embryo minute straight axile in the middle of the fleshy albumen.—Smooth rarely frutescent herbs with bitter tonic properties, not milky. L. mostly simple entire opposite or whorled, palmate-nerved, often rosulate at the base of the fl.-st., without stip. Inflorescence mostly centrifugal; fl. mostly scentless, often handsome p., h., w. or y.

Tribe I. GENTIANAEÆ.

Cor.-lobes twisted dextrally in bud. Coat of seed (testa) membranous; alb. filling it entirely.—L. opposite simple or undivided entire.

Subtribe 1. Chlorææ.

Anth. with a connective. Style distinct caducous.
1. **ERYTHRÆA.** Cal. tubular 5-4-angular 5-4-partite, lobes linear flat simple. Cor. hypocrateriform, tube slender constricted at the throat, limb stellately 5-4-partite. Anth. erect exserted presently spirally twisted. Style distinct deciduous. Stigmas 2 more or less coherent or capitate. Caps. linear 2-valved imperfectly 2-celled by the infolded spongy placental margins of the valves.—Ann. herbs with square or angular st., opposite connate 1-3-5-nerved 1., dichotomous terminal cymes and elegant small lively pink rarely w. or very rarely y. fl.

**Tribe I. Gentianæ.**

**Subtribe 1. Chloreae.**

1. **ERYTHRÆA Renealn.**

§ 1. *Eu-erythrea* Griseb.; fl. p. or rose, rarely w., style simple, stigma capitate bifid, formed of 2 half-balls or half-ovoids, much shorter than the style. Cyme dichotomous, fl. stalked.

1. **E. PULCHELLA** (Sw.).

St. erect slender repeatedly 2-3-chotomously branched leafy often bushy, lower 1. not rosulate, oval oblong or ovate-oblong obtuse mucronulate, upper narrow-oblong lanceolate or elliptic acute; fl. all shortly pedicelled, ebracteate solitary in the forks and terminal, not fascicled, forming a large lax leafy subremotely many-fl'd. fastigate cyme; sep. finely linear-acuminate, at first as long as and afterwards only a little shorter than cor.-tube, lobes of cor. narrow elliptic-oblong subobtuse, “caps. 1-locular” (DC.).—Hornem. Fl. Dan. t. 1637; Hook. Fl. Scot. i. 79; Sm. E. Fl. i. 322; Koch 567; Cost. et Germ. i. 258; Gren. et Godr. ii. 483; Bab. 221; Willk. et Lange ii. 661. *E. pulchella a*, caule ramosissimo, and *b*, caule simplici Fr. Nov. Fl. Suec. 74. *Erythræa ramosissima* Pers. i. 283 (excl. var. β); Spr. i. 579; DC. ix. 57; Webb Spic. Gorg. 150; J. A. Schm. Fl. Verd. 216; Griseb. W. I. Fl. 422; RFG. xvii. 13, t. 20, f. 5. *E. Centaurium* WB. ! iii. 19 (not Pers. and excl. syn.). *E. pyrenaica* Pers. i. 283 (var. fl. albis). *Gentiana Centaurium* β Linn. Sp. 333; Lam. Dict. ii. 641. “*G. pulchella* Sw. Act. Holm. (1783) 85 (84 in Willd.) t. 3. ff. 8, 9.” *G. ramosissima* Vill. Dauph. ii. (1787) 530; Brodt. i. 276. *G. palustris* Lam. Ill. i. 486. no. 2221. *Chironia pulchella* EB. t. 455; Willd. i. 1067 (caule simplici uniflora). *C. inaperta* Willd. i. 1069. *Centaurium* (sic) *autumnale* Chr. Sm. ! in Tuck. Voy. 252 (caule subsimplici 1-3-floro). *Centaurium minus palustre*, *ramosissimum* Vaill. Par. 32, t. vi
f. 1. Obs. the two states of this pl. viz. a, with a many-fld. repeatedly branched bushy st., and b, with a simple 1-3-fld. st., mixed up in the preceding syn., are not worth distinguishing; the latter being a mere depauperated form of the pl.—Herb. ann. Mad. reg. 1, rrr. Machico towards and about the old Fort on the E. side of the bay; Paul do Mar above the Waterfall. June, July.—Whole pl. smooth, varying greatly in size and luxuriance from 1 or 2 to 12 or 15 in. high, but normally from 6-9 or 10 in. St. straight stiff erect leafy throughout and not chiefly at the base, mostly branched all the way up from the base, and bushy with the branches rising to the same height, but sometimes simple and 1-3-fld., or branched only upwards and few-fld. Foliage copious light gr.; st.-l. large and close-set, 6-12 lines long, 3-6 broad. Fl. rather small and delicate bright rose-pink, very numerous in well-grown pl., not crowded or congested by themselves, but dispersed in a broad leafy level-topped cyme of l. and fl. intermixed. Br. none except the floral l. at base of pedic. Cor.-limb 3-4 lines in diam., exserted about 2 lines beyond the finely acuminate (not aristate) tips of sep.; base of its limb or throat abruptly w. like its long slender tube; lobes mostly 5 distinct (not laterally imbricate), rather narrow, elliptic or lanceolate, nearly or quite 2 lines (3½-4 mill.) long, 1½ mill. broad, bright rose-pink. Anth. pale y. exserted to or beyond base of cor.-lobes; fil. finely capillary w. Style and stigma 3 mill. long or half the length of ov. and reaching to base of cor.-lobes; stigma very distinctly capitate subobovate finally dark-coloured; style purplish. Caps. subunilocular, the length of cal.

The EB. fig. above quoted gives a very imperfect idea of the usual habit and appearance of this pl., having been evidently drawn from a depauperated, starved or stunted spec.

§ 2. Xanthea Reichenb.; fl. y.; style simple, stigma elongato-capitate or clavate formed of 2 erect parallel distinct linear-oblong lamelle, as long as the style itself. Cyme dichotomous. Valves of caps. subinflexed.

2. E. maritima (L.).

St. stiffly erect straight fork-branched from the base or at top only, not bushy or leafy, lower l. not rosulate small soon withering obtuse, upper ovate, oval, or ovate-oblong, acute, uppermost or floral lanceolate; cyme or pan. few-fl. lax irregular 2-3-chotomous stiffly erect, fl. dispersed, of different height or rarely fastigate, all distinctly stalked; sep. acuminate-aristate as long as cor.-tube; lobes of cor. ovate-oblong or elliptic subobtuse; stigma clavate rising above the stam.—Pers. i. 283; WB. iii. 20,
Gentiana occidentalis, *E. maritima* and *E. lutea* Roem. et Schult. iv. 171. *Gentiana maritima* Linn. Mant. 55; Broit. i. 278; Cav. Ic. iii. 49, t. 296. f. 1. *Chromia maritima* Willd. i. 1069; Fl. Gr. t. 287. Centaurium minus luteum latifolium &c. Barr. t. 468.—Herb. ann. Mad. reg. 3 (lower part), r. Bare open sunny mountain-pastures at top of the Caminho do Meio about the Pico da Silva in the short turf here and there, not uncommon; “about the Fort or Pico do Arrebentão,” Sr. Moniz. June.—A small short-lived pl. with conspicuous fl. altogether smooth, varying much in size and luxuriance. Root small nearly simple flexuous w. stiff slender. St. 4-angular about 6 in. high and 6-12-fl.d. with stiffly erect forked fl.-branches, often by depauperation simple 2 or 3 in. high and 1-2- or 3-fl.d. L. rather small and inconspicuous, especially the lower, of a shining rather dull or pale gr., all 3-nerved sessile and entire, the lower short obtuse, the upper longer and acute, the midrib distinct, the 2 side-nerves faint. Fl. in Mad. pale lemon-y. very erect elegant, their tube ¼ in. long and expanded limb the same in diam., all on short 4-angular pedic. ½ in. long and thickened upwards, at first terminal, but presently, by the production of a branch on each or only one side from the axils of the pair of l. at the base of each fl., becoming either alary or lateral, forming a stiffly erect irregular not close or crowded or many-fl.d. or constantly fastigiate cyme. Cal. acutely 5-angular, the angles produced into line long slender hair-like points or awns as long as its tube. Limb of cor. funnel-shaped, tube greenish slender striate, nearly or quite as long as awns of cal., limb fine pale lemon-colour, expanding stellately, but closing about noon or in cloudy weather; lobes 5 elliptic, 2-3 lines long, 1-1½ broad. Stam. just exserted beyond the tube, anth. golden- (somewhat or.-)y. Style reaching to top of stam. where it divides into 2 large erect ob-long flattened adpressed lemon-coloured stigmas, about a line long, forming a club overtopping the anth. by nearly or quite its whole length. Caps. longer than the cal.

Of Loganiace.e, which are little more than Rubiace.e with a free ov., Buddleia globosa L., BM. t. 174, a subarborescent shr. 12 or 15 ft. high, with square w.-tomentose young shoots, opposite long acuminato-lanceolate reticulato-rugose l. dark gr. above, snow-w. beneath, and stalked small balls of bright reddish-orange strongly scented flowers, occurs about cottages or in garden-hedges at the Palheiro and Camacha, seminaturalized.
+++Order LX. APOCYNACEÆ.

The Dogs-bane, Periwinkle and Oleander Family.

Fl. perfect regular 5-merous 5-androus. Cal. 5-partite persistent. Cor. hypogynous gamopetalous funnel-shaped or salver-shaped, deciduous, lobes in bud imbricate twisted, rarely valvate. Stam. 5 inserted on cor.-tube with mostly very short free fil., pollen granular. Ov. superior free, of 2 separate or connate cells with ventral sutural placentæ; ovules mostly numerous amphitropal or anatropal. Style single, composed of 2 coherent into 1, mostly thickened or dilated upwards. Fr. 1–2 follicles or capsules, sometimes drupaceous or baccate, 1–many-seeded. Seeds compressed mostly pendulous, sometimes comose, sometimes winged; hilum ventral or basilary; cot. leafy; embryo straight mostly enclosed in a fleshy albumen.—Mostly tr. or shr., rarely per. herbs, with milky juices and poisonous or noxious qualities. L. mostly opposite, sometimes 3–4-nate, simple, entire, without stip. Fl. mostly cymose, conspicuous, often fragrant.

+++Tribe I. PLUMIERIEÆ.

Ov. 2, distinct; ovules affixed to their inner angle, amphitropal. Seeds naked (without beard or coma).

+++Subtribe 1. Tabernæmontaneæ.

Alb. even (not ribbed or ruminate).

+++1. VINCA. Cal. 5-partite, Cor. salver-shaped, mouth of tube with a raised 5-angular erect rim crown or border, throat downwards closed with hairs, limb obliquely 5-partite, lobes cuneiform obliquely truncate. Stam. included, anthers connivent, fil. short geniculate, dilated upwards. Stigma a flat orbicular disk or rim-like ring with a central conical papilla tufted with hairs at the tip. Hypog. glands 2, alternate with the 2 ov. Fr. 2 erect follicles. Seeds naked.—Per. suffrutescent herbs, not milky!, with mostly sarmentose st. or runners, opposite entire l. and handsome solitary axillary scentless b. v. or w. fl.
††Tribe I. **Plumieriacae.**

††Subtribe I. **Tabernamontaneae.**

††1. **VINCA L.**

Periwinkle.

††1. **V. major L.**

Barren st. diffusely spreading or decumbent, flowering sub-erect, all gr. smooth slender sarmentose; l. ovate or ovate-lanceolate subacute often subcordate at the base, the edges alone shortly ciliato-pubescent, petioles 2-glandular at top subciliate at the edges; cal.-lobes linear ciliate nearly as long as cor.-tube; pedic. shorter than the l.; cor.-lobes obliquely cuneato-rhombooidal and truncate.—Linn. Sp. 304; Vill. Dauph. ii. 486; Lam. Dict. v. 198; ejusd. Ill. t. 172. f. 1 (fl. only); Desf. i. 206; Pers. i. 207; EB. t. 514; Sm. E. Fl. i. 339; Spr. i. 638; Koch 557; DC. viii. 384; Coss. et Germ. i. 251; Gren. et Godr. ii. 477; Bab. 219; Willk. et Lange ii. 666 (not Brot.).—Herb. per. Mad. reg. 2, cc.

Perfectly naturalized in Chestnut woods and shady places at the Mount, S. Antă da Serra about the Church, Arco de S. Jorge, S. Vicente, &c. Feb.-May.—St. numerous tufted 1-2 or 3 ft. long round hard rigid simple, the barren arcuate declining, the flowering shorter more erect, all ultimately here and there rooting at the joints and copiously leafy. L. opposite shortly stalked dark gr. subcoriaceous shining quite entire smooth except at the edges, 1-2 in. long, ½-1 in. broad, the lower shorter and broader, the upper longer and somewhat narrower, all rounded or subcordate at the base. Petioles 3 or 4 lines long. Pedic. axillary solitary slender, about 1 in. long. Fl. full lavender-blue with the tube and throat of corona pale or w., large, 1½ in. in diam. Sep. ½ in. long, finely linear, gr. Throat of cor. clothed downwards inside with w. horizontal hairs; angles of corona opposite lobes of cor.-limb. Stam. short halfway down the cor.-tube; anth. large closely connivent over the stigma, hairy outside, bursting inwards. Style slenderly clavate; stigma a viscidly broad-edged or double-edged disk like an up-and-down double-rimmed wheel, with a short conical gr. knob or button in its centre clothed at the tip with a deflexedly stellate or 5-angular thick tuft or coma of dense snow-w. silky hairs: the style and stigma together resembling in shape an inverted teetotum. Follicles small slender subulate acuminate unequal 1-2 in. long. Seeds 3 or 4 oblong brown roughened.

Neither the Portuguese **V. media** Hoffm. et Link (**V. major**
The Oleander (Nerium odoratum Sol.) with more or less deep rose-p. or w., single (BM. t. 2032) or double (BM. t. 1799) fragrant fl., is a common ornament of gardens, to which, however, it is quite confined.

††Order LXI. ASCLEPIADACEÆ.

Cal. and cor. as in Apocynaceæ, but lobes of cor. in bud valvate rarely twisted. Stam. 5 inserted at base of cor. and alternate with its lobes, the fil. mostly combined into a coronated tube (gynostegium) enclosing the pistil, rarely free; anth. 2-celled or incompletely 4-celled, the connective mostly produced into a membrane at top, connate and applied to the stigma. Pollen coherent into mostly clavate attenuato-stipitate or caudate masses as many as the anth.-cells but mostly 10, the 2 or 4 contiguous pollen-masses of adjacent anthers on escaping from their cells becoming adherent or attached in pairs or quaternately to a common gland or viscid process between each of the 5 lateral angles of the stigma either pendulously, horizontally, or erectly. Styles 2, combined at top by the large fleshy dilated pentangular, variously coronated or appendaged stigma. Ov. 2 with many anatropal ascending or pendulous ovules affixed to the suttural ventral placenta. Follicles 2 or by abortion 1. Seeds numerous mostly. comose; alb. thin; cot. leafy; embryo straight; radicle short superior.—Milky acrid poisonous or noxious per. herbs or shr. often twining. L. entire, mostly opposite. Fl. red p. w. or orange-y., very rarely b., extraaxillary, mostly umbellate conspicuous, often fragrant. Stigma deciduous.

††Tribe I. ASCLEPIADEÆ.

Fil. connate. Anth. 2-celled. Pollen-masses 10 clavate, varicately pendulous in pairs from the longitudinally sulcate bipartite stigmatic glands or processes.

††1. Arauja. Cal. 5-leaved, lobes ovate leafy persistent enlarged after fl. Cor. campanulate, tube broad ventricose or swollen at base, limb 5-partite. Stamen- or anther-crown included subcoroniform 5-leaved, leaflets cusculate erect fleshy adnate downwards to cor.-tube, the margins upwards revolute. Anth. with a terminal membranous point. Stigma 2-horned at top. Pollen-masses compresso-clavate
pendulous attached in pairs to two divergently stalks from each stigmatic gland. Follicles spongy-coriaceous; seeds comose.—Climbing or twining partially mealy-grey glabrescent shr. L. w. or pale beneath. Fl. rather large, w. or rose-col., in loose subdichotomous bracteate few-fl. cymes.

†2. Gomphocarpus. Cal. 5-partite, lobes small narrow. Cor. 5-partite rotate, tube very short or 0, lobes petaloidal patent or reflexed. Stam.-crown 5-leaved, leaflets compresso-cuculate with a small outwardly hooked toothlet on each side at top. Anth. with a terminal membranous point. Stigma depressed fleshy 5-angular. Pollen-masses affixed by their attenuated tip, compresso-clavate or eutriform. Follicles inflated ventricose, often clothed or echinate with flexible soft spines. Seeds comose.—Erect or ascending (not twining) shr. or per. herbs. Fl. often specious, in extraaxillary or terminal many-fl. loose cymes or umbels.

††Tribe I. Asclepiadeae.

††1. Arauja Broth. Seda or Arvore de Seda.

St. twining; l. ovato-deltoidal acute or acuminate, dull w. beneath, the lower broader shorter and subcordate, the upper narrower elongate and truncate at the base; cymes 1-4- (mostly 2 or 3)-fl., their ped. shorter or not longer than the petioles; sep. erect ovate or ovato-lanceolate, as long as the tube of cor.; lobes of the latter erect plain flat (not undulate) half-ovate subobtuse.—Broth. in Linn. Tr. xii. 69, tt. 4, 5; Spr. Syst. i. 855; DC. viii. 533. Physianthus albens Mart. et Zucc. Nov. Gen. i. 53, t. 32 (not Don, Grav., Hook., Lindl.).—Shr. per. Mad. reg. 1, r. Up the Machico valley in several spots quite naturalized, as in the garden-hedge by the roadside at the Quinta de S. Cristovo quite naturalized, from 1826 till very recently; and now at the Capella do Amparo up the Rib. Seco, a branch of the Machico valley. July, Aug.—A copiously milky climbing shr., running thickly over hedges, &c., to a height of 5 or 6 ft. Branches round woody the older sarmentose pale brown smooth, the younger hard gr. glabrescent flexuously twisting and twining, very thin or slender and mealy or velvety-whitish towards the ends. Petioles slender 1-2 in. long and with the ped. pedic. and cal. velvety whitish. L. 2-3½ in. long, 1-2½ broad, shaped like a pointed flat trowel or isosceles triangle, truncate or subcordate at the base; their upper surface at first minutely and inconspicuously subpuberulous, then glabrescent and shining
GOMPHECARPUS.

47
dark or full gr.; their lower surface permanently clothed with a dull w. lustreless very densely and shortly velvety thin tomentum somewhat like those of Rubus discolor W. & N. Fl. subdichotomously cymose, 1–4 together, subracemose, on short intraaxillary ped., scentless, about ½ in. long, somewhat resembling those of Clematis cordata Pursh. (BM. t. 1816) but neither cernuous nor with revolute lobes. Sep. leafy pale mealy gr. or purplish distinct loosely erecto-patent ovate or broadly lanceolate, acute, ½ in. long and about half as broad. Cor. campanulate pale dull pink or flesh-col., sometimes full pink, paler or mealy-whitish-blush outside, within fuller or darker rose-purple disposed in interrupted streaks or lines; the lower inflated part of tube hairy and like the 5 large conspicuous cucullate fleshy lobes or lfts. of stam.-crown (which are adnate downwards to the tube itself) pure w. The shortly for­cipately 2-horned stigma. Tube of cor. ½ in. long about half as broad, constricted above the swollen or inflated base about halfway up, smooth, with 5 pale gr. gibbous prominences outside at the base of the inflated part corresponding with the 5 internal fleshy hooded leaflets of the stam.-crown; lobes of cor.-limb erect or erecto-patent flat ovate mostly subobtuse. Fol­licles very large, 4 or 5 in. long, very widely or horizontally divergent, acuminately ovoidal broadly constricted towards the base, tumid soft or spongy, irregularly ribbed or plaited longitudinally, pale gr., finally yellowish. Seeds numerous dark coffee­brown rough or granulate; pappus or coma very copious soft silky w.

In foliage there does not seem to be much difference between the present pl. and A. albens Don, as figured in BM. t. 3201 and BR. t. 1759, under the wrong name of Physianthus albens Mart., which is properly, as referred by DC., a synonym of A. sericifera Brot. But besides the decidedly pink cor. in the Mad. pl., its sep. are much larger and longer (i. e. quite as long as or rather longer than the cor.-tube), and the cor.-lobes are suberect and plain or flat, not spreading or waved or reflected at the sides and tips.

††2. GOMPHECARPUS R. Br.

Shr. erect, branches straight virgate furry-puberulous gla­brescent; l. linear acuminate, attenuate at base, subsessile, smooth or glabrescent, shining dark gr. above, the margins sub­revolute; fl. umbellate, umbels 5- or 6–10-fld. subcernuous shorter than the l., ped. and pedic. hoary-puberulous slender;
hood-like leaflets of stam.-crown truncate, their 2 inner teeth at top minute short straight erect or subincurved; follicles resupinate softly echinate bladdery beaked.—"R. Br. Wern. Soc. i. 38;" BM. t. 1628; Spr. i. 849; WB. iii. 17; DC. viii. 557; Seub. Fl. Az. 35; Griseb. W. I. Fl. 419; Willk. et Lange ii. 669. *Asclepias fruticosa* Linn. Sp. 315; Lam. Diet. i. 283; Desf. i. 211; Pers. i. 276.—Shr. per. Mad. reg. 1, cc; PS. reg. 1, rr. Waste rocky sunny places and beds of ravines all about Funchal and at various other places along the S. coast chiefly; PS. sparingly in the bed of the Rib. da Serra de Fora; "also Campo Debaixo," Sr Moniz. May–Nov. chiefly, but at most seasons.—A Willow-like shr. 3–5 ft. high with flexible straight erect slender leafy round gr. or purpuraceous branches, finely downy upwards, smooth below. L. opposite crowded 2–4 in. long, 2–6 lines broad, finely attenuate at both ends, without or with only an indistinct short petiole, dark gr. smooth and shining above, paler and with a still paler prominent distinct (at first downy then glabrescent) midrib beneath, erect stiffish. In pl. growing in moist or shady spots, or cult. in English greenhouses, the l. are broader lanceolate membranous loosely spreading or deflexed and attenuate into distinct petioles. Fl. elegant 6–8 or 9 lines in diam. w. in numerous stalked lateral more or less drooping umbels shorter than the l. nearly or quite scentless. Ped. extraaxillary erecto-patent slender about an inch long; pedic. ½–¾ or 1 in. long, very slender often purplish or red. Sep. linear-lanceolate, finely acuminate and downy, 2 or 3 lines long. Lobes of cor. ovate concave, about 4 lines long, 2½ broad, spreading or subreflexed, more or less ciliato-downy or woolly outside at the edges, distinct like pet., connected at the base only by a narrow ring; hooded lfts. of stam.-crown 5, w. or pale greenish, petaloidal, prominent like the cogs of a horizontal wheel, compresso-saccate or ciliate sharply keeled large conspicuous, with a pair of w. approximate hooked teeth at top bending down outwards into the mouth of the lft. like a parrot’s upper mandible, and behind these another pair of minute erect or incurved teeth; the whole lft. very pale greenish, w. at top inwards, reddish purple at the base. Stigma depressed or flattened at top obtusely 5-angular. Follicles inflated membranous or bladdery, elliptic-ovoidal, beaked, 2–4 in. long, 1–3 broad, mostly single (one of the 2 ov. in each fl. being usually abortive, and one only, rarely 2 fl. in each umbel fruit-bearing), resupinately ascending or erect from a twist in their strongly deflexed thickened pedic., mostly red or purplish on their upper or exposed side. Seeds very numerous, black or dark coffee-brown. Pappus w. silky very copious. Whole pl. milky.

From the omission of this pl. in Solander’s, Fydell’s and Von
Convolvulaceae.

Buch's Mad. lists which were formed chiefly on Masson's collections, it may be presumed to have been introduced into the island some time between 1778 and 1820. It first occurs as a Mad. pl. in Raddi's "Breve Osserv. sull' Isola di Madera" (Antol. ii. 267, Firenze 1821), under the wrong name of Cynanchum vincetoxicum Pers.

Asclepias curassavica L. (Bot. Reg. t. 81), with its brilliant orange-scarlet umbels of fl., occurs in Mad. only in gardens occasionally, in and about Funchal. In the Canaries I met with it abundantly and apparently quite naturalized a mile or two up the Degollada de S. Sebastian in the island of Gomera. In the Cape-Verdes I found it only rarely in or about gardens. Stephanotis floribunda Brongn. (BM. t. 4058) and Hoya carnosa (L.) (BM. t. 788) are also not unfrequent in gardens in Mad.; the former bearing fr. abundantly at a height of about 1000 ft. above the sea, though not usually fructiferous lower down in Funchal.

Order LXII. CONVOLVULACEAE.

The Convolvulus or Bindweed Family.

Fl. perfect regular. Cal. inferior 5-sepalous (in Wilsonia gamosepalous 5-toothed), sep. persistent often unequal mostly imbricate and enlarged in fr. Cor. hypogynous gamopetalous bell- or funnel-shaped 5-lobed 5-plaited, lobes twisted in bud. Stam. 5 opposite the sep., alternate with cor.-lobes, inserted towards the base of cor.-tube. Anth. mostly sagittate finally twisted. Ov. mostly with an annular or cup-shaped hypog. disk (nectary) round its base, of either 1 or 2-4 mostly combined rarely distinct cells or carpels, each cell 1-2-ovulate. Style mostly 1 simple or bifid, very rarely 2 styles; stigmas 1 or 2 simple or bilobed. Fr. a 1-4-celled caps., cells or carpels 1-2-seeded; seeds angular rounded at the back, attached by their base to the inner angle of the dissepiments, their shell (testa) often villous or pubescent, always hard and black or dark brown; albumen mucilaginous; cot. large leafy corrugate or plicate; radicle incurved inferior.—Herbs or shr. often milky, mostly twining climbing or sarmentose. L. alternate, simple and entire, pedatilobed, or palmate. Inflorescence various, but pedic. always jointed on to ped. Fl. mostly conspicuous purple, p., r., b., w. or y., seldom fragrant. Root sometimes tuberous, edible or with drastic properties, e.g. Batata edulis (Thumb.), B. Jalapa (L.), Ipomoea Purga Wend., Convolvulus Scammonia L., &c.
Tribe I. CONVOLVULAE.

Style 1, rarely (Cressa, Evolvulus &c.) 2. Carpels united into a single ovary. Caps. single 2–4-lobed, mostly dry rarely subbaccate, indeliscent or dehiscent.

††1. QUAMOCLITIA. Sep. 5 mostly mucronate or aristate. Cor. tubular hypocrateriform, tube narrow-subcylindric or clavate elongate. Stam. exserted. Style 1; stigma single globose or capitately 2-lobed. Ov. 4-celled, cells each 1-ovulate.—Twining herbs. Ped. 1- or mostly many-fld.; br. minute or inconspicuous.

†††2. BATATA*. Sep. 5. Cor. tubular-bell-shaped or campanulate-hypocrateriform, tube short subcylindric abruptly enlarged above the narrow base. Stam. included. Style 1; stigma single globose capitately 2-lobed granulate. Ov. 4-ovulate 2-celled or partially 4-celled.—Herb. or suffrutescent often twining. L. palmately nerved, often palmat-lobate. Ped. 1 or 2—many-fld.; br. small and inconspicuous, often deciduous.

††3. PHARBITIS. Sep. 5. Cor. campanulate-infundibuliform. Stam. included. Style 1; stigma single globose capitately 3-lobed coarsely granulate or favoso-cellulate. Ov. 2- or mostly 3—rarely 4-celled, cells 2-ovulate.—Twining herbs with large conspicuous fl. Ped. 1 or 2—many-fld. Br. inconspicuous linear.

4. CONVOLVULUS. Sep. 5 subequal. Cor. campanulate-infundibuliform. Stam. included. Style 1; stigmas 2 divergent filiform linear or subclavate. Ov. 2-celled, cells 2-ovulate.—Herb. or fruticose often twining. Ped. mostly 1 or 2—rarely many-fld. Br. small inconspicuous, mostly remote from the fl.

5. CALYSTEGIA. Sep. 5 equal membranous. Cor. campanulate-infundibuliform. Stam. included. Style 1; stigma forked bipartite, lobes short linear or cylindric-oblong, flattened inside. Ov. 1-celled or partially 2-celled, the dissepiment not reaching to the top, cells 2-ovulate. Caps. indeliscent 1— or imperfectly 2-celled, 1–4-seeded.—Twining or procumbent herbs. Ped. 1-fld. Br. 2 large leafy opposite close below and infolding the fl.—bud or cal.

††Tribe II. DICHONDREAE.

Cal. and cor. 5-partite or 5-lobed, aestivation of sep. subvalvate. Styles 2. Carpels 2 distinct; ov. 2, or 4 binate in pairs.

* Batatas in Spanish and Portuguese is merely the plural of Batata.
1-2-celled, cells 1-2-ovulate. Caps. 2 distinct, 1-2-celled, 1 or 2-4-seeded.—Small herbaceous creeping or procumbent pl.

**††6. DICHONDRA.** Cal. 5-partite or sub-5-sepalous. Cor. 5-partite rotate or sub-5-petalous. Ov. 2 distinct 2-ovulate; styles 2 distinct; stigmas capitate or clavate subtrilobed. Caps. 2 (rarely by abortion 1) distinct binate forming a bladdery double globe connected only at the base, each 1-celled indehiscent and 1- or rarely 2-seeded.

—Minute cespitose leafy herbs with creeping st., orbicular undivided long-stalked l., and small inconspicuous fl. on short hooked or deflexed axillary 1-fld. ped.

**Tribe I. Convolvuleae.**

**††1. QUAMOCLITIA Tour., Chois.**

**††1. Q. COCCINEA (L.).**

Glabrescent; l. cordate-acuminate entire repand or angular at the base; ped. loosely many-fld. longer than the petioles; sep. aristate subequal.—*Quamoclit coccinea* Chois. in DC. ix. 335. *Ipomoea coccinea* Linn. Sp. 228; BM. t. 221; Poir. in Lam. Dict. vi. 12; Pers. i. 183; Hort. Kew. (ed. 2) i. 338; Griseb. W. I. Fl. 472. *Convolvulus coccineus* et *C. luteolus* Spr. Syst. i. 599.—Ann. herb. Mad. reg. 1, rrr. Formerly (1826-1832) quite naturalized in Batata-fields below and about the Quinta do Valle, Funchal; but it seems now to have disappeared there altogether. Aug., Sept.—A small delicate short-lived pl., not lasting above a month or two, with light gr. thin flaccid l. and small but pretty tubular salver-shaped bright or. or scarlet fl. St. not more than 12-15 in. long slender or filiform twining. L. about 3 in. long, 2 broad. Fl. about 1 in. long, limb ½ in. in diam.

*Q. pennata* (Desr.) = *Q. vulgaris* Chois. in DC. = *Ipomoea Quamoclit* L., BM. t. 244 = *Convolv. pennata* Desr. in Lam. Dict. = *C. Quamoclit* Spr. with 1-fld. ped., crimson fl. and remarkable pectinately pinnatifid foliage, occurs also occasionally in gardens about Funchal.

**†††2. BATATA Rumph., Chois.**

**†††1. B. EDULIS (Thum.). Sweet Potato. Batata Mad.; Batata doce Lisbon.**

Roots tuberiferous; st. prostrate or procumbent trailing sermentose, not twining; l. heteromorphous simply cordate or cordately or hastately deltoidal, entire, angular, or 3-5-7-lobed, stalked, smooth on both sides; cymes axillary many-fld. stalked, about as long as the l., fl. congested shortly pedicelled; sep. shortly
aristato-acuminate; cor. pale p. or purple.—DC. ix. 338; J. A. Schm. Fl. Var. 232. *Convolv. Batatas* Linn. Ameen. Acad. vi. 121; Pers. i. 178. *C. Batatas* et *C. edulis* Spr. Syst. i. 607. *Ipomeae Batatas* Griseb. W. I. Fl. 468.—Per. herb. Mad. PS., reg. 1, 2, ccc. A universal crop in fields and gardens everywhere about towns and villages. Fl. here and there at different seasons, but chiefly July—Oct.—Two principal varr. or forms may be distinguished, passing indeed into each other, yet sufficiently or even strikingly distinct in their extreme states, viz.:—

a. *cordifolia* Lowe; *Batata de Demerariva*, B. *coriola*, B. *amarella*, B. *cor d’Anil* (synonyms or subvarr.).—1. light gr. undivided simply cordate or deltoidal and entire, or, cordately hastately or cuneately 3-5-angular, more or less shortly acuminate; tubers thickly oblong, ovoidal, or subglobose mostly red or y., flesh y. or or. rarely w.—*Conv. edulis* Thunb. Fl. Jap. 84; Spr. Syst. i. 607. *C. Batatas* Linn. Sp. 220; Lour. Fl. Coch. i. 107; Ait. H. K. (ed. 2) i. 331. *Ipomeae Batatas* Poir. in Lam. Diet. vi. 14. *Conv. Indicus Orientalis Inhume sen Battatas &c.*, Moris. Hist. ii. 11, t. 3. § 1. f. 4. *Sisarumperuvianum sive Batata hispanorum* Ger. Herb. 780.—Intro'd. about 1845; now cult. everywhere below 2000 ft. in several subvarr. distinguished by the Portuguese.

b. *digitata* Lowe; *Batata da terra*, B. *velha*, B. *a ramo amarelo*, or B. *branca* (syn. or subvarr.).—1. dark dull lurid purplish or v.-gr., hastato- or cordato-palmatifidly, or palmatisectly 3-5-7-lobed, lobes narrow the middle lobe produced; tubers mostly thinly subcylindric elongate-oblong or fusiform, flesh mostly w. and farinaceous, sometimes or. or y. and pulpy when boiled or roasted.—*Conv. Batatas* Spr. 1. c.—This is the old Mad. *Batata*, now almost superseded by the new more productive but much inferior Demeraran *a*, with which it grows often intermixed, an odd pl. here and there.

St. hard stiff often woody or almost suffrutescent downwards, loosely prostrate or decumbent, trailing, neither rooting nor twining in Mad., 2 or 3 ft. long, sparingly branched but numerous and often, thickly matted and dark v. or purpuraceous. Foliage mostly light gr. but often full or even dark gr. Whole pl. mostly quite smooth, but st. and petioles frequently more or less hairy, sometimes hirsute. L. on long (1-3 in.) petioles, smooth somewhat shining, very variable in shape on the same pl., palmately nerved or veined, simply cordate and entire, or, like ivy-l., repand-angular, or palmately lobed, and cordate hastate or truncate or truncate at the base; 2-4 in. long, 1½-3 broad, sometimes as broad as or broader than long, often purple-veined beneath, the veins palmate 5 or 6 on each side the mid-rib. Fl. pale-p. or rose-purple, the throat and tube inside dark
full rose-purple, outside and limb pale, handsome but not large, about $1\frac{3}{4}$ in. in diam., closely aggregate in naked erect axillary many-flowered, abbreviated dense shortly fork-branched cymes about as long as the leaf at the top of the thick stout firm stiff straight erect or ascending angular dichotomously and shortly branched ped. which is as long as or longer than the petiole; pedic. clustered short stout round smooth verruculate 2-3 lines long; br. none or inconspicuous and early caducous. Cal. smooth; sep. subequal oblong keeled, abruptly contracted at top into the short excurrent awn or mucro of the keel. Cor. 1 in. long altogether smooth tubular-campanulate or -infundibuliform, limb but little expanded, 2-3 in. broad. Fil. and style smooth, of equal length, w., purple at the base, the former, like the inside of cor.-tube quite at the base, hairy, the hairs w. Anth. erect pale yellowish. Stigma an abrupt large double globe, scrotiform, strongly granulate. Ov. pilose upwards with long w. erect hairs, 4-celled 4-seeded. Nectary waxy-yellow 5-crenate or obtusely lobed, shallow cup-shaped, about 1½ mill. high:

I have never met with ripe or perfect seeds or caps. either in Mad., the Canaries or Cape-Verdes. The pedic. fall off at their junction with the ped. together with the fl. shortly after flowering. Grisebach l. c. describes the caps. as 2-celled and seeds “glabrous except a few puberulous lines.”

The root-tubers are of various shapes and sizes, sometimes globose or ovoidal but mostly oblong like red or w. kidney potatoes, often elongato-fusiform, rarely knobby, either pale drab-brown or dirty yellowish w. or dull dark purplish red outside. Flesh whilst raw crisp and sweet, when boiled soft, yet in good sorts firm and often mealy, very sweet, of a dull w., y. or orange col. The w.-fleshed old sort var. $\beta$ (Batata velha or da terra) is by far the best, being more usually firm dry and mealy, not unlike a boiled chestnut. The new Demerara sort var. a (B. de Demerêira), whether w. or y., is more of the watery consistence of a boiled turnip, like the y.-fleshed var. of the old sort. Both are far better baked than boiled. Eaten incautiously, whether largely or otherwise for several days consecutively, and unmixed with other food, they are found to possess in some degree the laxative or drastic properties of others of their tribe. Still they form a large proportion of the food of all the labouring classes in Mad.

The mode of culture is very simple. It consists in planting
thickly in shallow trenches, on a layer of manure, the long trailing branches or runners (ramos) of the plant. The roots of these produce tubers fit for digging up in from 3 or 4 to 10 or 12 months. The best Batatas are produced in a light dry friable and well-drained, not over moist close soil.

The value of the Deinerara sort consists in its more abundant yield and speedy production of tubers, allowing 3 or even sometimes 4 crops to be raised in lieu of one of the old sort. Thus on the destruction of the Potato-crops in 1845-6 by the then prevalent disease, its simultaneous accidental introduction from Demerara into the island proved a most providential alleviation to the famine and distress (see Journ. Hort. Soc. i. 177).

I have endeavoured in vain to find any stable characters to separate further the 2 sorts or varr. above distinguished. The l. in the old sort β are smaller darker lurid smoky gr., the st. perhaps more often suffrutescent downwards, and the fl. seem more closely aggregate or clustered in the cymes. The newer Deinerara sort α is also on the whole a stouter stronger more robust luxuriant plant with mostly light or pure full gr. foliage. I have been unable to detect any difference in the st., foliage or fl. corresponding regularly with that of the shape or col. of the root-tubers, in either of the kinds.

The tubers are usually about the size of Potatoes; but I once (May 1861) saw several from Grand Canary weighing 6-7½ lbs. each; and I have heard of one in Mad. at Machico said to have weighed an Arroba (32 lbs.)! after having been left in the ground 2 or 3 years. Nor indeed is this enormous size at all incredible for a plant allowed to grow several years undisturbed.

††3. Pharnitisis Chois.

††1. P. purpurea (L.).

St. elongate twining, retrorsally hispid; l. cordate acute or subacuminate pubescent or glabrescent stalked; ped. 2–3-fld. shorter than the l.; pedic. umbellate hispid upwards, thickened and stiffly cernuous in fr.; sep. thickly hairy almost hirsute at the base, smooth upwards, ovato-lanceolate or lanceolate; cor. large v.-blue, p. or w. with 5 equidistant darker rays or streaks.

—Convolv. purpureus Linn. Sp. 219; BM. tt. 113, 1005, 1682; Ait. Hort. Kew. (ed. 2) i. 330; Spr. Syst. i. 597. Ipomoea
Pharbitis purpurea Poir. in Lam. Dict. vi. 16; Pers. i. 183; Coss. et Germ. 259. Pharbitis hispida Chois. in DC. ix. 341; J. A. Schm. Fl. Verd. 233.—Herb. ann. Mad. reg. 1, 5; Waste ground and vineyards all about Funchal; amongst Cactuses (Opuntia Tuna L.) along the Caniço road beyond the Louros, &c. At various seasons.—St. slender strongly twining to the height of 4 mostly or 5 but sometimes 10 or 12 ft. Whole pl. adpressedly subhispid-pubescent, the short w. hairs on the st. and petioles deflexed. L. rather dark dull gr. above, paler beneath, thin soft or flaccid, a little shining or glossy, broadly cordate with a short point, 2-4 in. long, a little broader than long, their petioles mostly longer than themselves. Ped. 2-3 in. long; pedic. ½-1 in. long, after flowering thickened upwards and stiffly hooked or deflexed; br. small linear inconspicuous. Sep. 6-8 lines long pale gr., 2 or 3 outer broad, 3 or 2 inner narrow. Cor. 2-2½ in. in diam., the throat and tube pale or w., altogether smooth inside; the tube about an inch long regularly infundibuliform from the base. Anth. and style not rising out of the throat, pure w. Fil. bearded towards the base with spreading w. curly hairs; style altogether smooth. Stigma capitately depresso-globose 3-lobed coarsely and strongly granulate, not favoso-cellulose as in P. Learii Hook. Nectary shallow 5-agonal, notched at the angles, pale v. Ov. smooth shining conico-turbinate 3-celled, each cell 2-ovulate. Caps. cernuous smooth globose, a little higher than broad, 4 or 5 lines in diam., at first pale gr. or whitish, finally pale brown splitting up valvately from the bottom, very fragile, 3-celled, 0-seeded; seeds black subpuberulous or finely rough, a little shining, triangular, the sides flat, the back convex and grooved, 5 millim. long, 3 broad.

Pharbitis Learii Hook. in BM. t. 3928 occurs in gardens at Funchal; and Sr. Moniz thinks it will soon become quite naturalized. Roots per. St. at first herbaceous loosely twining or trailing, then after a year or two frutescent woody and climbing to a considerable height up trees &c. L. cordate, the lower and those of the barren shoots often bluntly 3-lobate, all greyish and finely tomentose beneath. Ped. longer than the l. Cymes 3-5-fl. Fl. much larger and brighter v.-purple than in P. purpurea. Sep. lanceolate-acuminate hairy-pubescent almost silky. Cor. 3½-4 or even 5 in. in diam., the tube 3 in. long infundibuliform from the base. Stigma snow-w. abruptly depresso-globose or subdiscoidal, curiously areolato-cellulose or coarsely and irregularly honeycombed with hollow cells separated by irregular reticulating sharp intermediate walls crests or ridges; not granulate. Nectary w. shallow irregularly 5-sinuate obtuse crenate. Ov. 3-celled, 6-seeded, 2 seeds in each cell, but ripened only occasionally.
No sp. of *Ipomea* L., Chois. *proper* (artificially and imperfectly defined by its capitate mostly 2-lobed stigma, 2-celled 4-ovulate ov. and 2-celled 4-seeded caps.) is found wild or even naturalized in Mad.: but several occur in gardens—as occasionally, spreading thickly over arbours, walls or trellises, *I. tuberosa* L. (Bot. Reg. t. 768), a large twining shr. with a tuberous root, palmate l. bright y. fl. and very large seeds and caps., and more frequently the lovely *I. rubro-carnosa* Hook. in BM. t. 3297, a tall stout twining ann. pl. with cordate l., and fl. (in Mad. always) of the purest imaginable sky blue, without a tinge of red or purple.


§ 1. St. not twining—*Orthocaulos* Don.

(a) Herbaceous; root and st. ann.

††1. *C. tricolor* L.

Hairy-pubescent or subvillous; st. pale suberect ascending or diffuse, villous upwards; l. sessile oblong-lanceolate or oblong-spathulate pubescent ciliate especially towards the base; ped. 1-fld. 2-bracteate mostly longer than the l. spreading and flexuous in fr.; sep. ovate or oblong-lanceolate hairy or villous; cor. 3 or 4 times the length of sep. b., throat y., tube w.; caps. villous.—Linn. Sp. 225; Lam. Dict. iii. 548; BM. t. 27; Defl. i. 175; Brot. i. 308 (excl. var.); Pers. i. 182; Hort. Kew. (ed. 2) i. 387; Spr. i. 610; DC. ix. 405; Coss. et Germ. i. 259; Gren. et Godr. ii. 502; Willk. et Lange ii. 517. *C. longifolius* &c. Barr. In. p. 4. nos. 28, 29, tt. 32, 322. *C. peregrinus ceruleus, folio oblongo* &c. Moris. Hist. ii. 17, t. 4. § 1. i. 4.—Herb. ann. Mad. reg. 1, rr. Vineyards and waste ground about Funchal here and there occasionally; below the Quinta do Valle; along the road to S. Antonio opposite the Q. das Maravilhas, &c. May, June.—St. hard stiff subflexuous one or many from the root, pale gr. often straw-colour or whitish, 1–2 ft. long. L. rather dark or full gr., 1–1½ in. long, 4–6 lines broad, often subundulate at the edges, fringed with long w. soft fine hairs. Ped. in fl. about an inch, in fr. 1½ in. long. Br. 2 minute linear, opposite in fl., alternate and subremote in fr. Sep. subcoherent or close-pressed into a pale obovate-oblong or half-obovoidal tube for about ⅔s upwards from their base, their limb gr. leafy half-ovate spreading ciliate like the l. Cor. 1–2 in. in diam., mostly sky-b. with the mouth w. and throat bright y. in 5 rays; but sometimes (though not observed in Mad.) the b. is changed into dark v., or the whole fl. except the throat becomes pure w. Stam. subequal rising with the stigmas quite out of the throat; anth.-lobes each with 2 longitudinal dark v. streaks in the b. or v.-coloured fl.; fil. smooth y.
Ov. 2-celled 4-ovulate, densely silky-pilose with long erect w. hairs; style nearly or quite smooth; stigmas long filiform divericate w. Nectary even at the edge, y. with an or. ring at the base. Caps. depresso-globose 1- or 2-celled, each cell 1- or 2-seeded.

§ 2. St. more or less twining—Strophocaulos Don.

(a) Herbaceous; root and st. ann.

2. C. siculus L.

Root ann.; st. prostrate or procumbent rarely slightly or loosely twining pale adpressedly pubescent like the petioles and ped.; l. nearly or quite smooth oblong-ovate acute truncate or subcordate at the base, very shortly stalked; ped. 1- (rarely 2-)fl., 2-4-bracteate at top, slender, not longer than the l., hooked or recurved in fr.; br. leafy conspicuous linear-lanceolate or ligulate acute, close below and as long as the fl.; pedic. very short; fl. nearly sessile small inconspicuous; sep. broadly oval or elliptic, the upper half herbaceous gr. ovate sub acuminate conspicuously ciliate, the lower membranous pale or whitish; cor. small inconspicuous pale b. sub tubular, style short; caps. smooth cernuous.—Linn. Sp. 223; Lam. Dict. iii. 540; Desf. i. 174; Pers. i. 180; Ait. Hort. Kew. i. 335; Fl. Gr. t. 196; Buch 193. no. 204; Bot. Reg. t. 445; Spr. i. 608; DC. ix. 407; WB. iii. 23.; Gren. et Godr. iii. 503; Willk. et Lange ii. 518; Moris. Hist. ii. 36 (excl. icon. App. § 1. t. 7. f. 4); Bocc. Sic. 89. t. 48.—Herb. ann. Mad. reg. 1, 2 (chiefly 1), £ or c. Waste grassy places by roadsides or amongst fields and vineyards. Sea-cliffs &c. to the E. of Funchal along the Caniço road, S. Gonçalho, Machico above the E. Fort, S. Antº W. of Funchal &c. March–May.—St. several from the crown of the small vertical root spreading all round 6 in.–2 ft. long slender simple elongate trailing and only occasionally when luxuriant twisting or climbing. Foliage bright or full gr. L. 1½-1⅓ in. long, 1½-2 in. broad, smooth. Petioles 2-4 lines long, adpressed-pubescent like the st. Ped. filiform ⅔-⅔ in. long adpressed-pubescent bearing at top little leafy heads of 1-2 small nearly sessile fls. subtended by 2-4 smooth leafy br. ½-⅔ in. long and 1-2 lines broad, almost overtopping them; pedic. very short, scarcely any. Cal. rather large; sep. smooth 3 lines long, 1½-2 broad in the middle, their lower half pale subcircular, upper subcordately ovate fine-pointed gr. ciliate with y. bristly hairs. Cor. 3 lines long scarcely overtopping the sep. but sometimes almost twice as long as cal., small but pretty, delicate pale b. with 5 silky-pubescent stripes outside, the throat inside w. Style 1⅔ mill. or ⅔ line long.

The conspicuous leafy br. close below the fl. owing to the
extreme shortness of the pedicel, indicate an approach to Cale-
stephia.

The closely allied *C. elongatus* Willd., Bot. Reg. t. 498, WB.
iii. 24 (*C. pseudosiculus* Cav. DC. ix. 407), with 2-3-fld. ped.
longer than the l., distinctly pedicelled w. fl. and filiform br.
remote from the cal., occurs in the Canaries but has not been
found in Mad.

(b) Herbaceous; root per., st. ann.

3. *C. arvensis* L. *Corriola.*

St. prostrate or twining, spirally striate and angular; l.
shortly stalked sagittate or hastate oblong mostly obtuse and
mucronulate, the basal lobes acute; ped. mostly 1-2-fld., 2-1-
bracteolate at top, br. minute linear remote from the fl., shorter
than the pedic.; sep. oval or broadly obovate very obtuse; cor.
p. and w.; caps. smooth 2-celled.—Linn. Sp. 248; Vill. Dauph.
n. 484; Lam. Dict. iii. 540; Desf. i. 172; Fl. Dan. t. 459;
EB. t. 312; Bret. i. 207; Pers. i. 177; Ait. Hort. Kew. i. 327;
Buch 193. no. 200; Hook. Fl. Sc. i. 73; Sm. E. Fl. i. 284;
Spr. i. 603; Koch 569; Seub. Fl. Az. 38; DC. ix. 406; WB.
iii. 22; Coss. et Germ. 259; Gren. et Godr. iii. 500; Bab. 224;
Hist. ii. 13, tab. 3. § 1. f. 9.—Herb. per. Mad. and PS. reg. 1,
2, cc; not seen in the Desertas. Cornfields, vineyards and
waste ground by roadsides &c. almost everywhere, especially
near the sea. March–Oct.—Roots w. slender running exten-
sively and penetrating deep into the ground. Whole pl. mostly
smooth, but sometimes very pubescent. St. slender wiry an-
gular spirally twisted but only occasionally twining, 6 in.–2 ft.
long leafy sparingly branched. Foliage dull gr.; l. 1–1½ in.
long, ½–1 in. broad; petioles 2–5 lines long. Ped. slender about
1 in. long, 1–3-fld. Pedic. 3–4 lines long; br. about 2 lines,
both always puberulous. Fl. conspicuous and elegant, ½–1 in.
in diam., sometimes pure w. but mostly more or less, rarely
altogether, rose-p. with 5 deeper-coloured rays, slightly fragrant
with the smell of bitter almonds. Style of moderate length,
fine and slender; stigmas filiform almost as long as the style.
“Caps. ovoidal acute smooth. . . . Seeds black scaly” (Gr.
et Godr.).

4. *C. althaeoides* L. *Corriola.*

Whole pl. more or less hispid-pubescent, often silky-hoary,
sometimes silvery; st. elongate procumbent or diffuse climbing
or partly twining; lower l. undivided ovate-oblong or deltoidal
sagittato-cordate obtuse irregularly crenate, upper deeply 5-7-
pedate or palmate, the middle leaf produced inciso-lobed or
CONVOLVULUS.

cretate; petioles slender, of lower l. long, of upper short; ped. erect straight slender much longer than the l., 1—2-fld., 2-brac-teolate at base of pedic. a little below the fl., br. minute linear-filiform; pedic. distinct moderately long; fl. large conspicuous; sep. elliptic-oblong acute glabrescent; cor. broadly campanulate widely patent purplish p. or rose; stigmas not overtopping the anth.; caps. elliptic-oblong smooth.—Linn. Sp. 222; Lam. Dict. iii. 564; BM. t. 359; Desf. i. 173; Broth. i. 265; Pers. i. 179; Fl. Gr. t. 194; Hort. Kew. (ed. 1) i. 333; Buch 193. no. 203; Spr. i. 591; WB, iii. 24; DC. ix. 409; Gren. et Godr. ii. 501; Willk. et Lange ii. 519. C. argyreus DC. Fl. Fr. "Suppl. 423" (a mere extreme silvery-silky state). C. tenue-sissimus Sibth. & Sm. Fl. Gr. t. 195; Spr. i. 591; Koch 509. C. althaeoides v. sedatus DC. 1. c. Convolvulus betonice altha-eque fol. repens argentus fl. purp. Barr. Icon. 312. C. argenteus Althaceae folio &c., Moris. Hist. ii. 13, tab. 3. § 1. f. 10.

C. virescens; greener and less hispid, l. more broadly and less deeply or distinctly lobed or divided.—C. althaeoides v. hirsutus Chois. in DC. 1. c. C. flexuosus Sol. MSS. and BII. ! Buch ! 193. no. 202. C. bryoniaceolatus Sims. in BM. t. 943; Willd. Enum. 205; Lam. Dict. Suppl. iii. 404 and 473. C. hirsutus Ten. Fl. Nap. i. 60, t. 15.—Mad. everywhere about Funchal &c., up to 1000 ft. March–June. Scarcely more than an early stage of the pl. or as growing under shade or shelter.—Herb. per. Mad., PS., reg. 1, 2, ccc. Sunny banks and rocky ground everywhere chiefly from the sea up to 1000 ft. All along the Camis road amongst Cacti &c. for the first 2 miles out of Funchal; Pâ de S. Lourenzo at the Piedad &c. March–Sept.—Root w. hard tough slender penetrating deep into the ground. Whole pl. pale dull gr., becoming more or less silvery-grey or hoary as the summer advances or in exposed hot dry sunny places. St. 2—4 ft. long straight or slightly flexuous somewhat hard or wiry round obsoletely striate pubescent, the ends mostly twining. Petioles of lower l. 1—2 in. long, of upper ½—⅓ in., all pubescent. L. about 1 in. long and ½—⅓ broad, varying from light gr. to silvery-grey or silky-hoary, and from broad and shallow to narrow-linear deeply cut divisions, the upper pedate with the lobes divaricate and the middle one produced. Ped. about 2 in. long; bractlets about 2 lines, very fine and narrow-linear or filiform. Pedic. 2—3 or 4 lines long pubescent like the ped. and petioles, but more densely. Sep. oval-oblong or elliptic 4 lines long, the inner blunt, the outer acute hairy-pubescent. Cor. bright purplish p. or rose of various intensity, the throat darker, 1 in. long, 1½—2 in. in diam. Stam. and stigmas scarcely rising out of the throat. Anthers dark vinous-purple blackish. Stigmas and upper part of style and fil. crimson, the former divaricate filiform 3—4 mill. long. Ov. style and fil. smooth. Nectary cup-
shaped, even at top but 5-angular, shining waxy y. with an orange band, half the height of ovary. Caps. small scarcely overtopping the sep.

The fl., produced in great profusion and long succession, much resemble those of the Marsh Mallow, *Althea officinalis* L.; whence doubtless the name *altheoides*.

(c) Shrubby, st. woody per.

5. C. Massoni Dietr. *Corriola*.

Branches elongate sarmentóse trailing or partly twining, round smooth or only towards the ends whilst young (like the young l. and petioles) adpressedly pubescent, thickly leafy; l. glabrescent stalked ovate-oblong or ovate subacuminate, rounded at the base or sometimes subcordate, about twice as long as broad and 2½ the length of their petioles, presently with the latter quite smooth; cymes axillary solitary stalked scarcely longer than the l., normally simple and 3-fld. but sometimes trichomously compound and many-fld.; stalks or ped. and pedic. slender erecto-patent, br. inconspicuous deciduous linear or linear-lanceolate and like the pedic. a little hairy or adpressedly pubescent; cal. obconic or obovate subpentangular glabrescent, sep. at top leafy spreading broadly ovato-rhomboidal or deltoidal, subauriculately waved or plicate at the base, the edges finely subciliate; cor. rather small 3 times the length of cal. w. with the plaits or angles red or rose-purple and adpressedly hairy-pubescent; stigmas not overtopping the anth. Caps. smooth ovate.—"Dietr. Gart. Nachtr. ii. 377;" Chois. in DC. ix. 413. *C. suffruticosus* Ait. Hort. Kew. (ed. 2) i. 331; Bot. Reg. 128, t. 132 (not Desf.). *C. Dryandri* Spr. i. 597. *C. depilis* v. *C. fruticosus* Ait. *C. rupestris* v. *C. suffruticosus* Sol. i MSS. and BH. *C. rupestris*? Buch! 193. no. 201 (not Pall. & Willd.). *C. solanifolius* Lowe Prim. 22; Novit. 537 or 15.—Shr. per. Mad. reg. 3, rr. Rocks on the right of the Waterfall at the head of the Rib. de Sta Luzia; Curral das Freiras on the short foot-road down to the right of the Voltas; Rib. da Metade; Rib. de S. Jorge; Seixal more plentifully in most of the ravines especially towards S. Vicente. Fl. May, June; fr. July, Aug.—A large thickly leafy shr. with dark glossy gr. foliage, running over other bushes or hanging down rocks in thick masses with long weak flaunting or trailing shoots like a Woodbine (*Lonicera etrusca* Savi or *L. Caprifolium* L.) twisting or twining only here or there. Older branches stout hard woody covered with an even smooth brown bark; the younger striate and subrefuscently adpresso-pubescent (like the young l. and petioles) towards the ends. L. crowded 2–3 in. long, 1–1½ broad, rounded or sometimes cordate at the base, sharply acute
or subacuminate. Petioles slender, an inch long; the uppermost or floral, and lowest, half an inch. Cymes produced chiefly on short erect thickly leafy side-branches but also along the long new shoots, 3 or 4 in. long, with the fl. only just overtopping the l. and much resembling those of *C. arvensis* L. Ped. round slender glabrescent, 1½-2½ in. long; pedic. a little thicker, ¼-⅓ in. long. Cal. or sep. ¼ in. long, their leafy spreading concave upper half ¼ in. long and broad at the subauriculately plicate base, closely and distinctly nerved, acute; the lower half closely imbricate forming a pale smooth even hard fleshy subscariose tube. Cor. 1 in. long, about 1½ in diam., w. or faintly tinged with very pale blush-p. or purple, with 5 broad and 5 narrow reddish-lilac or rose-purple streaks outside and the throat y. Stam. as long as the 2 linear divaricate w. stigmas. Fil. and style smooth w. Caps. globose ovate tipped with the persistent style and nearly concealed by the brown dry membranous or scarious enlarged spreading or partly reflexed sep., 8–10 millim. high, 6–7 in diam., smooth, even, brown.

The young shoots and petioles of l. are sparingly milky; the milk sweet and creamy or nutty in taste. Fl. mostly scentless but sometimes very slightly fragrant.

5. *CALYSTEGIA* R. Br.

††1. *C. SEPIUM* L.

Smooth strongly twining; roots per. creeping; st. ann. extensively climbing twisted angular; l. repandly or subangularly cordate or sagittate acuminate; ped. 1- (rarely 2-) fld.; br. large cordate very obtuse pale gr. inflated bladdery or submembranous; sep. equal lanceolate; cor. rather large w. rarely blush or rose.

—*Br. Prodr. 483;* Chois. in DC. ix. 433 (excl. varr.); Coss. et Germ. 260; Willk. et Lange ii. 519 (excl. varr. β). *Convolv. Sepium* Linn. Sp. 218; Fl. Dan. t. 458; Vill. Dauph. ii. 484; Lam. Dict. iii. 539; Ill. 450, t. 104. f. 1; EB. t. 313; Brot. i. 268; Pers. i. 177; Ait. Hort. Kew. (ed. 2) i. 327 (excl. varr. β); Hook. Fl. Sc. i. 74; Sm. E. Fl. i. 284; Spr. i. 603; Koch 508; Seub. Fl. Az. 38 (excl. varr.); Gren. et Godr. ii. 500; Bab. 224. *Conv. major albus vulg.* &c. Moris. Hist. ii. 12, tab. 3. § 1. f. 6.—Herb. per. Mad. reg. 2, rrr. Naturalized at the Livramento, an old Quinta a little to the right of the Mount road about halfway up. First found by Capt. Norman in 1866. "Fl. w. in July," Sr Moniz.—St. slender wiry hard tough twining sometimes to a considerable height, gr. Roots w. brittle and difficult to extirpate, running both deep and far horizontally. Foliage copious, rather dark gr. L. dark gr. above, paler beneath, thin or flaccid, cordate-acuminate, the basal lobes angular.
subsagittate or obliquely truncate, 1-2 in. long, $\frac{3}{2}-1\frac{1}{2}$ broad (in English spec. often 5 in. X 4). Petioles slender 1-1½ in. long. (The following from English spec.)

Ped. 1-fld. round or angular, 1½-2 in. long. Br. 6-8 lines long tumid or inflated and bladdery erect and closely embracing and quite concealing the sep. and base of cor.-tube, broadly cordate, very obtuse in fl., subacute in fr., light gr. with membranous thin purplish edges, persistent and finally in the ripe fr. pale brown and scarious. Sep. lanceolate equal, $\frac{4}{5}$ in. long, 1½-2 lines broad, thin membranous very pale gr. and shining. Cor. pure w. tubular-campanulate, i.e. with the tube longer than usual in proportion to the limb which is distinctly 5-angular with the edges reflexed or revolute and 2-2½ in. in diam., the tube rising an inch at least above the br. and smooth inside. Stam. and style w. not reaching to the throat or shorter than cor.-tube, style longer than the stam., smooth, splitting at the base in fr. into 2 parts; fil. furry or glandular-pubescent, broadly dilated and flattened downwards; anthers and pollen w.; stigmas 2 w. erect and closely parallel but distinct, narrow-oblong and flattened inside or half-clavate, coarsely granulate or scaly. Nectary a thick tumidly 5-angular y. cup. Ov. small smooth and shining pale yellowish mostly abortive. Caps. rarely perfected hard pale brown globose ovate or ovoidal tipped with the 2-cleft or 2-partite base of the style and completely enclosed in the dry scarious persistent cal.-br., about 4 lines in diam., smooth outside, puberulous within, 1-celled or imperfectly 2-celled downwards, 4-seeded but 1 or 2 only of the seeds perfected and then large ovoidal irregularly angular, about 2 lines in diam., quite smooth and even, dark blackish brown; the rest minute abortive.

2. C. Soldanelia (L.).

Succulent smooth not twining; roots per. creeping; st. ann. prostrate or procumbent; l. a little fleshy orbicularly reniform or cordate mostly very obtuse or retuse and entire rarely subacute and repandly angular; ped. 1-fld. as long as or longer than the l. 3-4-angular thickened upwards; br. broadly oval or ovate-oblong, rather shorter than and not quite concealing the cal.; sep. equal ovate-oblong or oval; cor. large rose-p. or purple with 5 pale yellowish plaits or rays.—Chois. in DC. ix. 438; Willk. et Lange ii. 519. Convolvulus Soldanelia Linn. Sp. 226; Lam. Dict. iii. 549; EB. t. 314; Desf. i. 176; Brot. i. 268; Pers. i. 182; Ait. Hort. Kew. (ed. 2) i. 387; Hook. Fl. Sc. i. 74; Sm. E. Fl. i. 285; Spr. i. 609; Koch 569 (fl. albis); Gren. et Godr. ii. 500; Bab. 225. Conv. marinus noster rotundifolius nobis, Brassica marina Matth., &c.; Moris. Hist. ii. 11, t. 3. § 1. f. 2.—Herb. per. PS. reg. i, cc. Sandy sea-beach and sand-hills close behind it, near the town and to the eastward. May, June.—
Roots and st. slender, creeping or running extensively in the loose sand and forming beds or patches of a dark shining gr. Whole pl. nearly or quite smooth, or with only the st. and petioles a little puberulous. Petioles slender about an inch or not more than an inch and half long. L. 1–1 1/2 in. in diam. orbicular with a wide open notch at bottom and mostly retuse with a shallow smaller one at top, sometimes merely obtuse, palmately 6-nerved, always in PS. with the basal lobes rounded and quite entire, not angularly deltoidal or repandly toothed and acute, as in EB. t. 314. Ped. erect 1 1/2–2 in. long, thickened and membranously 3–4-winged or angular upwards. Br. leafy gr. close beneath the fl. and erectly embracing the cal., broadly obovate or oval obtuse, 4–5 lines long. Sep. about the same length but ovate narrower and more acute, their tips overtopping the br. Cor. funnel-shaped 1 in. long above the br. or sep., a little more in diam., always pale rose-pink in PS. Lobes of stigma short divergent linear-subulate acute.

In habit and foliage this pl. more resembles some entire-leaved aquatic Ranunculus or even Hydrocotyle than a Convolvulus.

The Açorian pl. referred to under this name by Seubert (Fl. Az. 38) proves to be Batata littoralis (L.) according to Mr. Watson in Godm. Az. 197.

††Tribe II. Dichondreae.

††6. Dichondra Forst.

††1. D. repens Forst.

St. creeping pubescent; l. fasciculate cordately rounded or reniform, entire but mostly retuse or notched at the apex, minutely and inconspicuously adpresso-puberulous above, almost silky beneath; ped. one-fld. deflexed pubescent; sep. subvillose; pet. or lobes of cor. shorter than the sep.—Forst. Gen. 39. t. 20; Lam. Dict. ii. 277, Suppl. ii. 470, Ill. t. 183; Pers. i. 288; Spr. i. 803; Choix. in DC. ix. 451; Griseb. W. I. Fl. 476. Sibthorpiea evolutacea Linn. Suppl. 288. Steriphia reniformis Gaern. ii. 81, t. 94.—Herb. per. Mad. reg. i, rrr. Funchal, in the Rua de S. Pedro, 40 or 50 paces east of the church, running between the stones of the pavement, one small patch. First observed by Sr. J. M. Moniz in 1868. March–June.—An almost minute inconspicuous pl. with more the aspect or habit of some Hydrocotyle, such as H. asiatica L., than of a Convolvulus; discernible only by its dark gr. crowded l., forming a cespitose bed or mat between the stones scarcely above an inch high. St. cespitose creeping slender or filiform yet strong and wiry, with the l. and
fl. fasciculate at their rooting nodes and the fl. quite concealed by the crowded l. Whole pl. more or less pubescent or puberulous though appearing smooth or glabrescent. L. above dark dull bottle-gr. subpuncticulate and thinly finely and minutely adpresso-puberulous, but to the naked eye appearing smooth; beneath a little brighter but scarcely paler gr. and more closely adpresso-puberulous scarcely silky but distinctly palmately 5-7-nerved; 3-4 lines broad, 2-3 long, the edges very entire but sometimes a little waved or plaited as if crenulate. Petioles slender subpubescent 5 or 6 lines long or more, blanched downwards. Ped. one-fld. ebracteate much stouter and shorter than the petioles, 2 or 3-many from the nodes, abruptly deflexed or hooked downwards in all stages like those of *Trifolium subterraneum* L., pubescent, thickened in fr. Fl. small inconspicuous pale gr. or yellowish w. like the petioles, opening stellately to \( \frac{1}{10} \) or \( \frac{1}{12} \) in. in diam. Sep. 5 herbaceous gr. permanent half-ovate or ovate-oblong obtuse villos-puberulous and fringed at the edges. Pet. 5 hypogynous alternate with sep. scarcely united except by the broad subdilated fl. at the base, pale greenish ligulate obtuse. Æstivation of sep. and I think of pet. nearly if not quite valvate, or at least only subimbricate. Stam. 5 hypogynous short half the length of and alternate with the pet.; anth. large reddish brown bursting longitudinally. Ov. 2 large didymous. Styles 2 very short; stigmas pale gr. large capitately subtrilobed. Fr. large scrotiform, of 2 geminate distinct globose indehiscent caps., each about 2 mill. in diam. and each mostly 1-celled and 1-seeded, but one of them sometimes apparently double externally with an impressed raphe and 2-seeded though still only 1-celled internally; and sometimes (but rarely) one of the 2 normal globes is wanting, and again sometimes instead of being distinct and separate down to the base they are connate or confluent and 1-celled without any dissemination between the 2 seeds. Before maturity the fr. is conspicuously large and w. or cream-coloured; but when ripe it shrinks a little, becoming pale brown or fawn-colour and of a dry thin brittle chartaceous substance. The cal. becomes a little enlarged and leafy in fr. but not reaching above half its height. Seeds dark brown smooth and even but not polished, hemispherically subovato-globose, rounded-convex dorsally, flat ventrally, quite loose and free in the ripe caps., large \( 1 \frac{1}{2} \) mill. in diam. Cot. large linear-oblong flexuously coiled up like the rad. within the horny albumen.

First observed 100 years ago by Forster, on Capt. Cook's Expedition, in New Zealand, this curious little pl. is now found in almost all the warmer regions of the globe. It is however of very recent (3 or 4 years) introduction into Mad., where never-
theless it will probably become as quickly universal in the streets of Funchal as *Euphorbia prostrata* Ait., *Euxolus deflexus* (L.) and *Alternanthera Achyrantha* (L).

**Order LXIII. CUSCUTACEÆ.**

Fl. perfect regular. Cal. inf. gamosepalous 5-4-lobed or -partite, lobes equal subvalvate i. e. very slightly imbricate in bud, not enlarged in fr. Cor. hypogynous gamopetalous globose, urceolate or tubular fleshy persistent marcescent 5-4-fid. or lobed, lobes equal alternate with cor.-lobes subvalvate or very slightly imbricate in bud. Stam. 5-4 adnate to cor.-tube alternate with cor.-lobes, each mostly with a scale at its inner base. Ov. free without any hypogynous disk or cup (nectary) at its base, 2-celled 4-ovulate. Styles 2 distinct, rarely combined; stigmas cylindric-linear, capitate, or clavate. Fr. a single two-celled membranous circumscissilely dehiscent caps., rarely baccate. Seeds 2 in each cell smooth; embryo filiform coiled spirally within the mucilaginous or fleshy albumen; radicle marcescent; cot. 0 !—Leafless presently rootless and parasitical herbs with filiform or capillary twining st., reddish or yellowish, devoid of gr. colour, creeping and twisting over other plants. Fl. minute agglomerate w., p., or flesh-colour, mostly agglomerate in sessile crowded globose tufts or heads, sometimes fragrant.

1. **CUSCUTA.** Char. that of the Order.

1. **CUSCUTA L.**

Dodder.

§ 1. **Eucuscuta.** Styles and stigmas simple filiform or sub-clavate, equably continuous, not capitate.

1. **C. EPITHYMUM MURT.Linheio.**

St. finely capillary pale or flavescent rarely rubescent, intricately intertwining; cobwebby or matted; heads of fl. small 2 or 3 lines in diam. globose sessile bracteolate w. rarely pale blush-p. or flesh-coloured; fl. scentless sessile densely crowded small; cal. w. or subrubescent distinctly shorter than cor., lobes scarcely or not longer than cor.-tube loose or spreading fleshy nerveless not carinate; cor. shortly campanulate or urceolate w. rarely pale blush or flesh-coloured, tube short cylindric finally subinflated or ventricose, lobes nerveless carinate shortly and broadly half-ovate apiculate scarcely or not longer than the tube, spreading or reflexed; stam. exserted, scales at their base large fimbriate convergent or connivent over the ov.; styles distinct
erect and parallel, rarely subdivergent.—Murr. in Linn. Syst. Veg. (ed. 13) 140; EB. 378 (text at bottom of page, not fig.); EBS. t. 2898 at bottom (except the narrow acute interspaces of scales in the middle fig.); Pers. i. 289; Hook. Fl. Sc. i. 86; Sm. E. Fl. ii. 25; Spr. i. 865; Rchb. Iconogr. t. 499; WB. iii. 36; Koch 569; Coss. et Germ. 261; Gren. et Godr. ii. 504; Bab. 225; Willk. et Lange ii. 520. C. europaea, epithymum Linn. Sp. 180; C. minor Lam. Dict. ii. 229, III. t. 88; b, Vill. Dauph. ii. 311; A, Desf. i. 147. C. europaea EB. t. 55. C. minor Vaill. Par. 43. nos. 2, 3; DC. ix. 453; "Epithymum s. Cuscuta minor Bauh. Pin. 219;" Fl. Dan. t. 427.—Herb. ann. Mad. reg. 1, r; PS. reg. 3, r; Mad., Brazen Head, on Mercurialis ambigua L. &c., Ilhco de Fora or do Pharol (Pa de S. Lourenço) on Calendula maderensis DO. chiefly (most abundant immediately below the Lighthouse); PS. on Cheiranthus arbuscula Lowe on S.W. ascent of Pico Branco; on Hypericum glandulosum Ait. on E. side of Pico d’Anna Ferreira (Barão do Castello de Paiva). Feb.—April.—Overspreading and often destroying the pl. or weeds which it infests with a thick tangled filamentous mass or web of a pale straw-colour, rarely subrubescent; the extremely fine capillary branches fulvous or deep golden-y. towards their free produced and loosely flaunting ends, but lower down intricately intertwining amongst themselves in tangled cobwebby masses rather than twisting in distinct coils or rings round the st. or branches of the pl. which they infest. Heads of fl. either sparse and remote or densely massed and crowded, size of a small pea, w. or pale, with a small inconspicuous ovate or ovato-lanceolate membranous br., at first w. then brown, at their base. Fl. rarely 4-merous, perfectly scentless. Cal. little more than half the length of the cor.; tube short, gr. only at the base; lobes without nerve or keel, thick and fleshy, shining w. and pellucidly vesicular-granulate like the cor., elliptic and acute or clavate and obtuse, nearly or quite as long as the cor.-tube, loose or spreading. Cor. pellucid shining w. or pale; tube short, at first cylindric, then urceolate; lobes abruptly and shortly acuminate, scarcely longer than broad, shorter or not longer than the tube. Anth. bright chrome-y., shortly oblong or oval, obtuse or retuse not apiculate, exserted above the cor.-tube or stigmas and reaching half the length of the cor.-lobes; scales at base of their w. fil. spathulate, obtuse or truncate, sometimes subacute, filmy-w. pellucid, glandular-fimbriate or irregularly capitato-ciliolate, connivently inflexed over the ov., distant below with widely arcuate-rounded interspaces, not (as described by Bab. 1. c. 225 and figured in EBS. t. 2898) “approximate below with narrow acute spaces,” but exactly as figured on the same plate above for C. trifoliæ Bab. Styles filiform-cylindric thickish continuous or confluent with the obtuse or subtruncate not more thickened stigmas, distinct quite to the base, erect
and parallelly approximate, sometimes erecto-divergent, their lower half w., upper or stigmatic half dark red. Ov. large 2-lobed gr.

2. C. calycina Webb.

St. more robust and wiry or less finely capillary and cobwebby than in C. Epithymum, less matted or intricately intertwining and more frequently spirally curling or tightly twisting in coils or rings round the branches of the pl. on which it grows, dark red or purple; heads of fl. 2½–3½ lines in diam. globose sessile bracteolate p. or rose-col.; fl. not quite sessile densely crowded rather large; cal. deep p. or rose-purple large subconspicuous nearly or quite as long as the cor. deeply 5-cleft or 5-partite, lobes membranous large broadly oval or oblong-ovate subobtuse reaching nearly to the tips of the cor.-lobes, not nerved or carinate; cor. blush-p. or flesh-col., the lobes at first erect then spreading or reflexed, otherwise, like the stam. with their scales, as in C. Epithymum; styles distinct divergent from their base.—WB. iii. 37, t. 142.—Mad. on low bushes of common E. Broom (Sarothamnus scoparius (L.), Serra do Estreito, from the late T. H. Edwards Esq. May 16th 1839 and May 1st 1848.—Pl. stouter larger and more rubescent altogether than in C. Epithymum; st. thicker or less cobwebby and darker red or purple with (in Mad.) larger thickly crowded heads forming a dense mass of fl. of a beautiful p. or rosy and w. hue like a bunch of fl. of Tamarix gallica L. Fl. very fragrant!, in bud deep rose-red or purple, passing as they expand from p. to pale blush or w. Stam. exserted, shorter than cor.-lobes. Styles and stigmas altogether dark crimson or atropurpureous, ultimately longer than the stam. Scales at base of fl. precisely as in C. Epithymum above. Seeds 2 only perfected, large globose or subtrigonal with 2 flattened and one convex (dorsal) side, like that of a Convolvulus, brown or fawn-colour, finely and closely granulate.

Willkomm and Lange strangely refer C. calycina Webb to their C. planiflora Ten., which they distinguish from C. Epithymum by its carinated cal.- and cor.-lobes and by the latter never being reflexed. The former of these characters applies indeed to C. Episonchum WB. iii. 36, t. 141; but neither of them to C. calycina.

It may however be well doubted whether either C. calycina or C. Episonchum Webb is really distinct as a species from the polymorphous C. Epithymum.
Order LXIV. SOLANACEÆ.

The Nightshade Family.

Fl. perfect regular mostly 5-merous. Cal. inf. gamosepalous free persistent (at least by its base) and often leafy and enlarged in fr., 5- rarely 4- or 6-toothed, -fid or -partite, valvate or subimbricate in bud. Cor. hypogynous gamopetalous caducous mostly rotate or stellato-rotate, sometimes infundibuliform or hypocrateriform, limb 5- rarely 4- or 6-partite or 5-angular, lobes sometimes a little unequal, valvate or induplicatovalvate in bud. Stam. all perfect alternate with and as many as cor.-lobes, inserted on its tube, sometimes unequal; anthers opening by 2 terminal pores or longitudinally, rarely unequal and with the lower produced. Ov. 2-celled, sometimes completely but mostly more or less incompletely 3-5-celled by spurious partial dissepiments; placentas axile; ovules numerous amphitrop. Style 1 simple terminal; stigma capitulate or clavate, simple or 2-lobed. Fr. a more or less juicy many-seeded berry (grape or nuculanum). Seeds numerous compressed and reniform or lenticular with a hard shelly or bony episperm, copious fleshy albumen, mostly curved or spiral (rarely straight) terete embryo and semicylindric cot.; the radicle inf. its point directed downwards to the inner basal angle of the seed a little below the hilum.—Herbs or shr. rarely tr., with watery poisonous or noxious more or less narcotic juices, often prickly. L. alternate often geminate upwards by the partial development of axillary buds, without true stip., rarely pinnatisect. Inflorescence normally cymose (racemiform, corymbiform, paniculate, spicato-fasciculate or umbellate), cymes often super- or extraaxillary sometimes reduced to 1 or 2 axillary fl. Fl. or their pedic. mostly articulate to ped. or rachis and small, w., p., lilac, v. or purple, rarely fragrant.

A. Gyrembryoneæ; embryo annular or spiral.

Tribe I. SOLANEÆ.

The Potato and Tomato Tribe.

Cal. small simple very rarely leafy or enlarged in fr. Cor. 5-stellately or 5-angularly rotate. Anth. at first erect and connivent or coherent into a cone or pyramid bursting by terminal pores or longitudinally. Fr. berry-like i.e. a grape or nuculanum, mostly juicy.—Herbs or shr. often prickly. Fl. in supraaxillary or axillary cymes or rac. rarely reduced to one or two fl.
64. SOLANACEAE.

††1. CAPSICUM. Cal. small subcyathiform obsoletely 5-6-toothed 5-6-angular, somewhat fleshy scarcely or not at all enlarged in fr., not leafy. Cor. stellato-rotate 5-6-fid, tube very short, limb plicate, lobes acute. Stam. 5-6 subexserted, fil. short flattened-filiform, anth. free connivent, longitudinally dehiscent. Stigma depresso-capitate subbilobed. Ov. 2-4-celled. Fr. inflated nearly dry imperfectly 2-3-celled many-seeded, oblong conoidal ovate ovoidal or globose.—Shr., rarely herbs, unarmed. L. simple entire ovate or lanceolate, attenuate at each end. Fl. small alary in the forks of the st. or extraaxillary, solitary or 2-several together, w., pale yellowish or violascent. Fl. and their pedic. articulate to ped. or st. Fr. polymorphous both in shape and size, scarlet red or y. Whole pl. in drying disarticulating at the forks or axils and not only at the ped. and pedic.

2. SOLANUM. Cal. small not leafy stellately 5-fid or 5-partite, lobes scarcely or not at all leafy or enlarged but mostly dry or marcescent in fr. Cor. stellato-rotate, limb mostly equably 5-fid or 5-partite, lobes distinct plicato- or induplicate-valvate in bud. Stam. 5 inserted in the throat of cor.; fil. short; anth. equal linear subelongate bursting by 2 apical pores. Fr. a 2-celled or imperfectly 4-celled many-seeded naked globose or ovoidal berry-like grape, juicy or fleshy, rarely dry. Seeds smooth or naked.—Herbs, shr. or subarb. often prickly. L. mostly simple undivided. Pubescence mostly compound or stellate very rarely viscid. Fl. in extraaxillary lateral or at first terminal corymbiform 1-many-fld. cymes or umbels, mostly w., lilac, blue or v. Fl. or their pedic. articulate to ped. or rachis. Fr. y., or., r. or black.

††3. LYCOPERSCUM. Like Solanum but lobes of cal. in fr. herbaceous lax linear, cor. deeply stellato-partite, anth. bursting longitudinally, pyramidal cohertent or coadnate at top into a tube with the connective produced into a membranous point and seeds limbate papillosos-puncticulate depressedly silky-pubescent or sericeous towards the limb or border.—Herb. ann. or per. mostly viscid villose, often fetid or strong-smelling pl., with simple (not stellate) hairs or pubescence, odd-pinnatisect or pinnatifid 1., articulate pedic., y. fl. and scarlet red or y. edible juicy pulpy or fleshy fr. : the fl. and fr. sometimes by coalescence or multiplication of parts irregularly 6-many-merous.
4. **Normania**. Cal. leafy 5-partite open and enlarged in fr. with erect or erecto-patent herbaceous leafy lobes, not bladdery or contracted at the mouth or inclosing or concealing the berry. Cor. widely rotato-campanulate, limb 5-angular or shortly 5-lobed plicato-valvate (as in *Physalis*). Stam. 5 unequal, scarcely exserted; fil. simple shorter than the anth. dilated and coadnate at the base into a narrow ring; anth. erect distinct free (not connivent) unequal, the lower 2–3 mostly arcuato-elongate and often with a gibbous or spur-like or even short-horn-like lobe inside towards the base, the 2 cells turgid downwards, united laterally nearly to their base and bursting (by a pore at first, then) longitudinally and outwardly all their length. Style simple; stigma subcapitate subbilobed. Fr. berry-like globose 2–1-celled juicy or pulpy many- (about 20-) seeded surrounded by the enlarged leafy more or less loosely spreading or erect cal. lobes. Seeds as in *Solanum*.

Succulent branched herbs or sometimes sarmentosely sufrutescent, viscid-villose. Lower 3–5-pinnatisect, upper simple subentire. Rac. pedunculate subaxillary many-fid.; pedic. secund, drooping in fl., deflexed in fr., not articulate to fl. or rachis. Fl. subconspicuous v.-b. or lilac. Fr. blood-red or scarlet. Strictly Macaronesian (Mad. and Can.) sporadic pl.

**Tribe II. Physalideae.**

The Winter-cherry Tribe.

Cal. leafy and conspicuously enlarged in fr. Cor. 5-angularly subrotato-campanulate. Anth. free distinct short, bursting longitudinally. Fr. entirely enclosed within the vesicular inflated cal. which is contracted at the mouth.—Pubescent often viscoso herbs. Fl. axillary solitary rarely 2–3-nate.

††5. Physalis. Cal. 5-toothed or 5-fid leafy, much enlarged inflated and membranous in fr. and closed or contracted at the mouth. Cor. widely subrotato-campanulate, limb 5-angular plicato-valvate in bud. Stam. 5 subincluded, fil. connivent originating from 5 adnate scales at base of cor.; anth. erect short free distinct bursting longitudinally. Fr. berry-like globose juicy 2-celled many-seeded, enclosed completely within the 5-angularly globose capsuliform inflated bladdery reticulated cal. Seeds numerous small compressed reniform; embryo half-annular; cot. semiterete.

* In honorem Francisci M. Norman, Classis Reg. Brit. navarchi, inter indagatores Flore Mad. optime merentis.
——Ann. or per. herbs rarely suffrut. L. soft, entire or repandly lobed. Fl. ochroleucous; ped. 1-fld. simple exarticulate solitary extraaxillary or in the forks of the branches. Fr. red or y. drooping.

B. Orthembryoneae; embryo straight.

†††Tribe III. CESTREÆ.

The Cestrum Tribe.

Cal. small simple equally 5-toothed or lobed, not leafy or enlarged in fr. Cor. hypocrateriform more or less infundibuliform. Anth. short free erect bursting longitudinally. Fr. fleshy, berry-like. Seeds mostly few compressed.—Shr. or tree unarmed. L. simple. Fl. mostly small and greenish y., w. or cream-col., sometimes or., red or purple, often fragrant.

†††6. CESTRUM. Cal. short tubular subcyathiform or subcampanulate 5-toothed or 5-ftd. Cor. hypocrateriform or tubular-infundibuliform, tube slender filiform or clavate, limb short 5-ftd, lobes induplicato-valvate. Stam. 5 included, fil. toothed or simple, anth. globose or obcordate bursting longitudinally. Ov. 2-celled few- or many-ovulate shortly stipitate, with or without an hypogynous disk: stigma capitate or clavate. Fr. "berry-like 2–1-celled few-seeded. Seeds compressed; embryo straight; cot. leafy small orbicular."—Shr. or small tr. often fetid. L. simple entire. Fl. or their pedic. articulated to the rachis small in axillary and terminal cymes or fascicles, mostly yellowish gr. or w., often deliciously fragrant especially at night; edge or margin of cor.-limb pubescent. Fr. "black or b., atropurpureous or v., rarely w."

A. Gyrembryoneæ.

Tribe I. Solanææ.

†††I. CAPSICUM L.

§ 1. Fr. erect or suberect, oblong

†††1. C. FRUTESCENS L. Cayenne or Chili Pepper. Pimenta encarnada; (tr.) Pimenteira.

Shr. erect smooth or glabrescent stiffly and subflexuously fork-branched, younger branches gr. hard angular subpuberulous glabrescent; l. single or binate elliptic-ovate or lanceolate acu-
minate unequal at the base and cuneately attenuate into the petiole, smooth entire; cal. in fr. cup- or saucer-shaped, subpentagonal with 5 or more erect remote sharp distinct little teeth or denticles at the angles; fr. erect, ovate-oblong or ovato-conoidal obtuse 2-celled, cells equal many-seeded; seeds much flattened, angularly suborbicular, smooth, pale yellowish.—Linn. Sp. i. 271 (excl. var. β); Lam. Ill. no. 2395, t. 116. f. 2; Poir. in Lam. Dict. v. 325; Pers. i. 230; Ait. H. K. i. 406; Webb Spicil. 162; J. A. Schm. Fl. Verd. 296; Griseb. W. I. Fl. 436.—Shr. per. Mad. reg. 1, 2, cc. Gardens, vineyards, &c. about Funchal and other places, almost everywhere, subspontaneously. Summer and Aut. chiefly, but at most seasons; at least in fr.—A small shr. 3 or 4 ft. high. Older branches pale ashy-grey. Fl. w. scentless drooping. Anth. lilac or pale v. at first; pollen w. Fr. about 1 in. long, 5 or 6 lines broad, even, smooth, shining, deep blood-red, on stout stiff erect angular ped. which are a little thickened upwards. Cal. in fr. a little rugged smooth shining gr. fleshy.

Several varr. of this or other sp. are also occasionally cult. Amongst the latter is a smooth var. or form of C. sinense Jacq., a more delicate smaller shr. than C. frutescens L., not above 2 ft. high, with regularly strongly flexuous subhorizontally spreading sharply angular branches and smaller pendulous ovoidal or shortly oblong-ovate orange-y. fr. 4–6 in. long × 3–4 broad obtuse or subacute tipped with the persistent dried-up style; the cal. as in C. frutescens L. Also not unfrequently occur one or two of the still smaller-fruited “Bird-peppers” (C. conoides Mill. or C. baccatum L.), the first with conoidal pointed, the latter with globose fr. the size of a pea, red or orange, called Pimenta miuda or in the Cape-Verdes (wrongly) Malaguêta, by the Portuguese, the latter name belonging rightly (Hook. and Benth. Fl. Nigr. 576) to Amomum Granum-Paradisi L.

2. Solanum L.

§1. Morella Dun.—Herb. mostly ann. L. simple entire re-pandly angular or angularly toothed, smooth or pubescent, dull gr. not stellato-tomentose. Fl. small w. Berries small, size of a pea, i.e. 2 or 3 lines in diam., globose, black, ochraceous, greenish y., or.-red or scarlet. Pubescence furry or glandular-pilose subcompound not distinctly stellate.
Fetid or sometimes slightly musk-scented erect bushy leafy ann. herbs, with dark dull lurid gr. nearly smooth or naked foliage; st. straight erect or virgate and with the short erectopatent branches either naked verruculate and denticulately narrow-winged, or simply angular and more or less furry-pubescent; l. shining naked smooth, or thinly and minutely subtrigulose and glabrescent, subuneately ovate or rhomboidal acute undulate, sparingly and irregularly angularly toothed or repandly subentire, with rather long smooth or more or less furry-pubescent petioles; cymes racemoso-umbellate superaxillary, mostly 4-6-fld.; ped. and pedic. slender adpressedly strigulos-pubescent or puberulous, the latter thickened upwards and strongly deflexed in fr.; cor. outside towards the tips of lobes pubescent, twice the length or more of cal. which is a little enlarged fleshy loosely open and spreading or reflexed in fr.; fil. smooth or pubescent; berries drooping black opaque smooth shining.—**S. nigrum** (*vulgaris*) *Linn.* Sp. 266 excl. varr.; Vill. Dauph. ii. 494 excl. varr.; Poir. in Lam. Dict. iv. 288 excl. varr.; Desf. i. 194 excl. varr.; Brot. i. 283; Pers. i. 224 excl. varr.; Dun. Hist. Sol. 152; Ait. Hort. Kew. (ed. 2) i. 399 (*a. vulgaris*); Buch 193. no. 190; Sm. E. Fl. i. 318; WB. iii. 121; Koch 384 excl. varr.; Seub. Fl. Az. 38; Coss. et Germ. 273 (*a. vulgare*); Webb Spic. Gorg. 162; J. A. Schm. Fl. Ver. 237; Dun. in DC. xiii. 50; Gren. et Godr. ii. 543 a, excl. varr. **β, γ**; Bab. 233 excl. var. **β**; Willk. et Lange ii. 526. **S. vulgaris** &c. Moris. iii. 520, § 13. t. 1. f. 1. **S. officinarum** Fl. Dan. t. 460 (opt.).—Herb. ann. Mad. reg. 1-3, ccc; PS. reg. 3, ½, and Ilheo de Cima at top; ND. r; GD. reg. 2, r; SD. reg. 2, rr. Roadside, waste ground, in vineyards, gardens &c. a universal weed, at all seasons.

**a. glabrum:** st. branches and l. nearly or quite smooth, the former stouter thicker verruculate and denticulately narrow-winged; ped. pedic. and cal. adpressedly puberulous; fil. smooth. —One of the commonest weeds in gardens vineyards road sides and waste ground everywhere chiefly below 2000 ft., but following cultivation up to 5000 ft. All about Funchal, the Mount, Sª Anna, &c.

**β. hebecaulon:** st. and branches furry-pubescent simply angular, l. subtrigulose the lower sometimes furry-pubescent, ped. pedic. cal. and fil. strigulos-pubescent.—**S. nigrum** Koch l. c.—With **a** here and there, but rare; Levada de Sª Luzia above Funchal, Feb.

A low bushy pl. 6-12 in. (rarely more) high with a rank heavy smell and peculiarly dark lurid blackish foliage. Root

**Vol. II.**
strong vertical clothed with fibres. St. firm hard stiff almost woody and round at the base, mostly very erect and straight or very stiffly fork-branched from the base or often only above the middle, forming a compact leafy oblong or subpyramidal bushy head; the branches blackish purple, strongly angular, either naked and verruculate with the angles toothed, or furry-pubescent. L. mostly smooth or naked, 1–2 in. long, \( \frac{3}{4} - 1 \) broad, on petioles \( \frac{1}{2} - 1 \) in. long, thin or membranous, lurid blackish gr. shortly ovate always pointed or acute, cuneately decurrent down the petiole, mostly toothed more or less. Ped. of cymes halfway at least between the axils, about half an inch long rounded; pedic. 5 or 6 lines long more numerous than in either of the 2 following sp. abruptly deflexed in fr. Lobes of cal. short obtuse, spathulate in fl., broadly rounded in fr. Cor. w. tinged or streaked outside especially in bud with p. or lilac; the eye or centre y. radiating up the stellately spreading or reflexed acute lobes. Stigma abruptly globoso-capitata gr. just over-topping the anther-cone. Anth. bright chrome-y. large oblong 2-pored at top. Berries not showing the seeds within, uniformly black, 2–3 lines in diam., reputed poisonous but not ill-flavoured, less acid than in S. *villosum* L. and without the peculiar rank raw taste of those of *Lycopersicum vulgar*. The juice is deep mulberry-col. Seeds flat minutely punctato-reticulate. Cal. in fr. a little enlarged, lobes blunt fleshy sometimes reflexed.

Nothing can be more variable than the l. in amount of dentation; but the teeth are almost always acute more or less, and the l. cannot properly be described as sinuato-dentate.

The bruised or pounded fresh l. are a favourite rustic remedy as a cataplasm for boils or tumours.

*S. nigrum* EB. t. 506 represents a luxuriantly succulent spreading and widely branched state of the pl., with thick juicy strongly winged st. or branches, shortly stalked entire repandly waved subcordate l. and larger berries, occurring in Mad. occasionally in moist or shady spots.

2. S. *patens* Lowe.

Inodorous naked nearly altogether smooth or glabrescent shining bright gr. diffusely but stiffly spreading (not erect or bushy) ann. suffrutescent; branches forked subelongate remote stout stiff hard or almost woody, horizontally straggling or divaricately spreading, light gr., straw-col. or pale brown downwards, smooth and naked or glabrescent, 2-edged, denticulately winged; l. shining glabrescent nearly or quite smooth ovate- or elliptic-oblong acute or acuminate, wedge-shaped more or less
SOXANTTM: attenuately at the base and broadly decurrent down the petiole, subundulate repandly angular or sparingly and irregularly but sharply and strongly toothed; cymes small and inconspicuous, far superaxillary shortly pedunculate racemoso-umbellate 2–5–mostly 3-fld.; pedic. nearly as long as ped. reflexed or drooping from first to last, both (like the sep. and young l.) substrigulosopuberulous; berries drooping dull reddish orange or miniaceous, (in earlier stages pale yellowish or dull watery ochre-v.) pelucid smooth shining.—S. humile WB. iii. 122? (not Bernh.).—Herb. suffrutescent ann. Mad. reg. 2 (upper part) or 3 (lower part), rr. Rib. de St Luzia, from about half a mile below to the foot of the waterfall itself, in the bed of the ravine on the W. side of it; “S. Vicente at the Forno de Cal, Seixal, Serra do Fayal (Levada da Fajãa dos Vinhaticos) and Rib. do Vasco Gil” near Funchal, S’ Moniz. At various seasons i.e. March–Dec.—Very distinct from every state of S. nigrum or villosum by its larger size robust straggling rankly growing habit, flaunting elongated branches, glossy bright gr. foliage and large sharply toothed and pointed l. Whole pl. scentless. Branches 2 ft. long or more, decumbent or diffuse quite smooth or glabrescent strongly denticulately winged compressed or 2-edged and warty, the warts scattered and often tipped with a short incurved w. hair or bristle. Petioles 1/4–1 in. long; l. 2–31/2 in. long, half as broad, thin flaccid membranous, the younger only sparingly and minutely substrigulosopuberulous, sharply and strongly toothed at or below the middle and always acute or shortly acuminate. Ped. very short 1/4–1 in. long, placed nearly at the top of the internodes or at least mostly nearer to the next above than to their own proper axil, mostly 3–, rarely 4–7-fld. Pedic. very little if at all shorter than the ped., round and rough like the ped. to which they are articulated, drooping or refracted even in the bud and fl., not all originating from the same point. Sep. herbaceous gr. short obtuse without membranous edges, patent or subreflexed in fr.; tube adpressed dark v. Cor. rather smaller than in S. nigrum or S. villosum, bright w. or yellowish w. with a very distinct narrow v.-purple line up each pet., quite scentless. Berries perfectly globose dull reddish or, or red-lead col., perhaps a little duller than in S. villosum, and sometimes (immature?) pale yellowish or dull watery ochre-v., subpellucid, showing the seeds inside, very juicy, subacid and with the nauseous raw taste of Tomatos (Lycopersicum esculentum or cerasiforme). Seeds yellowish w. reticulato-punctate flat as in S. nigrum.

Raised in England (Northamptonshire) in 1860 by my friend the Rev. M. J. Berkeley from Mad. seeds, this pl. preserved all its characters, from which it never deviates in Mad.
76

The only pl. I can find in the great English Herbaria at all like this is a spec. in BH. marked "S. patulum" with an old ticket inscribed "S. nigrum—an distincta sp.? Mill. Dict. no. 4—e semibus aegyptiacis a Forskalio missis—annuum, baccœ rubœ Mill.;" and with "Hort. Chelsea 1763" written at the back. Yet, whatever this may be, the Mad. pl. can neither be referred to S. Dilleni Schult. (=S. nigrum* patulum Pers. = S. procerius patulum &c. Dillen. Elth. 367, t. 275. f. 355) which has the "st. and branches round, the pedic. erecto-patent in fr. and berries black" (Dun. in DC. xiii. 47 and Willk. et Lange ii. 527), nor to the obscure S. rubrum Mill. Dict. no. 4 (Dun. in DC. I. c. p. 57), the typical spec. of which is also extant in BH, and which, though referred by Grisebach (W. I. Fl. 437) to S. nodiflorum Jacq., seems to me rather the smooth state or var. β (S. miniatum Bernh.) of S. villosum Lam. It approaches also S. humile Bernh., but differs in its large robust suffrutescent habit and woody elongate rampant straggling smooth or nearly smooth wide-spreading branches, &c.

Though so much larger and stouter a pl. than S. nigrum, the fl. are much smaller and so is usually the fr.

†3. S. villosum Lam.

Musk-scented mostly erect, pale dull gr. more or less greyish-hoary or glaucencescent, subdichotomously and remotely branched; branches stout stiff erecto-patent angular or sometimes subdenticulately winged upwards (rarely terete) furry-strigulose or villoso-pubescent at least upwards; l. with rather long winged villoso-pubescent petioles, thickish more or less striguloso-pubescent or even velvety and hoary, rarely smooth, rounded or rounded-oval, abruptly cuneate or subtruncate at the base, coarsely sinuato-toothed or lobed subremotely but subequably all round, teeth or lobes few short broad mostly obtuse or rounded; cymes superaxillary pedunculate 2–5–mostly 3– or 4–fld. racemoso-umbellate; pedic. pubescent, deflexed in fr.; sep. spathulate fleshy and reflexed in fr.; lobes of cor. outside towards the tips and fil. velvety-strigulose; berries drooping dull watery orange-red or scarlet subpellucid shining, nearly or quite smooth mostly globose. S. villosum and S. miniatum Auct.—Herb. ann. Mad. reg. 1, 2, c; not seen in PS. or the Desertas. Varr.:—

a. velutina Lowe; young shoots villous, l. furry-tomentose or velvety-pubescent thickish hoary-grey.—S. villosum Lam. III.
SOLANUM.

no. 2338; Poir. in Lam. Dict. iv. 289; Brot. i. 283; Willd. Enum. 236; Dun. Hist. Sol. 157; Spr. i. 680; Koch 583; WB. iii. 122; Dun. in DC. xiii. 58; Willk. et Lange ii. 527.  
*S. nigrum var. c Vill. Dauph. ii. 494.  
*S. nigrum γ. villosum Linn. Sp. 266; β. villosum Ait. H. K. i. 309; *villosum (moschatum) Pers. i. 224; β. villosum Coss. et Germ. 274.  
*S. miniatum β et γ Dun. in DC. xiii. 56?  
*S. annuum hirsutiss., baccis luteis Moris. Hist. iii. 520. no. 3; Dillen. Eltham. 366, t. 274. f. 353.—On the sides of walls, in dry waste ground by roadsides, and an occasional weed in gardens. About Funchal to the westward, at the Valle, the Mount in Mr. Gordon's kitchen-garden, &c. At most seasons but chiefly in summer and aut.—A stout upright pl. stiffly and sparingly fork-branched erectly mostly from the base, not bushy or leafy, with more or less hoary or dull gr. foliage, the st. sometimes simple and branched only at the top, 1-2 ft. high; the branches stiffly ascending or erecto-patent sometimes diffuse or reclinate, hard stout remote dark lurid v., strongly angular and often narrowly denticulately winged as in *S. nigrum, mostly furry downwards and almost villous towards the ends. Petioles ½-1½ in. long purple or v. winged, villoso-pubescent. L. subfasciculate from the early development of their axillary buds, 1-2 in. in diam., roundish or as broad as long, whilst young more ovate and pointed, all notwithstanding their decurrency down the petiole abrupt and transversely truncate at the base, flat or but slightly waved, rather thick in substance, pubescent on both sides, often hoary especially in summer, but always of a paler less lurid or blackish gr. than in *S. nigrum; the veins beneath large distinct and prominent and purplish or v.; the margins broadly and regularly sinuate all round, the lobes or sinuses broad and rounded, mostly 7, sometimes 8-10, the middle lobe obtuse and not more prominent than the rest. Fl. drooping rather small, the size of those of *S. nigrum. Ped. mostly far supraaxillary or a little below the axil (though on the opposite side the st.) of the l. above that to which they belong, villous straight round, not more than ½ in. long. Pedic. round pubescent 5 lines long, not all originating from the same point and hence racemoso-umbellate, abruptly deflexed in fr. Fl. mostly fewer than in *S. nigrum, 2-5, mostly 3 or 4. Sep. villous v. or purplish, appearing before the cor. falls, spathulate and very obtuse from the paleness of their membranous margins; in fr. strongly reflexed and somewhat fleshy. Cor. similar in size and all respects to that of *S. nigrum, w. or purplish with the midrib of each pet. y. towards the centre and v. or purple towards the tips. Berries dull reddish or. or red-lead col. (that of the fr. of *Lycopersicum cerasiforme Dun.), showing the seeds within, smooth or with only a short hair here and there, always as far as I have seen in numerous both living and herb. spec. perfectly globose, rather larger than those of *S.
nigrum, subacid and not more nauseous than raw tomatos, very juicy. Seeds yellowish w. much thicker or more convex than in S. nigrum but otherwise like them in shape and delicate reticulate punctation.

The whole pl. always exhales a faint musky odour. It varies much in degree of villosity or hoariness from season, soil or situation, passing gradually into

\[B. \text{lavigata} \text{ Lowe; 1. subglabrous membranous dull or dark full gr. not hoary but sometimes glaucescent} - S. \text{miniatum} \text{ Bernh. “Begriff. Pflanz. 55, 65” (Koch); Willd. Enum. 236; Poir. Suppl. iii. 759; Dun. Hist. Sol. 156; Koch 583; WB! iii. 121; Dun. in DC. xiii. 56; Willk. et Lange ii. 527. S. villosum Wats.! in Godm. Nat. Hist. of Azores 198 (from Flores spec. in HH.). S. nigrum b var. Vill. Dauph. ii. 494. S. nigrum \alpha, subv. miniatum Coss. et Germ. 274; \gamma, miniatum Gren. et Godr. ii. 543; \beta, Bab. 233. S. rubrum Mill.! Dict. no. 4 (in Herb. Banks.); Poir. in Lam. Dict. iv. 293 (partly); Dun. Hist. 155; Dun. in DC. xiii. 57. \text{Solanum baccis rubris pheniceiseve} \&c. Moris. Hist. iii. 520. no. 2.—At higher or in moister situations and in winter chiefly or early spring, only occasionally in Mad. Also (Jan. 1865) at Lisbon in waste ground about the Museum, Buenos Ayres.—A mere local state or temporary condition of \alpha, the distinctions drawn by authors between the two all breaking down in practice. Thus I find usually the branches of \alpha in Mad. denticulately narrow-winged or at least strongly angular; a character ascribed distinctively by authors to S. miniatum Bernh. But the late Dr. C. Lemann in litt. July 28, 1838, says, “the Mad. pl. has not winged branches;” and he refers it on this account and from its l. being “in a young state at least villous” to S. villosum Lam. instead of (as I had done) to S. miniatum Bernh. The berries vary considerably in Mad. in intensity of colour, and are not at all unlikely to become permanently quite pale or even y. (“lutese” Dillen., Moris., Bernh., Koch ll. cc.) in the colder or moister climates of England, France or Germany; as, parallelly, in the case of S. auriculatum Ait. introduced from Brazil to Mad. It is however certain that neither the size, the ovoidal or globose shape or col. of the berries, nor the less or greater smoothness of the l. nor the winged or terete character of the branches appear in very numerous spec. in BH. and HH. to afford any reliable or constant distinctions between S. miniatum and S. villosum Auct. And thus also in Mad. we have the denticulately winged branches and or.-red or scarlet berries of S. miniatum Auct. combined with the hirsute branches and velvety-tomentose l. of S. villosum Lam.; and again sometimes (Lemann) the round unwinged branches and villous or velvety-
SOLANUM.

pubescent 1. of S. villosum Auct. joined with the red or minia-
ceous globose berries of S. minutum.

§ 2. Cerasocarpum Lowe. Shr. or suffrut. with slender vir-
gate twiggy branches. L. narrow lanceolate or ovato-
lanceolate entire repand or undulate smooth or glabre-
scent. Cymes or rac. often subsessile and reduced to
1-3 or 4 aggregate pedicels. Fl. small w. Berries rarely
more than 1 or 2 together globose size of a cherry or 5
or 6 lines in diam., or., red or y.

†4. S. PSEUDOCAPSICUM L. Pimenteira brava or Erva de Sta
Maria; Berradura at Fajãa d’Ovelha.

Suffruticose altogether smooth and scentless, branches slender
round gr. leafy; 1. lanceolate with the edges waved or repand;
cymes shortly pedunculate 1-3-fld., fl. drooping umbellate, fr.
erect mostly solitary.—Linn. Sp. 280; Lam. III. no. 2311,
Dict. iv. 280; Brodt. i. 283; Pers. i. 223; Ait. Hort. Kew.
(ed. 2) i. 396; Dun. Hist. Sol. 150; Buch 193. no. 189;
Spr. i. 684; WB. iii. 122; Seub. Fl. Az. 38; Dun. in DC.
xiii. 152; Wats. in Godm. Nat. Hist. of Az. 198. Amomum
Plinii Ger. Herb. (ed. 1) 289. S. fruticosum bacciferum
Moris. Hist. iii. 525.—Herb. ann. Mad. reg. 2, cc. Roadsides,
rocky stony banks and shady spots in chestnut woods, but no-
where remote from cultivated ground or cottages; at the
Mount, S. Martinho (1st ravine to the westward), Calheta,
Fajãa d’Ovelha, &c. At all seasons.—An elegant little willow-
like shr. 2-3 ft. high, in its slender graceful virgate branches
and narrow-lanceolate 1. reminding one of Salix. Branches
simple subelongate thickly leafy remotely subdivided at acute
angles, dark gr. upwards, ash-coloured below. L. dark full gr.
paler beneath with prominent midrib and side-nerves, mem-
branous not deciduous, 2-4 in. long, \(\frac{1}{4}-\frac{3}{4}\) broad, attenuate at
both ends shortly petiolate, their margins finely waved or re-
pand, not sinuate. Ped. far supraaxillary very short erecto-
patent, the lower 1 or 2-, the upper mostly 3-fld. Pedic.
drooping in fl., erect in fr., 2-4 lines long. Fl. w. larger than
in S. nigrum L., subconspicuous. Anth. bright or. large oblong
equal. Base of cal. pentagonal, lobes linear-lanceolate not re-
flexed. Berry opake bright reddish or. or red-lead colour (not y.)
smooth and shining perfectly globose, 5 or 6 lines in diam.,
erect hard or firm, somewhat juicy and insipid rather than di-
strictly nauseous, never eaten. Seeds rather large roundish
flattened waved shining yellowish or dirty w., very obscurely
reticulato-punctate.

Though found in Mad. by Sloane as early as 1687, and re-
corded, on his authority, by Morison l. c. in 1699 as growing
there spontaneously, this pl. is probably of S. American origin.
The fresh bruised leaves are applied by the country-people frequently to boils or tumours.

The small-fruited var. microcarpum Pers. 1. c. (S. microcarpum Vahl; Dun. Hist. 149, DC. xiii. 153) collected in Tenerife by Bourgeau (not Webb), has not occurred in Mad. The fr. is said to be little larger than a pepper corn. In the Mad. pl. it is about the size of a small cherry.

§ 3. Astrochelana Lowe. Shr. or subarborescent. L. simple large entire clothed like the young shoots and fl.-buds with stellate pubescence mostly floccoso- or furfuraceous-tomentose. Fl. middle-sized v.-blue lilac or w. Berries mostly the size of a cherry (rarely of a pea) 5 or 6 lines in diam. mostly globose rarely ovate, greenish y. or ochraceous, sometimes miniaceous, rarely black or w.

††5. S. auriculatum Ait.

Subarborescent erect stragglingly fork-branched stellato-tomentose; l. large elliptic or ovate-oblong acuminate attenuate at the base into the petiole floccoso-woolly glabrescent, petioles pseudo-stipulate at the base in the young shoots by the development of axillary auriculiform ultimately abortive or evanescent and caducous l.; cymes stalked 2-3-chotomous at first terminal congested, presently lateral spreading broad ample; fl. and fr. subsessile on short thick pedicels or shortly pedicelled, erect; fl. v.-blue; berries at first floccoso-furfuraceous, finally glabrescent dull ochraceous or miniaceous globose 4-6 lines in diam.—Ait. Hort. Kew. i. (ed 1) 249, (ed. 2) 396; Lam. ii. no. 2307, Dict. iv. 270; Pers. i. 221; Dun. Hist. Sol. 166; Spr. i. 682; DC. xiii. 1. 115.—Subarb. per. Mad. reg. 1, r. Here and there in vineyards and gardens above Funchal chiefly along the Levada de São Luzia below the Palmeira growing spontaneously; perfectly naturalized on the sea-cliffs about a mile out of Funchal to the eastward beyond the 1st ravine of the Louros or Lazaretto. Fl. and fr. at all seasons.—A somewhat stragglingly or remotely and flauntingly subdichotomously branched small tr. or shr. 6-12 ft. high, the st. 2-3 in. in diam., branches as thick as the little finger, somewhat brittle, leafy w. and woolly upwards, velvety and dull olive-gr. downwards, naked woody and pale ash-col. like the st. below. Foliage large and handsome somewhat dull but not distinctly hoary gr. Petioles 1-2 in. long. L. 6-18 in. long, 3-6 in. wide, thickish and softly velvety, very flaccid and fast withering, dull greyish-gr., thinly stellato-velvety or subglabrescent and minutely (through the lens) shagreened or postulate above, distinctly paler or whilst young whitish and densely stellato-tomentose beneath;
the edges quite even and entire. Young shoots, petioles, ped.,
pedic. and cal. more loosely furry tomentose. Petioles stout
apparently auriculato-stipulate at their base by the develop­
ment of two oval or rounded wavy small evanescent and pre­
sently caducous l. from their axillary buds, which prove-them­
selves however to be ultimately quite abortive, drying up and
withering away. Ped. of cymes stout erect 3 or 4 in. long.
Cymes at first densely compact subhemispherical, then spread­
ing fastigiate dichotomously branched, branches short thick
ending in short rac. of handsome subsessile full v.-blue scent­
less fl. 8-10 lines in diam. Cal. densely woolly and w. like the
branches and short thick pedic., lobes elliptic-ovate. Cor.
stellato-pubescent and hoary outside, lobes broadly ovate-acute
spreading or subreflexed, each with a w. streak or ray at its
base forming a 5-rayed star in the fl. Anth. oblong bright
chrome-y. Style filiform, stigma gr. Berries the size of a
small marble or cherry, always stiffly erect, whilst young flocc­
oso-tomentose, finally glabrescent and in Mad. always of a
pale dull watery (sometimes greenish) ochre-y., very juicy and
much devoured by birds. Hence its rapid diffusion since 1833,
when it was first raised by myself from dried berries (of a full
bright red-lead colour!) received from Rio de Janeiro, though
the sp. is said to be originally from Madagascar and the Mau­
ritius.

§ 4. Sodomela Lowe. Shr. or suffrutescent more or less
spinose. Pubescence stellate. L. repandly sinuate or
sinuato-pinnatifid. Cymes or rac. few-fld. Fl. middle-
sized (as in S. tuberosum L.) v.-blue or lilac. Berries
globose pyriform or ovoidal, size of a small apple, crab
or wallnut, ½-1 in. in diam., dry, with a hard tough
coriaceous skin or rind, y. or or.

†6. S. SODEMEUM L.

Suffrutescose leafy full or dark shining gr. spinose; branches
hard woody round, whilst young shining as if varnished and
dark purplish or blackish above; l. sinuato-pinnati-lobate with
broad dilated rounded often 3-lobed lobes and wide rounded
sinuses sparsely y.-spinose on both sides, smooth or glabrescent
and shining above, thinly stellato-puberulous beneath, ciliato-
pubescent at the edges; ped. supraaxillary short 2-6- (often
2-)fld., fl. racemose v.-blue or lilac the lowest remote; pedic.
exarticulate erect; fr. drooping hard globose about 1 in. in
diam. pale y.—Linn. Sp. 268; Lam. Ill. no. 2358, t. 115. f. 1;
Poir. in Lam. Dict. iv. 298; Broth. i. 283; Pers. i. 227; Ait.
Hort. Kew. (ed. 2) i. 403; Fl. Gr. t. 235 (fl. rose-lilac!);
Spr. i. 688; Gren. et Godr. ii. 544; Willk. et Lange ii. 524. S.
Sodomeum a et β Dun. in DC. xiii. 1. 366. S. Hermanni Dun.
Hist. Sol. 212, t. 2, B (fr.); ejusd. Syn. 39. *S. pomiferum* foliis Quercis utrinque spinosis, flore Borraginis Moris. Hist. iii. 521, § 13. t. 1. f. 15.—Shr. per. Mad. reg. 1, §. Roadsides, waste ground, especially at the back of the beach towards Fort St Iago, and about ruined walls or houses in and near Funchal but scarcely above the Levada de Sma Luzia. At most seasons but chiefly July–Dec.—A low erect bushy leafy shr. 1–3 ft. high, with mostly straggling or diffusely spreading or ascending somewhat flexuous stiff and rigid rounded, whilst young shining full dark gr. or purplish-v., when old pale ash-coloured branches, and copious spinose oak-leaf-like full or dark gr. shining handsome foliage. All parts of the pl. spinose; spines straight dilated and compressed at the base, yellowish or pale fawn-coloured; those on the l. scattered and much longer than those of the st., petioles and cal. Petioles short 2 or 3–9 lines long. L. 2–4 in. long, 1½–3 broad, with broad widely rounded entire sinuses and remote bluntly 3-lobed lobes; sprinkled thinly with stellate hairs (like the young shoots, petioles, ped., pedic. and cal.) whilst young, presently glabrescent. Ped. ½–1 in. long, mostly 2–5-fld., with a separate single longer-pedicelled fructiferous fl. at its base, the rest mostly non-productive; ped. erecto-patent, pedic. reflexed, the latter in the fr.-bearing fl. with the cal. closely spinose, in the barren nearly or quite unarmed, all stellato-furfuraceous. Fl. about 9 lines in diam. fine v.-blue or lilac. Cal. small, in the fr.-bearing fl. thickly, in the upper barren fl. sparingly or not at all spinose; lobes ovato-lanceolate. Cor. plicate, stellato-patent, lobes outside stellato-pubescent. Anth. equal oblong full bright chrome-y. Fr. drooping large conspicuous, the size of a crab-apple or rose-apple, whilst immature dark gr. marbled or mottled at top with diffused milky blotches, streaks or veins; when ripe lemon- passing into chrome-y., subunilocular juiceless and dry within and bitter-tasted; whence supposed to be those apples of the Dead Sea, fair to the eye, but filled with only dust and bitterness*; skin smooth shining coriaceous not fleshy; seeds compressed, oval-oblong 3–4 mill. long 2–3 broad, shining pale or dark coffee-brown or tawny, finely reticulato-granulate or shagreened, very narrowly limbate.—The tempting-looking fr. is often infested with *larvae*, eating out all its contents and leaving only literally “dust and ashes” under its persistent golden fair outside.

* “The fruitage fair to sight like that which grew Near that bituminous lake where Sodom flam’d.”

**MILT. PAR. LOST, X. vv. 561, 562.**


Root-fibres tuberiferous; st. herbaceous succulent branched leafy erect or ascending strongly angular and denticulately winged; l. odd-pinnatisect, lfts. oblong-ovate entire veiny-rugose strigulose subsimple pubescent, dull or dark gr. unequal, 3–5 pair larger petiolulate, intermediate minute sessile; cymes many-fl. on long erecto-patent supraaxillary ped.; pedic. articulate above the middle, ebracteate, erect in fl., reflexed in fr.; fl. erect umbellate rather large lilac-b. or w., cal.-lobes linear-lanceolate narrow subelongate; berries drooping \( \frac{1}{2} - \frac{3}{4} \) in. in diam. globose or rarely subobovoidal, smooth pale dull gr. or yellowish, sometimes subviolasc. — Linn. Sp. 265; Vill. Dauph. ii. 495; Lam. Ill. no. 2328; Poir. in Lam. Dict. iv. 285; Desf. i. 193; Brot. i. 182; Pers. i. 226; Dun. Hist. Sol. 135; Ait. Hort. Kew. i. 399; Spr. i. 677; Koch 584; Dun. in DC. xiii. 1. 31; Gren. et Godr. ii. 544; Willk. et Lange ii. 525. *Battata virginiana* &c. Ger. Herb. 781. *Sol. tuberosum esculentum* &c. Moris. Hist. 522, § 13. t. 1. f. 19. Herb. ann. Mad. reg. 1–3, cultiv. ccc; PS. reg. 1, 2, cult. c; GD. reg. 2, cult. rrr. Growing as a crop everywhere in Mad. from the sea-beach up nearly to the highest elevations (6000 ft.) and here and there coming up spontaneously as a straggler from cult. Not introduced into PS. (as I was assured in 1828 by the then governor of that island) earlier than 1820–1825. At all seasons, according to elevation or supply of water.—Fl. with usually a peculiar heavy fetid smell. St. thick juicy tender hollow angular 1–2 ft. high. L. large about 9 in. long, petiolate; the terminal lft. 3–4 in. long and 2–3 broad, the lateral pairs narrower and gradually smaller downwards, all paler or sometimes albescent beneath. Ped. pedic. and cal. strigulose pilose. Fl. rather handsome and conspicuous. Berries when dead-ripe slightly fragrant like Lilac-fl. or Primroses, sometimes in England used for pickling; the vinegar neutralizing their deleterious narcotic property, if any. The tubers in Mad. are almost uniformly of excellent quality and form a large proportion of the food of the whole population.

The so-called Potato-disease affected Mad. about 25 years ago simultaneously and to a like calamitous extent as it did England, Ireland, &c.; causing great distress at first, but re-
lied by the provident introduction at the moment and ex-
tended cultivation of the Demerara Batata \((B. \text{edulis} \text{ (Thunb.) subvar.})\). The disease has now however (1871) almost wholly disappeared.

*S. insigne* Lowe in Journ. Hort. Soc. i. 178 (Lond. 1867), introduced by myself about 10 years ago from the Canary Islands, but doubtless of South-American origin, occurs already not unfrequently in cottage gardens. It is a small shr. or arbo-
rescent shr. about the size of *Brugmansia suaveolens* (Willd.), with handsome shining foliage (the young I. claret-coloured), moderately large very fragrant pale pinkish-w. or blush-w. fl. in short drooping compound rac. or racemose forked cymes and fine orange-coloured fr. (single or several in each racemose cyme), in Tenerife the size and shape of a hen's egg, but in Mad. smaller narrower and more pointed at each end, said to be eatable raw and serviceable in cookery like Tomatos (*Lycopersicum esculentum* L.). Its diagnosis is as follows:—

§ *Melongena* Dun.


Rank-smelling subviscid subglandularly hispid-villous; I. hispidly pubescent or strigulose odd-pinnatisect, Ifts. oblongo-
ovate irregularly inciso-toothed veiny-rugose very unequal at the base, 3 or 4 pair larger petiolate, the intermediate minute cyme articulate at or above the middle, ebracteate; rac. and fl. sub-
utant; berries drooping opake, scarlet, red or y.—*L. esculentum* and *L. pyriforme* Spr. i. 677. *L. Humboldtii, pyriforme, cerasi-
forme* and *esculentum* Dun.—Herb. ann. Mad. reg. 1, 2, ce; ND. §. Varr.:—

LYCOPERSCIUM.

copersicum \( \beta \) Linn. Sp. Pl. (ed. 1) 185, (ed. 2) 265; Poir. in Lam. Dict. iv. 287. S. pseudo-copersicum Jacq. H. Vind. i. 4, t. 11; Willd. Sp. Pl. i. 1034; Pers. i. 226.—In beds of ravines, waste ground, vineyards, gardens &c. or on rocks and walls, both cult. and growing spontaneously everywhere below 2000 ft. about Funchal and other towns or villages in Mad. Not noted but doubtless similarly existing in PS. Completely naturalized on the central rocky crest of ND. It has been found also in the Great Salvage by St. C. C. de Noronha; and in the interior of St. Iago, one of the Cape Verdes, between the Ribeira dos Picos and the Boa Entrada of Sta. Catarina, I found it mixed with Momordica charantia L., overspreading in vast tangled beds or masses whole miles of mountain tracts at an elevation of 3000-4000 ft. above the sea. Throughout the year, and thus especially useful in winter and spring when it is wanting.—St. gr. succulent yet hard or firm and stiff, 2-4 ft. long, loosely straggling, diffuse or decumbent, rounded or sometimes angular. Foliage harsh very flaccid and fast withering. L. 6-8 in. long; lfts. about 2 in. long and 1 broad, full or dark gr., sometimes pinnatifid or even pinnatisect and whitish or glaucous-cent beneath. Hairs of st. and petioles stiffish pellucid shining horizontally patent, a few bulboso- or capitato-glandular. Rac. 5-7-fld.; ped. and rachis round firm stiff straight, each 1-2 in. long; pedic. round slender 4-9 lines long or more, ebracteately articulate mostly much above the middle, the lower part stiffly divericate and the short upper thickened and geniculately refracted in fr. Cal. divided nearly to the base into 5 linear-longate obtuse hairy lobes 3 lines long, or about half the length of cor.-lobes, loosely patent or reflexed in fr. Cor. deeply stellate lemon-\( y \), nearly 1 in. in diam. from point to point, scentless. Anth. \( y \) united at top into a short open- (obtusely 10-crenate-) mouthed tube level or nearly so with the gr. subcapitate or clavate stigma. Berry completely 2-celled, each cell partially subdivided by an incomplete flat axile septum; smooth shining 6-9 lines in diam., juicy acidulous with a nauseous vapid taste, but excellent and much employed in cookery. Seeds numerous compressed suborbicular shining ochre-\( y \), mucilaginous smooth and surrounded by a gelatinous (when dry membranous and subpellucid) smooth brighter \( y \), distinct rim or border, reminding one of Spergularia fallax Lowe; the body of the seed when dry naked and minutely shagreened or papilloso-punctulate in the middle, finely and closely radiato-striolate, with closely depressed hairs gradually longer towards the margin and so forming a sort of fine fringe at the inner edge of the smooth and even limb or border.—Doubtless the original stock of the sp. The fr. varies much in size and colour.

\( \beta \) pyriforme; Tomate Cabaca; fr. evenly obovate or shortly
pear- or bottle-gourd-shaped, "red or y."—*L. pyriforme* Dun. Hist. Sol. 112, t. 26; DC. xiii. 1. 26. *Sol. pomiferum* "Cav. Descr. 112;" Pers. i. 226.—Rarely cult. in Mad. and not observed in the Canaries or Cape Verdes. According to Dunal himself in DC. l. c., not differing from *a* except in shape of fr.

*y. esculentum*; rac. often bifid; fl. polymerous; fr. depressospheroidal torulose sulcate multilocular.—*L. esculentum* "Mill. Dict. no. 2;" Dun. Hist. Sol. 113, t. 3, C; Seub. Fl. Az. 38; Coss. et Germ. 274; DC. xiii. 26; Willk. et Lange ii. 524. *Sol. hycopersicum* Linn. Sp. (ed. 1) 185, (ed. 2) 265 (excl. var. \(\beta\)); Lam. Ill. no. 2330, t. 115. f. 2; Poir. in Lam. Dict. iv. 287 (excl. var. \(\beta\)); Desf. i. 194; Brot. i. 182; Pers. i. 226; Ait. H. K. i. 399. *Poma amoris* Ger. Herb. 275. *Solanum pomiferum fructu rotundo* &c. Moris. Hist. iii. 520, § 13. t. 1. f. 7.—In Mad. as in the Canaries and Cape Verdes, cult. only in gardens or vineyards. About Funchal &c. frequent, but only in summer and autumn.

Whole aspect, foliage, &c. exactly as in *a*, but perhaps somewhat more robust and dwarfed in habit, with stouter or more succulent less elongated st. or branches. Fl. the same in form, size and colour, but cal. 6–20-partite, cor. 6–15-lobed or stellate, anth. 6–15 polyadelphous and "style multifid." Fr. orbicular deeply depressed or umbilicate, the diam. far exceeding the axis, grooved or torulose like a melon or pumpkin or Pitanga, 1½–3 or even 4 in. in diam., blood-red or scarlet, rarely y., more rarely ivory- or pale greenish-w., many-celled, somewhat more firm and fleshy or less juicy than in *a*; excellent sliced raw in vinegar as a salad, or stewed whole as a vegetable &c.

Though regularly propagated by seed in gardens, this seems to be nothing but a form or race with monstrous fl. and fr. of *a*, differing in nothing whatever, so far as I can discover and as Dunal indeed confesses in DC. l. c., but the irregularly polymerous fl. and fr. (formed from the combination and partial suppression as it were at once of several (2–5) fl. and ovaries into one) and the perhaps somewhat more succulent and robust st. and habit. Nor have I ever once seen it either in Mad., the Canaries or Cape Verdes growing spontaneously (wild or naturalized) like *a*, out of gardens, in which, along with *a*, it is in Mad. regularly raised from seed. Whether its seeds however, when not growing under cultivation, really revert to *a*, I have not ascertained. It would be an experiment well worth making.
4. **Normania Lowe.**

1. **N. triphylla** (Lowe).

   Herb. ann. scentless subtomentoso-pubescent glandular-viscous; st. branched from the base erect stiff firm fistulous angular submarginate; 1. petiolate ternatisect trifoliolate, terminal lft. petiolulate large ovate acute equal and often subcordate at the base, obsolescent and subrependly (rarely sharply) toothed or entire, the 2 lateral subsessile smaller more oblong and entire, very unequal at the base; a few of the lower 1. 5-foliolate, of the upper 1-foliolate simple; rac. 5-10-fl. axillary or nearly so (at first terminal) erect more or less distinctly stalked, in fl. scorpioidally congested or corymbose, in fr. elongate; fl. and fr. drooping unilateral; ped. in fr. erecto-patent, pedic. strongly refracted and with the rachis and ped. wholly ebracteate and inarticulate; berry the size of a small cherry, depresso-globose smooth even orange or dull deep blood-red (croceo-rubescent or atro-sanguineum) more or less concealed by the much enlarged and leafy open cal. with loosely erect or spreading leaf-like ovate-acute lobes. — *Nycterium triphyllum* Lowe Novit. 15 or 537. *Solanum trisectum* Dun. in DC. xiii. 36. *Sol. Nava* Reichenb. in WB. iii. 123, t. 174; Dun. l. c. 37 (status suffrutescens)? — Herb. ann. Mad. reg. 2, 3, rr. "S. Vicente below the Gingeiras, on the roadside to the Paul," not above cultivation, at a height of "about 1000 ft., July 1837," Dr. C. Lemann; "above P° da Cruz, along the Levada dos Lamaceiros a little beyond the Rocha Furada," Dr. Lippold; in the Cerca at S. Antonio da Serra; about a mile down the Voltas descending from the Cruzinhos to Seixal in a place amongst the forest or thick native brushwood lately cleared by fire. June-Sept. —

   In habit or aspect, foliage and fl. fallaciously like the common Potato (*Solanum tuberosum* L.), but truly differing in its real affinities and characters; altogether herbaceous and ann. Root fibrous, peculiarly small proportionately, with few short stiff pale or whitish subdivisions, not stoloniferous or tuberiferous. Whole pl. very viscid, with rather dark or dull gr. foliage, 1½—2 or 3 ft. high. Branches straight or slightly flexuous, at first succulent, but presently hard stout and rigid, subtriangular and downwards slightly winged or marginate, remarkably fistulose, clothed like the petioles, ped., rachises, pedic. and cal. with dark greenish or tawny brown soft simple glandular-viscid spreading furry crisped or somewhat woolly hairs. L. soft and flaccid more shortly or finely adpresso-pubescent or velvety, much as in *Physalis peruviana* L.; petioles 1 in. long; lfts. all (except a few 1-foliolate of the uppermost, and 5-foliolate of the lower) ternate; terminal lft. 2-3 in. long, 1½—2 in. broad; the 2 lateral opposite, 1½ in. long, ¾ in. broad, very unequal
and conspicuously cut away at their base quite to their midrib on their upper or outer side, very variably toothed, mostly sub-entire. Cymes simple stalked ebracteate, in fl. scorioidally corymbose abbreviate, in fr. elongato-racemose 2-4 in. long (including the ped.) or about the length of the 1. Pedic. in fr. about \( \frac{1}{2} \) in. long. Fl. handsome and conspicuous, much like those of the Potato (\textit{Sol. tuberosum} L.), but rather smaller, pale v.-blue or lilac, scentless. Cor. openly and widely rotato-campanulate, shortly 5-lobed or 5-angular, the size and shape of that of \textit{Physalis peruviana} L., dull greyish lavender-b. or lilac, dark or blackish in the eye or centre; the tips of the lobes ciliato-pubescent outside. Cal.-lobes adpressed to cor. ovato-lanceolate or lanceolate-acute, half the length of cor., much enlarged and leafy in fr. but open or only partially concealing the, shining smooth even dull dark red or or.-red berry which is 4 or 5 lines in diam. Anth. dark or blackish, all bursting by a longitudinal slit downwards from the top, the 2 or 3 lower 3 or 4 times the length of the upper, curved or subarcuate and with a short lobe, horn, or spur on one side near the base; all from the first distinct and separate; their 2 cells tumid downwards. Fil. short simple united at the base into a narrow ring. Style simple slender filiform subelongate ascending; stigma small indistinctly subclavato-capitate subbilobed. Seeds about 20, rather large i. e. 3-4 mill. long, \( 2\frac{1}{4} \) -3 broad, flat oblong-reniform, coarsely granulate or punctate, smooth.

Dr. Lemann's S. Vicente roadside specimen from the Gingeiras in my Herb. is a state or form, from a less shady lower situation, with stiffer smaller more sharply and distinctly toothed 1. than in the usual sylvan states of the pl. in higher and more shady spots. This probably helped to induce Webb and Reichenbach to regard the Can. pl., which agrees in foliage more closely with the normal Mad. sylvan form, as a distinct sp. (see WB. l. c. line 4 from bottom of page 123).

With the habit and aspect of \textit{Solanum tuberosum} L. and coming near to \textit{Lycopersicum}, this very curious and interesting plant has the racemose inflorescence of \textit{Pionandra} or \textit{Cyphomandra}, the leafy cal. of \textit{Atropa} or \textit{Triguera}, the angular cor. of \textit{Physalis} or \textit{Triguera}, and the many-seeded juicy berry of a \textit{Solanum}. It comes nearest (Mr. Miers thinks almost too near) to \textit{Triguera} Cav.; but differs in its free distinct mostly and always finally unequal not included stamens and anth., the latter not connivent or coherent into a cone and some mostly elongato-arcuate (with the cells turgid
downwards) and often with a spur-like lobe or horn at their base; in the many-fld. rac., secund inarticulate ebracteate pedic. (devoid of cup-shaped or any sort of br.), pulpy and juicy many-seeded fr., and heteromorphous (partly 3–5-pinnatisept) and altogether viscoso-tomentoso-pubescent foliage, st., &c. It is also strictly Macaronesian, not Gerontogean; Triqueria being apparently confined to Spain, and neither the Mad. nor Can. groups possessing indigenously any others of the specially characteristic pl. of that part of the continent, or vice versa.

Nycterium Vent., founded solely on the inequality of the stam. and anth., has been lately universally abandoned. It is indeed a wholly artificial group of pl. belonging truly to Solanum. Thus the Mad. pl., referred by me 40 years ago to Nycterium Vent., as then its nearest known related group, and subsequently to Solanum by Dunal, becomes open to commemorate the many valuable botanical discoveries effected by Commander Norman R.N. in Mad.

The Canarian Solanum Nava Reichenb. in WB. iii. 123, t. 174; DC. xiii. 37, is probably a mere suffrutescent form or state of the usual sylvan form of the Mad. pl., from which it differs in nothing I can find but its elongated sarmentose "woody" or suffrutescent branches, its bifid cymes or rac., and simple 1-foliolate l. As to this last point however, Webb's or Bourgeau's specs. in BH., like his figure t. 174, exhibit merely the upper ends of branches, wanting entirely the lower l. And so indeed the late Dr. Lemann's Can. spec. from Despreaux (Webb's collector), and sent by him as "Solanum nova sp.," was considered by Lemann in litt. at the time (1837) to be perfectly "identical" and "not to differ in the least from" his original herbaceous ternatisect-leaved specs. of the Mad. pl.
Tribe II. Physalideæ.

††5. Physalis L.

§ 1. Eurystorrhiza Don; herbaceous, root strong per., st. sometimes suffrutescent or persistent at the base. Cal. even in bud large conspicuous.

* Pubescence simple not stellate.


Per.; pale greyish gr. or hoary softly villosos-pubescent or velvety-pilose erectly fork-branched, branches stiff angular-sulcate; l. stalked acuminate-cordate entire or here and there repandly sinuato-dentate, softly velvety and flaccid; fl. erect shortly pedicelled; cor. ochraceous-y. with 5 black central spots; anth. v.; cal. in fr. obsolescetly 5-angular obturbinately globose pale ochraceous or straw-coloured; berry y.—Linn. Sp. (App.) ii. 1670; Lam. Dict. ii. 101; Pers. i. 22; Ait. H. K. i. 394; Dun. in DC. xiii. 1. 440; Miers Illustr. ii. t. 39, C; Griseb. W. I. Fl. 435; Willkr. et Lange ii. 529. P. edulis Sims in BM. t. 1068. Herschelia edulis Bowd. Exc. Mad. 34, 35. P. puhevens Buch i. 193. no. 188; Spr. i. 698; Holl's List in Hook. J. of Bot. i. 20; Seub. Fl. Az. 38; Wats. in Godm. Az. 198 (no; Linn.). Solanum vesicarium radice crassa Mexicanum &c. Moris. Hist. iii. 526, § 13. t. 3. f. 17.—Herb. per. Mad. reg. 1-3, formerly (1826-1850) ccc; now (1850-1871) e; not seen in PS. or the Desertas, nor received from the Salvages. Growing out of walls and rocks in dry sunny places, beds of ravines, rocky banks &c. about Funchal &c. everywhere formerly, but now (1871) become almost rare! All the year round, but in fr. chiefly July–Sept.—Root or root-stock strong per. pale or whitish; st. ann. Pl. 1-2 ft. high leafy more or less silvery-greyish gr., sometimes slightly viscid but hairs or pubescence simple furry; suffrutescent downwards. Petioles slender ½-1 in. long; l. 1½-3 in. long, 1-2½ in. wide, the edges wavy and mostly repandly 1 or 2-toothed on each side. Fl. mostly solitary and axillary rarely binate; pedic. erect in fl.; drooping or reflexed in fr. 3 or 4 lines long slender. Sep. in all stages very acute. Cor. 6-9 lines in diam. shallowly but acutely 5-angularly plicate shortly ciliato-pubescent at the edges and all over pubescent outside, ochre-y. with 5 large square coal-black spots or dashes in the middle which are ciliate as it were, or fringed at their edges. Anth. large erect shortly oblong, 2 lines long, 1 line broad, at first connivent, then altogether free and separate, exserted just out of the throat which is closed with a ring of dense inflexed yellowish silky hairs; before bursting square
strongly bilobed pale shining steelly b.; after bursting oblong, twice as long as broad, dark v.; rising out of the throat and bursting longitudinally from top to bottom in succession, one at a time. Pollen greyish w. Fil. round not dilated at the base, smooth shining v., at first shorter, afterwards a little longer than the anth. Style smooth shining v., a little longer than the stam.; stigma gr. abruptly depresso-capitate bilobed, lobes not decurrent. Ov. smooth pale or whitish, obsolete 2 or 4-lobed, obtusely 10-angular or sulcate downwards and immersed at the base in a waxy-y. fleshy cup-shaped ring or nectary, 2-celled many-seeded. Cal. in fr. much enlarged and globose inflated, bladdery, reticulated, scarcely or not prominently 5-angular, closely contracted at the mouth and apiculate, at first pale gr., then dry and pale or whitish straw-colour. Fr. or berry globose smooth shining full bright deep lemon-y., the size of a cherry or marble i.e. 6-8 lines in diam., loosely but completely enclosed within the bladdery cal. Seeds flat imbedded in a gratefully acidulous juicy pulp, very cooling and acceptable to a weary wanderer in hot summer weather.

The fr. is deservedly much esteemed for tarts, preserves &c.; and formerly (1826-1830) was so abundant that it was usually sold in the husk or calyx in July and August at 5d. per bushel. At present the pl. has become so scarce that the same quantity, if at all procurable, would be worth at least five times that price. As a preserve it is remarkable for its viscous or glutinous substance, rich deep golden colour and peculiar quite sui generis flavour.

In 1826, I was told by many old people in the north of the island that they remembered its being quite a scarce pl. It has now returned to that condition everywhere. In 1826 I found it universally abundant. It began to fall off in prevalence from 1840 onwards to the present time.

I cannot find the slightest ground for separating this pl. into dentate- or entire- or small- or large-leaved varr. a, β, γ, δ, as by Dunal in DC. l. c. All these states or stages may be often observed in the selfsame individual pl.
Arboreous or arborescent copiously leafy; branches round straight stiff subvirgate striolate shining even smooth pale ash-coloured, the upper arcuately subdeclining; l. solitary shortly stalked subcartilagino- or chartoeco-membranous, lanceolate or lanceolate-oblong acuminate subundulate entire, subcarinate and recurvedly spreading or drooping, smooth shining dark gr. with paler nerves and midrib; fl. pale yellowish gr., opening and fragrant at night, sessile in short axillary erect shortly stalked leafy-bracteate fasciculato-capitate interrupted spikes much shorter than the l.; cal. short obsoletely or obscurely toothed, the teeth or lobes indistinct abbreviate subobtuse and like the tube, bracts, rachis or whole spike more or less rusty-tomentulose; cor.-tube linear cylindric slender filliform, lobes erect with inflexed margins by day, reflexed with margins revolute by night; anth. subsessile, their fil. edentate attached to cor.-tube nearly to their top; fr. . . . —Linn. Mant. alt. 206; Murr. Linn. Syst. Veg. (ed. 13) 190; Murr. Comm. Nov. Gott. v. 41, t. 8; Hérin. Stirp. 72; Pers. i. 290; Jacq. Hort. Schönbr. iii. 43, t. 328; Willd. Sp. i. 1055; Spr. i. 673; Dun. in DC. xiii. 1. 661; Griseb. W. I. Fl. 443. C. jamaicense Lam. Diet. i. 687 (excl. β). "C. confertum Mill. Dict. no. 5." C. nocturnum β. pubescens and C. Bella-sombra Dun. in DC. 1. c. 632. Ixora alternifolia &c. Jacq. Amer. 16, t. 177. f. 8.—Small tr. or arborescent shr. per. evergreen Mad. reg. 1, s. In and about Funchal, Machico, &c. June—Sept.—A tr. 20—30 ft. high normally, with a bushy head and distinct trunk as thick as a man’s leg or thigh, but mostly in Mad. lopped and cut back into a shr. 10—15 ft. high, and so used as a fence or screen in gardens, growing readily and rapidly from slips or branches, and when lopped or cut, throwing out strong vigorous rank stout elongated straight or virgate large-leaved rapid-growing shoots. Whole pl. smooth except the cymes and buds or quite young tips of the shoots and petioles, which are clothed with a pale rust-coloured short close furry tomentum. St. and older branches with a pale ash-coloured smooth and even bark, the latter subfragile woody evenly rounded, stiffly straight subvirgate shining-whitish or olive-grey finely striolate and lenticelled; the uppermost with subdistichous (at first straight, then) slightly arcuato-declining side branchlets, their l. smaller (1½—2½ in. long) narrower and more strongly recurved and cari-
nate or subconduplicate like those of a Peach- or Almond-tr. \( (Amygdalus\ persica\) or \(A.\ communis\) L.) than on the rest of the tr. Whole pl. strongly and rankly fetid like Elder \( (Sambucus\ nigra\) L.) when cut, bruised or broken, and rank or coarse in habit, growth and foliage; its ready, vigorous and rapid growth from slips or branches accounting doubtless for its long-continued preservation in Mad. rather than the fine nocturnal fragrance of its otherwise unattractive fl. Petioles short 4-6 lines long, light gr., channelled above, whilst young furfuraceo-puberulous or mealy-tomentulose. L. dark shining gr. above, paler but full shining gr. beneath, membranous and fast withering, yet stiffer or chartaceous but not at all coriaceous, lanceolate-oblong or oblong-lanceolate acuminate, subobtuse or subacute and mostly equal at the base, widely channelled or subconduplicate, the 2 sides rising at an angle from the midrib all their length above, carinate beneath, their upper half recurved; 3-7 in. long, 1-2\(\frac{1}{2}\) in. broad, the midrib and simple equidistant and parallel primary side-nerves pale or light gr., impressed above, prominent beneath, the nerves arcuatly ascending, 7 or 8 in the smaller upper l., 12 or 13 in the larger, on each side the midrib. Petioles of the young fresh-growing shoots or branches mostly pseudo-stipulate by the premature development of two minute l. from their axillary buds; but these very soon fall off. Fl. small inconspicuous very numerous pale yellowish gr., nearly or quite scentless by day but deliciously fragrant at night from sunset to sunrise, in lateral axillary short erect leafy-bracteate shortly stalked subcorymbose or fastigiato-capitate interrupted spikes mostly about half the length of the l. or (with their ped.) 1-2 in. long, never longer than the l.; each terminating in a sort of condensed umbel, head or fascicle of crowded aggregate agglomerate cymules or of congested single sessile fl., with 2 or 3 detached scattered solitary or binate sessile fl. below down the ped. or rachis, each like the terminal head or tuft subtended by a small lanceolate deciduous gr. leafy br. These spikes are sometimes slightly compound or paniculato-corymbose branched, and sometimes reduced to small sessile fascicles of few or 2 or 3 or even single solitary fl., towards or at the ends of the branches or on the short side-spurs or knobs or leafy branchlets on the old wood below the l. Fl. in bud at first shortly ovoidal-oblong truncate and often blackish, tipped with w. tomentum, before the cor. appears; the latter before expansion of the limb slenderly subclavate. Fl. all nearly or quite sessile, articulated on the rachis, with either a single petiolate gr. leafy lanceolate br., or one or more sessile rusty-tomentulose membranous minute scale-like close-pressed inconspicuous ovate or ovato-lanceolate caducous bractlets at their base. Ped., rachis, bractlets and cal. more or less furfuraceo-puberulous or mealy-tomentulose pale rusty, the
ped. and cal. becoming gr. as the fl. advance. Cal. shortly tubular-cylindric or shallow tumbler-shaped, neither attenuate at the base nor stipitate, 2 lines long, 1 broad, tomentulose or mealy-puberulous, herbaceous somewhat fleshy full gr. often speckled or tinged with blackish purple on the upperside, obsoletely or shallowly and bluntly erosulo-5-4-toothed or crenulate, the teeth woolly at the edges. Cor. (including the limb) 5 or 6 times the length of the cal., entirely smooth, yellowish gr. outside sometimes speckled or tinged on the upperside with blackish purple, hypocrateriform; tube long slender filiform-cylindric scarcely at all infundibuliform or clavate but with a slight strumous swelling at top (corresponding with the position of the anth.) and a constriction close above it at the base of the limb; 8 lines long from base of cal., \( \frac{2}{3} - 1 \) line broad at top of cal. and 1-1\( \frac{1}{3} \) broad at its swollen part at top; limb 5-partite or now and then cruciately 4-partite, lobes when flatly or horizontally expanded obtuse or subobtuse oval or broadly ovate, appearing acute and narrow-linear i.e. half a line broad only from the inflexion or reflexion of their margins, 2\( \frac{1}{2} - 3 \) lines long, 1\( \frac{1}{4} - 1\frac{1}{2} \) broad, erect and closed by day, reflexed by night; each lobe bisulcate inside, bicarinate outside, with broad pale gr. margins which are inflexed by day, spreading or revolute by night, very finely and minutely velvety-pubescent and tomentuloso-ciliolate, the whole inside of cor. otherwise smooth and pale whitish gr. or greenish primrose-colour; diam. of expanded limb \( \frac{1}{2} \) in. Stam. included in tube, the anth. reaching to its top or edge of mouth and very nearly sessile on its sides, small subglobosely oval or ovate, erect, at first ochraceous-y., then Indian-red or brown, their fil. slender filiform and entirely smooth throughout; pale, adnate to cor.-tube very nearly or almost quite their whole length, without the least trace of a tooth at the origin of their very short free part at top or anywhere; pollen greyish w. Stigma full gr. clavato-capitate bilobed by a transverse groove, just overtopping the anth.; style smooth pale filiform. Ov. smooth ovoidal like an acorn, blunt, obsoletely 4 or 5-lobed at top, 2-celled, many-seeded, the upper half black or atro-purpureous, the lower gr. and adherent to the cal.-tube; hypogynous ring or nectary halfway down the ov. indistinct and obsolete, obscurely tumid and crenulate. Fr. never produced in Mad., the whole fl. falling off with ov. and cal.; but described by Grisebach I. c. as "ovoid, blue," shortly tapering at the base, and by Lam. I. c. as "a berry of the shape but half the size of an olive, nearly black with blackish-violet juice, containing in two distinct cells about 4 large oblong seeds."

This differs from C. nocturnum L. in its shortly peduncled short spike-like contracted or condensed abbreviate cymes.
almost always shorter and never longer than the 1., spicato-
corymbose fasciculato-capitate interruptedly crowded or con-
gested sessile fl. with a cylindric-filiform cor.-tube, very short
edentate fil., and indistinctly, obsolescently or confusedly toothed
always more or less rusty-tomentulose cal.

There can, however, be scarcely any reasonable doubt of some
perhaps peculiar or abnormal spec. of this Mad. pl. having been
the types of Dunal's *C. nocturnum* β. *pubescens* and *C. Bella-
sombra*; no other sp. of the genus except the above having
been seen in the island by any other botanist till within the
last 8 or 10 years, during which *C. fastigiatum* Jacq., *C. auranti-
tiacum* Lindl. and a 3rd (*C. Parqui* Hérit. ?) equally different
from *C. vespertinum* L. have been introduced into a few gardens.

At the same time, it should be remarked, that Grisebach in
W. I. Fl. p. 444 refers *C. Bella-sombra* Dun. along with *C. me-
galophyllum* Dun. to *C. macrophyllum* Vent.; an association
which does not seem however at all warranted by the descrip-
tions in DC. at least of the 3 pl.

There is no *Cestrum*, or any other pl. at all, called "*Bella-
sombra"* in Mad., where the present pl. is known solely and
universally by the name of *Boas* (or sometimes *Bellas*) Noites.
The name of *Bella Sombra* on the other hand, in all Spain and
Portugal, as also, if I remember right, in the Canaries, is ex-
clusively and constantly applied to *Phytolacca* (*Pircunia* Moq.
in DC.) *dioica* L.; a tr. planted everywhere about towns &c.
(Lisbon, Madrid, Cadiz, Seville, Gibraltar &c.) in the public
walks (Pracas or Alamedas) on account of its close thick shade.

There is a considerable resemblance both in the aspect and
fragrance of the fl. between the present pl. and certain sp. of
*Daphne*. Nothing can exceed the fragrance. It reminds one
most perhaps of that of some *Daphne*, resembling a mixture of
hyacinths or primroses and peaches, with an ethereal spicy aro-
matic pungent freshness perfectly entrancing; streaming down
at night upon the wind far from its origin, but so partially,
that whilst perfuming powerfully one side of a narrow road or
alley, there will often be no trace of it perceptible on the other
side. It is strongest about midnight and is scarcely distin-
guishable, even close at hand, before sunset or after sunrise.
Order LXV. ATROPACEÆ.

Fl. perfect regular 5-merous. Cal. inf. gamosepalous free persistent (at least by its base) mostly leafy and enlarged in fr., 5-toothed or 5-fid valvate or subimbricate in bud. Cor. hypogynous gamopetalous infundibuliform or tubular-campanulate, limb 5-lobed, lobes often subunequal imbricate or subinduplicato-imbricate in bud. Stam. mostly all perfect and equal alternate with and as many as cor.-lobes, inserted on its tube, "one sometimes shorter, 3 very rarely sterile;" anth. bursting longitudinally, equal. Ov. 2- (rarely spuriously more-)celled; placentas, ovules and style as in SOLANACEÆ; stigma 2-lobed. Fr. capsular or baccate. Seeds numerous compressed reniform or oval; embryo mostly arcuate or nearly straight, rarely annular or spiral; cot. semiterete or oval compressed and fleshy. —Herbs or shr. with mostly solitary subextraaxillary often large conspicuous w. or cream-coloured fragrant fl.

A. Fr. baccate.

Tribe I. LYCIEÆ.

Cal. small simple cup-shaped subirregularly or obsoletely 5-toothed fleshy wholly persistent. Cor. infundibuliform not large. Anth. short free distinct. Embryo spiral; cot. semiterete.—Submaritime low or stunted straggling often spinose shr. L. simple lanceolate or spathulate entire often fascicled. Fl. small lavender-b., p. or lilac.

1. LYCIUM. Cal. tubular-campanulate or cup-shaped somewhat fleshy 5-toothed or 5-fid, with the teeth often irregular or subconfluentely subbilabiate, wholly persistent, not or scarcely enlarged in fr. Cor. tubular-infundibuliform; tube contracted below the insertion of the stam., constricted and circumcisissily caducous at its base leaving a persistent ring or cup embracing the base of ov.; limb 5-4-fid, lobes blunt oblong or rounded. Stam. 5-4 alternate with cor.-lobes, mostly subunequal; anth. short free distinct (not connivent or coherent) bursting longitudinally. Style simple, stigma depresso-capitate. Ov. 2-celled multi-ovulate seated on a short stalk or hypog. fleshy disk and within the persistent shallow free cup-shaped base of the cor.-tube. Fr. juicy berry-like, ovate, oval or globose, 2-celled, many-seeded. Embryo spiral; cot. semiterete.—Shr. with stiff rigid or sarmentose and flexile flaunting often spinose branches. L. simple quite entire alternate, often fleshy and fasciculate. Fl. small axillary and terminal
pedicellate mostly solitary sometimes binate or few-fasciculate; pedic. simple exarticulate; cor. ochroleucous, p., red, b. or lilac, scentless, circumscissilely separating close above its base. Berries scarlet, red or o., rarely black or b., mostly small, sometimes edible. Seeds flat reniform.

†††Tribe II. SOLANDREEAE.

Cal. large subspathiform inflatedly tubular leafy wholly persistent. Cor. large campanulato-infundiibuliform. Anth. oblong short free distinct. Embryo arcuate or nearly straight.—Sarmentose large rampant shr. with large drooping trumpet-shaped fragrant fl. and simple coriaceous l.

†††2. SOLANDRA. Cal. large membranously leafy elongate inflatedly tubular 5-angular irregularly 2-5-fid or -toothed, splitting down mostly bilabiated and with the teeth valvately connivent and more or less cohering, not deciduous in fr. Cor. large tubular-infundiibuliform or campanulato-trumpet-shaped, tube fleshy elongate ventricosely swollen or inflated upwards and again contracted below the 5-fld (rarely 6-7-fld) limb; lobes broadly rounded undulately revolute, some of them crispato-fimbriate or crenate at the edges. Stam. 5 equal included; anth. distinct free broadly oblong, short, affixed above their middle, bursting longitudinally. Stigma small simply capitate or subcapitate. Ov. 2- or imperfectly 4-celled multiovulate. Fr. berry-like fleshy or pulpy, enclosed in the wholly persistent membranous split-down cal., 2- or partly 4-celled, many-seeded. Seeds reniform compressed; embryo slightly curved or arcuate; cot. semicylindric.—Sarmentose climbing shr. with large simple entire subcoriaceous l. and large handsome terminal solitary yellowish-w. or cream-coloured or ochraceous fl. often tinged or streaked with p. (peach-blossom) or v. Fr. rather large fleshy scarcely edible.

B. Fr. capsular.

††Tribe III. DATUREAE.

The Thorn-Apple Tribe.

Cal. as in SOLANDREEAE but in fr. circumscissilely deciduous a little above the thickened persistent base. Cor. large simply tubular infundiibuliform. Anth. linear-elongate or shortly oblong connivent or subcoherent bursting longitudinally, mostly erect or adnate. Embryo slightly curved or arcuate. Cot. VOL. II.
semicylindric.—Subarborecent shr. or fetid herbs. L. simple membranous. Fl. large or conspicuous w., reddish o., or purpurascence.

††3. BRUGMANSIA. Cal. large membranously leafy elongate inflatedly tubular 5-angular irregularly 2-5-toothed, or spathiform and split down on one side only; cor. as in Solandra but simply infundibuliform or tubular (not ventricose), with lobes of limb strongly angulato-plicate twisted in bud attenuato-acuminate aristate or horned, all with the edges even and entire. Stam. 5 included; fil. adnate to cor. ½ way up or more; anth. erect linear-elongate or linear-oblong connivent or coherent at least at first into a tube round the style, bursting longitudinally. Stigma linear-oblong or subcapitately oblong 2-lamellate or bilobed, lobes linear deflexed decurrent. Ov. conico-oblong 2-celled, multiovulate. Caps. subsiliquiform narrow-elongate cylindric-oblong and attenuated at each end or elliptic-subulate, unarmed stiff but somewhat soft or membranous, 2-celled many-seeded indehiscent. Seeds as in Solandra.—Shr. or subarboreous. L. simple. Fl. large pendulous, at first cream-coloured, then pure w., limb sometimes or.-red.—Differs not less from Datura than from Solandra in the fr. and long slender linear coherent anth.

††4. DATURA. Cal. large leafy tubular elongate 5-angular or 5-ribbed 5-toothed or 5-fid, often splitting down 1-2-labiately and with the teeth obsolete or cohering. Cor. infundibuliform or trumpet-shaped 5-angular, tube elongate, limb 5-toothed or 5-horned, sometimes 6- or 10-toothed or lobed, lobes angulato-plicate twisted in bud. Stam. 5 included, anth. erect free distinct short linear bursting longitudinally. Stigma capitate 2-lobed or 2-lamellate. Ov. 2-celled, spuriously or partly 4-celled, multiovulate. Caps. globose or ovoidal naked echinate 2-celled semi-4-celled (i.e. upper half 2-, lower 4-celled) opening at top by 4 valves, many-seeded. Seeds reniformly oval or subtriangular, embryo arcuate.—Robust or coarse strong-smelling fetid herbs, occasionally frutescent. L. large simple angularly cut or toothed. Fl. large handsome solitary alary (from the forks of the st. and branches) or axillary, w., cream-coloured, or violaceous. Caps. large hard coriaceous erect or drooping. Seeds dark brown or black.

††Tribe IV. NICANDREÆ.

Cal. large 5-partite leafy wholly persistent bladdery and inflatedly enlarged in fr. and closed or contracted at the mouth.
Cor. moderately large campanulate. Anth. shortly oblong or oval free distinct; fil. dilated and vaulted at the base. Embryo annularly arcuate.—Herbs with handsome pale b. fl. Fr. dry but berry-like completely enclosed, as in Physalis, in the bladdery cal.

††5. Nicandra. Cal. 5-partite large leafy wingedly 5-gonal, the wings or angles prominent compressed, lobes sagittato-cordate very acute, membranous connivent and much inflated and enlarged in fr. Cor. campanulate, limb shallowly 5-lobed, lobes rounded spreading or reflexed. Stam. 5 equal short subincluded; fil. flexuous vaulted and dilated at the base, connivent over the ov.; anth. oval affixed below or near their apex. Stigma globosely capitate, of 5 connivent lobes. Ov. 3–5-celled seated on a fleshy crenulate disk, many ovulate. Fr. berry-like globose 3–4- or 5-celled, many-seeded, dry, with a thin brittle irregularly bursting pericarp enclosed freely in the capsuliform inflated reticulately bladdery cal. Seeds reniform-compressed; embryo plano-spiral; cot. semiterete.—Ann. herbs with solitary or geminate alary or extraaxillar drooping specious pale b. fl. Fr. quite dry and inedible.

Tribe V. HYOSCYAMEÆ.

The Henbane Tribe.

Cal. herbaceous somewhat enlarged and altogether persistent in fr. Cor. campanulato-infundibuliform. Anth. short globosely ovate or oval free distinct erect adnate bursting longitudinally. Fr. a capsule operculate and circumscissile dehiscent, embryo subspiral; cot. semiterete.—Viscid mostly fetid herbs. L. large mostly simple. Fl. lurid y. or b., mostly reticulate.

6. HYOSCYAMUS. Cal. tubularly urceolate or infundibuliform, limb 5-toothed or 5-fid, rigid and enlarged but not inflated in fr. Cor. campanulato-infundibuliform sometimes partly split down on one side, limb oblique 5-lobed, lobes unequal subobtuse. Stam. 5 declining included or exserted; fil. vaulted at the base. Caps. contained within the enlarged hard coriaceous cal., urceolate 2-celled many-seeded. Seeds small reniform compressed, embryo annular subspiral, cot. semiterete.—Clammy softly downy dull gr. or greyish herbs, with angularly or sinuately toothed or pinnatifid l. and axillary solitary mostly secund dull ochraceous or y. reticulately veined fl.
†††Tribe VI. NICOTIANAE.

The Tobacco Tribe.

Cal. herbaceous or leafy, altogether persistent and enlarged in fr. Cor. hypocrateriform or tubular-infundibuliform. Anthers as in Hyoscyameae. Fr. a capsule 2-celled many-seeded 2- or 4- or many-valvate at top. Seeds minute, embryo slightly curved or straight, cot. short semiglobose or ovate.—Mostly viscid fetid herbs; rarely subarboreous. L. simple large entire. Fl. subconspicuous.

†††7. NICOTIANA. Cal. tubular-campanulate 5-fid. Cor. infundibuliform or hypocrateriform, limb 5-lobed plicate, twisted in bud. Stam. 5 included or exserted. Ov. 2-celled many-ovulate with a thick basal obsoletely lobed ring (nectary). Stigma capitato-plicate or cap-shaped, "2-glandular within." Caps. inclosed by the enlarged cal., 2-celled, many-seeded, 2- or 4- or many-valvate at top, valves at length bifid. Seeds oval subreniform rugulose, embryo slightly curved.—Herbs or suffrutescent, rarely subarboreous, mostly clammy downy or pubescent, rarely smooth. L. quite entire large. Fl. gr. w. y. p. or purple in terminal paniculate corymbose or racemose cymes, rarely axillary solitary.

A. Fruit baccate.

Tribe I. LYCIEAE.

1. Lycium L.

Sect. Brachycope Miers: lobes of cor. short, one third to one half the length of the tube. Stam. mostly subincluded or not longer than cor.

1. L. Evropæum L. Espinheiro.

Shrubby erect smooth spinose, branches spinescent terete stiff-straight virgate, only the elongated young shoots sometimes lax and curved or arcuate; l. fleshy fascicled lanceolate or spathulato-lanceolate subacute or obtuse often oblique, finely attenuated downwards into short distinct petioles; pedic. short, in fr. hamate; cal. subequally 5-toothed or shallowly 5-fid, not or only sometimes indistinctly subbilabiate; stam. exserted from the tube, shorter than the cor., style about the same length; cor.-limb and tube (pale greyish lavender-b.) reticulately veined, tube 2 or 3 times the length of limb; berry drooping globose or ovoidal obtuse or.-red.—Linn. Mant. i. 47, Syst.
LYCII.

Nat. (ed. 12) ii. 177; Lam. Dict. iii. 510. no. 4 (at least the syn. and most of descr.); Ill. no. 2266; Desf. i. 196; Brot. i. 284; Pers. i. 231; Fl. Gr. iii. 30, t. 236; Spr. i. 700; Koch 583; Rehb. in WB. iii. 286 (quod pl. ex ins. Palma); Buch Can. List, 175. no. 51 (do. do.); Miers Ilustr. ii. 95, t. 64 B; Gren. et Godr. ii. 542; Willk. et Lange ii. 532. L. mediterraneum Dun. in DC. xiii. 1. 523. sect. 1 breviflorum (excl. sect. 2 longiflorum). L. maderense Miers! "Ins. Madera Lemann 552" (i.e. no. 552 L. europaeum? MS. Lowe) v. quoad spec. Lycii omnia Maderae et Portus S" in HH. "L. salicifolium Mill. Dict. no. 3." Jasminoides aculeatum Salcis foliò, flore parvo ex albo purpurascente Michel. Pl. Nov. Gen. 224, t. 105. f. 1. Cestrum scandens Bowd. ! Exc. in Mad. 91 (not Vahl, Pers.).—Shr. per. Mad., PS., reg. 1, 2. Here and there in detached bushes near the sea all along the S. coast of Mad., e.g. at the Praia formosa, on the roads to S. Martinho and S. Amaro, at Calheta, Paul do Mar &c., and to the eastward beyond Sª Cruz towards the cemetery, and near the sea-cliff salt-spring on the Penedo do Saco (Pª de S. Lourenço); in PS. forming a hedge along the lane from the landing-place up to the town and used for fences generally in the whole sandy district about the town. Apr. or May—Dec.; fr. March—May.—A stiff erect moderately thorny shr. 2—5 ft. high with scant foliage and pale bleached or whitish stout firm straight rigid hard thickish knobbed or knotted both laterally spinose and terminally spinoscent erect or erecto-patent rarely horizontal branches; the more vigorous young shoots elongate and subarcuatly erecto-patent (not declining) round (not angular) purplish-v. or lilac and often slightly pruinose or mealy towards their ends. L. more or less fleshy pale dull leaden or greyish mealy-gr. alternate and solitary at first on the new shoots, fascicled on the spurs or knobs of the older branches, mostly ½—1½ in. long (including petiole), 2—4 lines wide. Axillary spines at first short (3—6 lines) stout strong woody pungent erect or erecto-patent, ultimately horizontal and half to an inch or more long.—Fl. 1 or 2 together from the axes of 1. or short axillary spurs or knobs, erect or drooping ½ in. long, each on its own short slender mealy or mealy-puberulous angular pedic. which is 1—3 lines long and a little thickened upwards; the whole much shorter than the 1. Cal. cup-shaped, 1 line long, fleshy not at all scarious, gr. smooth or mealy-puberulous, with 5 shallow slightly unequal or irregular teeth, not distinctly bilabiate but with 2 shorter or more obsolete than the other 3, and split sometimes partly down on one side. Cor. 5—6 lines long, regularly narrow-infundibuliform, altogether pale greyish lavender-b. with dark reticulating veins and nerves, turning as it withers pale brown, the tube furry-puberulous downwards within, throat naked, the 5 lobes spreading (not reflexed) equal broad
rounded shallow, not above \( \frac{3}{4} \) the length of the concolorous (not gr.) tube, their edges minutely puberulous. Stam. half-exserted, the rather large elliptic-oval anth. reaching to or a little above the base of cor.-lobes and versatile or affixed by their middle to the fil., of which the free part, like the style, is quite smooth. Style as long as or a little longer than the stam., stigma distinctly depresso-capitate. Fr. (only 4 berries seen) in 2 examples pendulous, in one (growing from the under side of a horizontal branch) ascending vertically on its abruptly hooked pedic., exactly ovoidal obtusely rounded at both ends, \( 2\frac{1}{4}-3\frac{1}{2} \) lines or 5–7 mill. long \( \times 2-2\frac{1}{4} \) lines or 4–5 mill. broad, smooth shining or.-y. or bright full or.-red. Cal. enlarged as long as the ripe berry itself, of which it closely embraces the base only, pale yellowish gr. fleshy, with 5 short ovate sub-equal or slightly unequal distinct teeth, the 3 or 4 upper sometimes rather longer than the lower, rendering it subbilabiate not bifid; tube not usually split down, turbinately or pyriformly attenuated at the base into the short (2–3 lines) abruptly and strongly hooked ribbed or angular pedic.

Though flowering abundantly, the fr. is extremely rare; and it escaped not only my own observation for 30 years or more, but that of Webb, Holl, Lemann, Lippold, Moniz, Norman &c. and indeed apparently of every other earlier Mad. botanist. I first met with a single ripe berry on a low stunted depauperated almost leafless bush which, though I have not seen its fl., I believe to be merely a starved (from drought) more thorny and fleshy-leaved maritime state of the sp.,—near the brackish sea-cliff spring (Fonte) on the Penedo do Saco, March 6th 1801; and again, on the same bush, two nearly ripe pale orange-y. berries and 'a single small subabortive unripe gr. one, May 21st 1871, having looked for fr. or fl. on it in vain several times in the interim. Still, ripe fr. must be sometimes or somewhere more abundantly or frequently produced, judging from the very general diffusion of the pl.; and the rarity of the one and wide dispersion of the other may be both perhaps attributable to the same cause, viz. the early and eager devouring of the fr. by birds.

The only points in which I can perceive the Mad. pl. to differ from \( L. \) \( \text{europaeum} \) of authors are the lavender-blue fl. and ovoidal fr. The former may be probably ascribed, as in the fl. of \( \text{Hydrangea hortensis} \) Sm. and \( \text{Ipomoea rubro-caerulea} \) Hook. in Mad., to the peculiar soil. The latter is perhaps no difference at all,
seeing that on one side Dunal l. c. describes the fr. in *L. europceum* L. as "ovato-globose," and considering on the other hand the insufficiency of 3 or 4 berries of the Mad. pl. from one bush only to establish as a constant character their ovoidal shape, especially in the face of their being reported by the country people in Mad. to be "round like a ball, not egg-shaped."

In the Canaries I met with and instantly recognized, precisely this Mad. *Lycium* in Palma only, whence also spec. from F. Bourgeau exist in BH. and HH. no. 924, under the name of *L. europceum* L. In the other islands and especially in Lanzarote and Fuerte Ventura occurred another sp. with the same stiff thorny habit but with erect ovate-acute or elliptic orange-coloured fr., which at Aria in Lanzarote, where it abounds down the ravine below the town, is eaten by the children under the name of *Romane*. Is not *L. afrum* Reichenb. in WB. iii. 285 a compound of this Lanz. pl. with the fr. of true *L. afrum* L. from elsewhere? I at least never met with the true *L. afrum* (Mich. 224, t. 105. f. 2) in any one of the Can. islands; and if this common and abundant Lanzarotan and Fuerte-Venturan sp. be not intended by the *L. afrum* Reich. in WB., it is not otherwise recorded in the Phytogr. Can. It may be called, if previously undescribed, *L. canariense*.

†††Tribe II. *Solandreea*.

†††2. SOLANDRA Sw.

†††1. *S. macrantha* Dun.

Wholly smooth; st. and branches woody trailing sarmentose; young shoots virgate or arcuato-virgate elongate; l. coriaceous smooth elliptic-oblong and acute or obtuse and mucronate, cuneate at the base, shining dark gr.; fl. terminal subsolitary nearly sessile; cor. 5-lobed; anth. erect atropurpureous within; stigma simply globoso-capitate; "berry acuminate pale not red within."—Dun. in DC. xiii. 1. 533. *S. grandiflora* BM. t. 1874 et Hortul. plur. (nec Sw. nec Jacq. &c. sec. Dun. 1. c.). *S. grandiflora* Griseb. W. I. Fl. 433 (partly). *Datura sarmentosa* β Lam. Ill. no. 2295; Dict. vii. 463.—Shr. per. evergreen Mad. reg. 1, cult. r. In gardens about Funchal, running over walls or trained (as formerly at the Palmeira) as a border-fence; growing and flowering luxuriantly but never fruiting. May–Sept.—A loosely rampant shr. with stout woody st., trailing or
climbing extensively but not without support; the older branches pale cinereous with the leaf crowded towards their ends, the young shoots shining olivaceous or atropurpureous greatly elongated and loosely erecto-patent with the leaf remote. Leaf 3 or 4-6 in. long, 1 1/2-2 in. broad, wholly smooth, dark shining gr. above, paler dull glossy with 5 or 6 prominent parallel nerves on each side the midrib beneath; the margins mostly slightly or partially subrevolute; the 2 or 3 floral leaves close below the pedic. smaller and like some of the lower 1. spathulate retuse or mucronulate. Petioles 1 1/4-1 1/2 in. long, channelled above, bright gr. Flower mostly 1 rarely 2 or 3 together at the ends of the branchlets erect or pendulous, fragrant especially at night, large, conspicuous. Pedic. short thick smooth subangularly turbinately fleshy gr. like an inferior ovary, 4-6 lines long, 3 thick at base, 5 at top. Calyx quite smooth gr. leafy carinately 5-angular unequally 2-4-toothed, 3 or 2 of the normally 5 teeth being mostly concrete into 1 or 2 broad 2-1-carinate teeth; either 2-labiate or often split down nearly or more than halfway on the lower side only, 2 1/2-3 1/2 in. long; teeth triangular-ovate acute, their tips marcescent. Corolla 5- (very rarely 4-)fif quite smooth outside, slightly or thinly lanato-pilose inside downwards, the tube 5 1/2-6 in. long, pentangular downwards, inflated upwards, from 10-12 lines at top of calyx to 1 1/2-2 in. in diam. an inch below the limb, then again a little contracted, yellowish gr. inside and outside downwards, lighter and pale-greenish buffy upwards, with 5 gr. nerves reaching to the base of lobes; limb w. or cream-col., the lobes unequal short broad rounded waved reflexed or revolute, 3-4 smaller quite or partially entire, the 4-1 larger wholly or partly crispato-fimbriate, all at first pure w. then cream-col. and finally bright buff or nankeen-col. Stamens declinato-ascending, reaching to top of tube or nearly to base of lobes; style a little longer, declining and then curvato-ascending. Filament quite smooth shining pale gr. attached throughout, attached to the cor.-tube nearly halfway up. Anther oval-oblong short broad remarkably flat and thin obtuse or rounded at top, subcordate at the base, before bursting ochre-y., afterwards dark atropurpuraceous or blackish claret-col. inside, but whitened outside by the copious mealy-w. pollen, erect affixed by their base, not versatile, 4 lines long, 2 broad. Style 6 in. long or 1 1/2 in. longer than the stamens smooth rounded pale shining gr., sometimes tinged with lilac or pale purpuraceous upwards; stigma gr. simply capitate like a small pin's head, i.e. a small globose uniform velvety gr. knob or button without the least trace of lobes or division, 1 1/4 mill. in diam., abrupt not at all decurrent but scarcely broader than the style immediately beneath it. Ovary quite smooth shining pale gr.-waxy-y., pyramidato-conoidal 2-celled many-ovulate with a tumid fleshy 10-sinuato-crenate ring at its base. Fruit never produced in Mad., the fl. soon caducous with their pedic.
Dunal's description, except that even with the lens I can perceive only sometimes a faint line and certainly no "sulcus" in the stigma. Thus it is certainly his S. *macrantha* as distinguished from his *S. grandiflora* Sw. (l. c. 535); and though the two are reunited by Grisebach (W. I. Fl. 433), it is noteworthy that the fl. in the Mad. pl. have not the slightest tinge of p. or peach-blossom, as they have in *S. grandiflora* Sw., the "Peach-blossom Trumpet-flower" of the W. Indies.

*S. guttata* Don in Bot. Reg. t. 1551 (Dun. in DC. xiii. 1. 536) was introduced into Mad. from Mr. Tate's nursery gardens in England as an unknown pl. in or about 1832. It grew luxuriantly, soon flowering, but not fruiting; and still perhaps exists in the Achada garden where it was first planted.

**B. Fruit capsular.**

††Tribe III. *Datureæ*.

††3. *Brugmansia* Bernh.

††1. *B. suaveolens* (Bernh.). *Bellas noites*. Trombetas.

Subarboreous smooth or glabrescent, young shoots 1. petioles and ped. at first puberulous; 1. ovate-obl. or elliptic entire membranous nearly smooth, the nerves and veins only puberulous; fl. axillary solitary pendulous on short thick cernuous puberulous pedic.; cal. nearly smooth 5-toothed; cor.-tube 5-angular, the angles triple-nerved or ribbed pubescent, the interspaces smooth; lobes of limb shallow shortly horned or mucronate; anth. permanently coherent or conglutinate.—"Don Gen. Syst. iv. 475, excl. syn. Mill. et Mch." (Dun. in DC.). *Datura suaveolens* Poir. Suppl. v. 255; Dun. in DC. xiii. 1. 545, 690; Griseb. W. I. Fl. 433. *Datura Gardneri* Hook. in BM. at t. 4252 (*D. cornigera* Hook.) in text p. 2, note. *D. arborea* Hortul. et auct. plur. (non Linn.).—Tr. or arborescent shr. per. Mad. reg. 1 or scarcely 2, ccc. In gardens, vineyards &c. everywhere with or without cult., and sometimes when left to itself, as in the north between the Entrosa and P*ª* Delgada, completely choking up with a thick jungle small damp ravines; deciduous and not flourishing above 1000 ft., yet producing fr. more frequently and abundantly than lower down. At most seasons, chiefly Apr.–Dec.—A small tr. or shr., 10–15 ft. high, with either a single distinct trunk as thick as a man's thigh, or several stout st. as thick as the arm or leg, covered with a shining smooth pale drab or whitish bark. Older or top branchlets subtortuous or flexuous brittle pale or whitish; younger vigorous shoots thick stout straight flexuously striolate. Foliage
large and copious; 1. always perfectly entire, membranous thin and flaccid, reticulately veiny or subrugulose, fast withering, shining light or full gr. above, paler and conspicuously reticulate beneath, the nerves and veins on both sides finely puberulous; 6 or 8–10 or 12 in. long, about or nearly half as broad, acute or subacuminate not cordate but a little narrowed and mostly very unequal at the base. Petioles stout 1–2 in. long. Fl. very large w. pendulous aromatically fragrant. Pedic. 1–1 ½ in. long. Cal. 4½–5 in. long, 1½ broad pale gr. shining nearly or quite smooth, the teeth or lobes subequal broad shallow, ½–⅓ in. deep, 2 of them sometimes coadnate. Cor. trumpet-shaped, (including cal.) about a foot long, the tube on emerging from the cal. ½ in. in diam. gradually widening into 6 or more inches in the limb, which is pure w., the tube being greenish downwards and the whole cream-col. or greenish ochraceous in the bud. Stam. and style included, ⅔ length of cor. or about 8 in. long; fil. round slender 6½ in. long, w. pale greenish downwards, united to cor.-tube ⅔ of their length, hirsute downwards from about an inch below their top to within 1 or 2 in. of their base, the rest smooth. Anth. erect affixed by their base linear about ⅔ length of fil. 18–20 lines long, scarcely 1⅔ broad, subciliate at the edges, w. or cream.-col. without, brown within, closely united into a tube, never separable without force; bursting introrsally, pollen greyish w. Style very slender round smooth throughout; stigma 4 or 5 lines long, scarcely 1 line broad, narrow-oblong flattened very little if at all broader than the style itself, equalling or exserted ¾–1 in. beyond the anther-tube; stigmatic lobes not prominent narrow linear decurrent down the edges. Ov. gr. quite smooth pyramidal oblong gradually attenuate upwards into the style, obsoletely subpentangular 2-celled many-ovulate. Nectary or torus? a thick fleshy pale gr. sinuato-quadangular obtusely crenate subpuberulous shallow ring, from which originate the stam., copiously honey-bearing. Caps. dry pale brown arcuate pod-like 8–4 in. long, narrowly elliptic, beaked or attenuate at each end, indehiscent.

The fl. are slightly fragrant by day, but much more powerfully and diffusely so after sunset and through the night, when, by moonlight, they display an almost radiant or phosphorescent snowy whiteness, and expand more fully, falling into elegant thick horizontal rows or flounces on the tr. or bushes. Nothing can exceed their grace and loveliness, when in full luxuriance and perfection, which they may be said to attain at intervals of 4–6 weeks continuously from June to Nov. or Dec.

The tr. is esteemed noxious; and therefore in Mad. of late years has been banished from gardens and proximity to houses.
This idea perhaps originated from an accident which occurred some 40 years ago, when 2 or 3 children, having eaten a few of the seeds, escaped by timely medical assistance with no further harm than the effects of an overdose of *Atropa Belladonna* L. Still there is something perceptibly oppressive in an evening in too long or close inhalation of the powerful aromatic fragrance of the fl.


††4. *DATURA L.*

*Caps. erect.*

††1. **D. STRAMONIUM L. Thorn-apple. Bufaretra.**

Smooth or glabrescent fetid; st. erect short stout smooth round simple, dichotomously branched at top, branches like the st. hard rigid woody, stiffly spreading; l. stalked ovate or ovate-oblong acute or acuminate cuneate and unequal at the base, coarsely sharply and unequally sinuate-toothed; fl. erect solitary in the forks of the st. and branches, shortly stalked; cor. about twice the length of the smooth 5-winged 5-toothed pale gr. cal., w. or violascent; base of cal. in fr. reflexed; caps. ovoidal sub-equally echinate.—Brot. i. 169; Koch 586; Gren. et Godr. ii. 546; Dun. in DC. xiii. 540; Willk. et Lange ii. 533.—Herb. ann. Mad. reg. 1, 2.—Varr.:—

*a. genuina* Gr. et Godr. l. c.; wholly gr., cor. w.—**D. Stramonium** Linn. Sp. 255; Fl. Dan. t. 436; Vill. Dauph. ii. 488; Lam. Ill. no. 2289, t. 113; Dict. vii. 459; Desf. i. 187; EB. t. 1288; Pers. i. 216; Ait. H. K. i. 387; Buch 193. no. 186; Sm. E. Fl. i. 314; Spr. i. 627; WB. iii. 118; Seub. Fl. Az. 38; Coss. et Germ. 277; Webb Spic. Gorg. 162; J. A. Schm. Fl. Verd. 235; Bab. 234; Griseb. W. I. Fl. 434.—Mad. reg. 2, r. Corn-fields, waste ground and roadsides at the Achada of Pio Moniz; a weed in the late Mr. Webster Gordon's kitchen garden at the Mount, 30 or 40 years ago. Aug.–Oct.

*β. chalybea* Koch l. c.; st., branches, petioles, nerves of l. beneath, cal. and cor. v. or v.-purple.—Gren. et Godr. l. c.; Willk. et Lange l. c. **D. Stramonium β. Tatula** Dun. in DC. l. c. **D. Tatula** Linn. Sp. 256; Poir. in Lam. Dict. vii. 461; Pers. i. 216; Ait. H. K. i. 387; Spr. i. 627; Coss. et Germ. 277; Griseb. W. I. Fl. 434.—Mad. reg. 1, s. Back of the beach and roadsides at Machico, Sta Cruz &c. May–Dec.
Pl. of very variable size and luxuriance, ranging from a few inches to 2 or 3 ft. in height, with copious dark gr. foliage. Root long w. woody nearly simple perpendicular. Branches widely and stiffly divaricate angular, and with the young l. and petioles mealy-puberulous. L. somewhat fleshy and flaccid or fast withering, 2 or 3 in. long, 1–2 wide, their teeth large unequal remote acute. Cal. membranous 1–1½ in. long, pale gr. bronzed or tinged in β with pale purplish brown, narrowly 5-winged. Cor. scentless in Mad. with shortly and finely awned lobes; in a cream-col. outside, w. inside; in β pale v. or lilac with the throat inside and angles outside darker lilac or v.-purple. Stam. and style ½ length of cor., included and not reaching above the throat. Fil. round and smooth upwards, subpubescent and a little thickened and grooved inside downwards below their free portion; their lower half adnate to cor.-tube. Anth. erect adnate affixed by their base, free distinct short linear very narrow, 2 lines long, with (in β) v.-black borders and dull w. pollen. Style smooth throughout and like the fil. pale gr. downwards, paler or whitish upwards; stigma gr. rather large, 3 mill. long, 2 broad, capitate ovoidal, formed of two opposite broad deflexed or deciduous lobes. Cal. after flowering marcescent nearly to the base, and in fr. deciduous, leaving only the gr. cup-shaped base which becomes presently strongly deflexed, forming a hard stiff gr. supliclate or jagged-edged turned-down frill or collar beneath the fr. Caps. erect in the forks of the st., shortly stalked, ovoidal, the size of a Walnut or 2 × 1½ in. diam., dark gr. finally pale brown, covered all over with short hard sharp and pungent subequal conoidal spines and divided into two halves by a vertical shallow groove or raphe; 2-celled at top, 4-celled below, the large transversely dilated placenta giving off about halfway down a wing or diaphragm completely subdividing each cell into two; splitting from the top downwards finally into 4 valves; the apical spines but little longer than the rest and not above 3 or 4 lines long. Seeds flattened, roundish oval, subreniform or obtusely subtriangular, dark coffee-brown or black, serobiculate or corrugately foveolate and very closely and minutely reticulado-pustulate, 4 mill. long, 3 broad: they were formerly and are perhaps still sometimes fraudulently used to adulterate Onion-seeds, which are however much smaller and sharply trigonal.

The foregoing description is from var. β, compared throughout with one of a, which differs in no respect whatever except the few points above specified. Both in Mad., the Canaries and Cape Verdes β is assuredly the common normal state.
** Caps. more or less drooping.

††2. D. METEL L.

Fetid, altogether softly viscido-pubescent dull greyish cinerascen; st. erect round simple branched at top dichotomously; l. stalked ovate or elliptic-oblong entire or repandly toothed, the upper unequally geminate; fl. erect solitary in the forks of the st. and branches shortly stalked; cor. about twice the length of the evenly rounded loose pubescent cal., the limb 10-toothed; base of cal. in fr. 5-lobed patent or reflexed; caps. drooping globose muricate.—Linn. Sp. 256; Lam. Ill. no. 2292, Dict. vii. 462; Pers. i. 216; Ait. H. K. i. 387; BM. t. 1440; Spr. i. 627; WB. iii. 118; Webb Spic. Gorg. 162; J. A. Schm. Fl. Verd. 235; Griseb. W. I. Fl. 434; Willk. et Lange ii. 534.—Herb. ann. Mad. reg. 1, r. A weed in gardens or vineyards at or about Funchal occasionally; the Deanery in 1826; and again (1858 and 1871) at the Quinta das Angustias, quite spontaneous but not apparently inclined to spread. June-Jan.—A stout vigorously growing pl. about 2 ft. high with large glaucous-grey soft flaccid foliage, strongly and nauseously fetid. Branches forked straggling stout stiff, dull purplish, softly or subvillously pubescent. Petioles the same, 2-4 in. long. L. dull gr. softly pubescent flaccid entire elliptic-oblong 5-8 in. long, 3-4 broad, one of the upper geminate l. smaller than the other. Fl. pure w. shortly stalked in the forks of the st., fragrant at night, large i. e. (with cal.) 5 or 6 in. long. Pedic. round, short and erect in fl., deflexed and ½-1 in. long in fr.; cal. pale gr., tube 3 in. long, ½-1 in. broad rounded not angular, 5-toothed, teeth equal ½-1 in. long oblong-lanceolate acuminate. Cor. twice as long as cal., tube greenish downwards smooth 5-ribbed or angular, limb pure w. pubescent outside 2 in. or more in diam. Stam. and style half included i. e. exserted from the throat but much shorter than the limb; fil. smooth adnate to cor.; anth. linear erect. Ov. bristly hirsute, bristles w. erect. Hypog. ring or nectary very shallow or narrow, double, the inner pale or w., the outer greenish, each repandly and irregularly 10-crenate.

Fr. large subglobose prickly all over with short stiffish conic spines, 1½-2 in. in diam., 2-celled, obscurely 2-lobed, the permanent base of cal. forming a stiff, spreading or mostly turned-back, repandly or obscurely 5-angular gr. frill or collar at its base, ¼-½ in. broad. Seeds ...........

The whole pl. is most disagreeably clammy and fetid.

In all the Canaries, and most of the Cape Verdes, this is a common and universal weed in waste places near the sea, about towns and villages, in dry beds of ravines &c.
††Tribe IV. Nicandreæ.

††5. NICANDRA Adans.

††1. N. physaloides* Grtn.

The only known sp.—“Gartn. Fr. ii. 237, t. 131;” BM. t. 2458; WB. iii. 283; Dum. in DC. xiii. 434; Miers Illustr. ii. 34, t. 43. N. physalodes Pers. i. 219; Spr. i. 699. Atropa physaloides Ait. Hort. Kew (ed. 2) i. 392. A. physalodes Linn. Sp. 260 (descr. opt.). “Physalis peruviana Mill. Dict. no. 16” (not Linn.). P. daturæfolia Lam. Dict. ii. 102 (descr. opt.); Ill. no. 2410. “Alkekengi amplio flore violaceo Fenuill. Peruv. ii. 724, t. 16.”—Herb. ann. Mad. reg. 1, 2, c. Sparingly here and there in waste ground, borders of corn-fields; by roadsides or a weed in gardens, vineyards, &c., about and above Funchal chiefly. Sept.–May.—Very variable in size from 2 or 3 in. with simple st. to mostly 1-3 ft., branched and leafy. Whole pl. smooth scentless and tasteless. Branches stout stiff angular shining pale gr. L. rather large shining dark gr. oblong or oval-oblong acute unequal and cuneato-recurrent at the base all down the petiole, very unequally sinuato-toothed and angular 2-5 or 6 in. long, 1-4 broad, the winged petioles ¾-1¾ in. long. Pedic. 1-fld. solitary (rarely binate) from the side of each petiole at its base or slightly supraaxillary, ½-1 in. long round slender acutely crenuous. Cal. even in fl. large inflated leafy pale gr. reticulately veined and membranous, curiously 5-winged at the base by the abrupt turning outwards or reduplication of the lower lateral margins of the subapicately acute erect lobes; each wing sub-sagittate or ending abruptly in an acute or subaristate angle at its base. Fl. handsome scentless; cor. campanulate delicate pale b., throat w. with 5 radiating deeper b. spots. Fil. dilated arched and hairy at the base forming connivently a vault over the ov. Fr. drooping; cal. much enlarged, sharply and prominently 5-winged, dry and scarious, closing over and quite concealing the berry; the latter globose, the size of a cherry, pale straw-col. or yellowish brown 4-5-celled, perfectly dry in all stages, finally bursting or breaking up irregularly. Seeds very numerous roundish-lenticular dark y. or tawny.

In 1828 I observed several pl. of this sp. in England, growing luxuriantly on a manure-heap by the roadside a little way out of Hatherne near Loughboro' in Leicestershire.

Wonderfully variable in size and luxuriance, ranging from

* The form physaloides is not correct; but it is at any rate better than physalodes, which would mean (if not a mere misprint) affinity to φύσαλος, a toad, instead of resemblance to φύσαλις, a bubble.
2 in. to 8 ft. (as I once saw it) in height, with 1. sometimes 15 in. long and 12 broad!

Tribe V. *Hyoscyameae.*

6. **Hyoscyamus** L.

1. **H. albus** L. *Beleno. Meimendro.*

Herbaceous woolly-hirsute viscid dull hoary gr. or cinerascent; branches few remote round stiff hard or woody; 1. all petiolate oval or ovate-oblong sinuately or repandly lobed or toothed, the lower suborbicular subcordate, the upper lanceolate subcumate at the base and subentire; fl. and fr. axillary second in long produced simple terminal leafy scorpioidal rac., the lower fl. stalked, upper subsessile; fl. pale y. not reticulately veined. —Linn. Sp. 257; Lam. Ill. no. 2414, t. 117. f. 2; ejusd. Dict. iii. 328; Broth. i. 274; Pers. i. 217; Rehbr. in WB. iii. 116; Willk. et Lange ii. 534. *H. albus et H. canariensis* Spr. i. 615, 616. *H. albus et H. major* Dun. in DC. xiii. 1. 548; Gren. et Godr. ii. 546, 547.—Var. :-

*β. major*; stout and robust, fl. rather large, throat and stam. mostly purpureous.—*H. major* "Mill. Dict. no. 2;" Dun. in DC. l.c.; Gren. et Godr. l.c. *H. albus* Desf. i. 188; Fl. Gr. t. 230; Ait. H. K. i. 389; Buch 193. no. 187; Koch 585; Wats. in Godm. Az. 199. *H. canariensis* Ker in Bot. Reg. t. 180; Spr. l. c. 616; Seub. Fl. Az. 38.—Herb. ann. Mad. reg. 1, 2; PS. reg. 2, 3; SD. c. Sea-cliffs in Mad. general on both the S. and N. coasts, e. g. at the Gorgulho, Praia formosa, Ponta do Sol, Calheta &c., P'au Delgada &c.; PS. in the Serra Dentro in corn-fields subremote from the sea. Throughout the year, but chiefly March-Oct.—Whole pl. fetid, but not so powerfully as in *H. nigra* L., with much the habit of a *Verbascum* in its mode of growth. Root strong fusiform or mostly undivided whitish fleshy or a little woody, but decidedly ann., or if biennial only hapaxanthous. St. erect 2 or 3 ft. high, sparingly branched upwards, clothed like the stiff stout rigid thickish erecto-patent branches petioles and cal. with copious soft whitish viscid widely spreading hairs. L. mostly more or less hairy-pubescent and cinerascent, but without the peculiar pale grey aspect of *H. nigra* L., and even sometimes, in moist shady spots (like the whole pl. of a bright grass-gr. ! with the 1. almost naked. Lower l. 3 or 4 in. long, 2 or 3 broad, on long petioles, subcordate at the base, strongly or coarsely angulato-toothed and almost lobed or at least sinuate; the uppermost or floral narrower entire lanceolate and decurrent into the petiole. Fl. in long virgate (at first scorpioidal) leafy subsecund rac., the lower shortly stalked upper
subsessile. Cor. pale lemon- or sulphur-y. or straw-col., not reticulately veined, the throat usually (but not always in Mad.) deep purple, downy outside, the 3 upper lobes of the limb larger and deeper coloured than the 2 lower. Stam. exserted longer than the cor.; fil. unequal and with the style purplish upwards; anth. large; pollen pale. Cal. in fr. erect almost wholly secund, campanulate somewhat rigid and fleshy enlarged and conspicuous, 1 in. long, resembling a gr. bell-shaped fl.; the limb erect-patent, disclosing the comparatively or entirely smooth top of the caps, which comes off circumscissilely like a lid. Seeds flattened angular reticulately scabrous light brown.

The root in the Mad. pl. is merely ann., in which respect alone it differs from the descriptions by Dunal and Gren. et Godr. of their H. major.

††††Tribe VI. Nicotianae.

††††7. NICOTIANA L.

* Caps. 2-valvate.


Herbaceous viscoso-pubescent full or dark gr.; st. round erect virgate, branched upwards; l. large, broadly oblong-lanceolate, acute or subacuminate, sessile and amplexicaul or wingedly petiolate decurrent; fl. stalked in bracteolate terminal loosely corymbiform or paniculate subbracteose cymes; cor. viscoso-pubescent outside, infundibuliform, tube clavate not constricted at top, 3 times the length of cal., inflato-clavate for ⅓ its length downwards below the limb, pale greenish, thrust and limb p. or rose-col., limb spreading or reflexed 5-gonal, lobes shallow very acute or shortly acuminate; caps. subexserted the length of or a little longer than the cal.—Linn. Sp. 258; Lam. Illust. no. 2280, t. 113; Poir. in Dict. iv. 477; Desf. i. 189; Pers. i. 217; Ait. H. K. i. 390; Fydell's List no. 115; Spr. i. 615; Coss. et Germ. 276; J. A. Schm. Fl. Verd. 234; Griseb. W. I. Fl. 434; Willk. et Lange ii. 535. *N. Tabacum et *N. latissima Koch 586. *Hyoscyamus peruvianus Ger. Herb. 285, f. 1. *N. major latifolia Moris. Hist. ii. 492, t. 2. § 5. f. 1.—Herb. ann. or bien. Mad. reg. 1. 5. Vineyards, gardens and waste ground about houses, in and about Funchal and most towns or villages in the island. At almost all seasons.—St. 2–3 or 4 ft. high hard stiff gr. L. soft flaccid dark or full gr. with impressed nerves above, paler and brighter gr. beneath with prominent nerves and veins. Whole pl. densely but shortly glanduloso-pubescent and viscid. L. 6–12 in. long, 3–6 broad, all sometimes petiolate, the lower at least mostly sessile; petioles plicato- or undulato-
winged; wings decurrent. Fl. numerous opening 1–2 or 3 together in succession scentless. Cal. like st. br. and pedic. densely viscido-pubescent, the teeth short rather shallow acute, their points a little spreading. Cor. 1½ in. long, oblageniform like a very long-necked inverted flask or bottle; inflated upper part of tube ½ in. long, limb 10–12 lines in diam.; tube about 3 times the length of cal. pale gr., paler upwards; limb dull p. or rose; the whole densely viscoso-pubescent outside, smooth within; limb concave, its lobes or rather angles very sharply acute or acuminato-apiculate broad shallow reflexed. Anth. reaching to the mouth of the throat erect brown, pollen dull w.; fil. very pale gr. smooth, lanato-pubescent downwards. Style smooth a little shorter than stam.; stigma full gr. abruptly capitate or pileiform like a young undeveloped Agaricus, bilobed by a transverse groove. Ov. conico-pyramidal smooth gr. 2-celled; nectariferous ring obsolete or none. Caps. 9 lines long, 4 broad, enclosed in the persistent close-pressed cal., ovato-pyramidal or conoidal acute brown smooth, bifid at top, imperfectly 2-celled i. e. 1-celled above the middle. Seeds very numerous and minute, ½ mill. long, flattened, roundish oval, obscurely subreniform, brown, subrugulose.

The damp air of Mad. is unfavourable for the manufacture of this pl. into tobacco &c.; and indeed, even whilst growing, it is apt to be infested with mildew or Oidium. Still I have occasionally seen some tolerable cigars made under specially favourable conditions for the drying of the leaves. Formerly its cultivation was prohibited on account of a monopoly now abolished.

The subarboreous N. glauca Grah. (in BM. t. 2837; Dun. in DC. xiii. 1. 562), altogether smooth, with slender trunk, glaucous young shoots and poplar-like l. (the latter cordate and long-petioled) and y. fl.,—so widely naturalized in the Canaries and Cape Verdes,—occurs, but has not yet at all established itself in Mad.
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